

# PTE Self Study

more than a group . . .



## Listening fill in the blanks

#Ifib

Ver 3.0

Real Exam Questions Included



# PTE Self Study

more than a group . . .

گروه PTE SELF STUDY در تاریخ ۳ تیر ۱۳۹۶ توسط فرزین غفارنژاد، [فراز تاج فیروز](#) و [علیرضا پلویی](#) تأسیس شد و رسالتش از آنروز تا به امروز کمک به هموطنان برای کسب نمره زبان از طریق آزمون PTE Academic بوده و خواهد بود.

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- ۴ متن و ۷۲۱ لغت تکراری امتحان مربوط به بخش LFIB اضافه گردید.
- ۱۰۹ سوال جهت تمرین بیشتر تدوین شده است. (شماره ۴۲ تا ۱۵۰)
- جهت آشنایی بیشتر با این تسک می توانید متریال های این جزوه را در سایت ما به آدرس [www.ptestudy.net](http://www.ptestudy.net) تمرین کنید.

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## Real Exam Questions

001

An Egyptian narrative of about 1080 BC, the Story of Wen-Amen, provides an ..... into the scale of their trading activity. One of the ..... is Wereket-El, a Phoenician ..... living at Tanis in Egypt's Nile delta. As many as 50 ships carry out his business, plying back and forth between the Nile and the Phoenician port of Sidon. The most ..... period for Phoenicia was the 10th century BC, when the ..... region was stable.

002

For all his fame and celebration, William Shakespeare remains a .....figure with regards to personal history. There are just two primary ..... for information on the Bard: his works, and various legal and ..... documents that have survived from Elizabethan times. Naturally, there are many .....in this body of information, which tells us little about Shakespeare the man.

003

Laurence Stephen Lowry RBS RA was an English artist. Many of his drawings and paintings .....Pend lebury, Lancashire, where he lived and worked for more than 40 years, and also Salford and its surrounding areas. Lowry is famous for painting .....of life in the industrial districts of North West England in the mid-20th century. He developed a distinctive style of painting and is best known for his urban .....peopled with human figures often referred to as matchstick man. He painted mysterious unpopulated landscapes, brooding .....and the unpublished "marionette" works, which were only found after his death.

004

In animals, a movement is coordinated by a cluster of neurons in the spinal cord called the central ..... generator (CPG). This produces signals that drive muscles to .....rhythmically in a way that produces running or walking, depending on the pattern of pulses. A simple signal from the brain instructs the CPG to switch between different....., such as going from a standstill to walking.



|     |                |     |               |     |                |     |                  |
|-----|----------------|-----|---------------|-----|----------------|-----|------------------|
| 001 | loosely        | 002 | brilliant     | 003 | alphabet       | 004 | interest         |
| 005 | spectrum       | 006 | aspects       | 007 | mysterious     | 008 | sources          |
| 009 | church         | 010 | gaps          | 011 | generalized    | 012 | doubt            |
| 013 | whatever       | 014 | boost         | 015 | tremendous     | 016 | permanent        |
| 017 | social         | 018 | limited       | 019 | association    | 020 | rammer           |
| 021 | vehicular      | 022 | depression    | 023 | revolution     | 024 | irritation       |
| 025 | Vikings        | 026 | declined      | 027 | enormous       | 028 | amalgamation     |
| 029 | encourage      | 030 | prescribing   | 031 | precise        | 032 | biologically     |
| 033 | modes          | 034 | ferry         | 035 | introduced     | 036 | Show             |
| 037 | travelling     | 038 | institute     | 039 | compulsory     | 040 | profound         |
| 041 | consultant     | 042 | exposed       | 043 | mind           | 044 | complexity       |
| 045 | completing     | 046 | forecasting   | 047 | challenge      | 048 | instilled        |
| 049 | insight        | 050 | characters    | 051 | merchant       | 052 | prosperous       |
| 053 | surrounding    | 054 | monetary      | 055 | excess         | 056 | mean             |
| 057 | shallow        | 058 | rare          | 059 | darkness       | 060 | similar          |
| 061 | initially      | 062 | critically    | 063 | drastically    | 064 | ridiculous       |
| 065 | unconventional | 066 | Conventional  | 067 | Conventionally | 068 | important        |
| 069 | break down     | 070 | inevitably    | 071 | access         | 072 | share            |
| 073 | abrupt         | 074 | oceanography  | 075 | million        | 076 | patriotism       |
| 077 | addition       | 078 | permission    | 079 | happen         | 080 | commodity        |
| 081 | significant    | 082 | mental        | 083 | classical      | 084 | summarize        |
| 085 | neighboring    | 086 | expansion     | 087 | propose        | 088 | strategy         |
| 089 | subscribe      | 090 | practically   | 091 | failure        | 092 | Electrically     |
| 093 | radical        | 094 | technical     | 095 | proposal       | 096 | passive          |
| 097 | psychological  | 098 | burgeoning    | 099 | talent         | 100 | graphics         |
| 101 | lightning      | 102 | series        | 103 | detail         | 104 | objectives       |
| 105 | surfer         | 106 | expression    | 107 | genius         | 108 | paddle           |
| 109 | boat           | 110 | done          | 111 | individuals    | 112 | theories         |
| 113 | turned         | 114 | branding      | 115 | visible        | 116 | electronically   |
| 117 | nutrition      | 118 | nutrients     | 119 | imagine        | 120 | industrialized   |
| 121 | globalization  | 122 | investigation | 123 | roots          | 124 | ground           |
| 125 | findings       | 126 | deeper        | 127 | Infrastructure | 128 | subordinates     |
| 129 | products       | 130 | wisdom        | 131 | enlarge        | 132 | medium           |
| 133 | partial        | 134 | everywhere    | 135 | application    | 136 | Natural          |
| 137 | Development    | 138 | Constitute    | 139 | Restricted     | 140 | radically        |
| 141 | massive        | 142 | personality   | 143 | deduction      | 144 | Depth            |
| 145 | Floor          | 146 | puzzled       | 147 | Granolithic    | 148 | science          |
| 149 | Sociology      | 150 | Cause         | 151 | Diagnosis      | 152 | Representative   |
| 153 | rather         | 154 | phenomenon    | 155 | paradox        | 156 | excellent        |
| 157 | experience     | 158 | shaved        | 159 | analytics      | 160 | necessarily      |
| 161 | timely         | 162 | knowledge     | 163 | accumulating   | 164 | migration        |
| 165 | facilities     | 166 | operation     | 167 | creature       | 168 | added            |
| 169 | recession      | 170 | steady        | 171 | swifts         | 172 | responsibilities |



|     |              |     |               |     |                |     |              |
|-----|--------------|-----|---------------|-----|----------------|-----|--------------|
| 173 | patterns     | 174 | curriculum    | 175 | swapping       | 176 | beginning    |
| 177 | light        | 178 | premium       | 179 | qualifies      | 180 | qualifiers   |
| 181 | maximization | 182 | global        | 183 | spreading      | 184 | send         |
| 185 | convergence  | 186 | salted        | 187 | profession     | 188 | studies      |
| 189 | alliances    | 190 | distrust      | 191 | complain       | 192 | complained   |
| 193 | observable   | 194 | spectacle     | 195 | element        | 196 | chief        |
| 197 | surprised    | 198 | layers        | 199 | provides       | 200 | schedule     |
| 201 | cultural     | 202 | baffle        | 203 | oceanologist   | 204 | protection   |
| 205 | author       | 206 | perception    | 207 | valuable       | 208 | legitimate   |
| 209 | complicated  | 210 | thereafter    | 211 | vogue          | 212 | promotions   |
| 213 | assumption   | 214 | initial       | 215 | figurative     | 216 | expectations |
| 217 | involved     | 218 | session       | 219 | resources      | 220 | behavior     |
| 221 | sleek        | 222 | bubble        | 223 | relatively     | 224 | relative     |
| 225 | robust       | 226 | label         | 227 | power          | 228 | environment  |
| 229 | urgent       | 230 | urgency       | 231 | government     | 232 | overseas     |
| 233 | reservoir    | 234 | conditions    | 235 | determination  | 236 | commonly     |
| 237 | irrelevant   | 238 | opposed       | 239 | Laid off       | 240 | tension      |
| 241 | mathematics  | 242 | equations     | 243 | ethical        | 244 | tidal        |
| 245 | frequently   | 246 | equally       | 247 | electronic     | 248 | chef         |
| 249 | elevation    | 250 | dependence    | 251 | dependency     | 252 | determine    |
| 253 | citizenship  | 254 | helmet        | 255 | editorial      | 256 | assume       |
| 257 | prescription | 258 | incorporate   | 259 | banding        | 260 | fatality     |
| 261 | pendulum     | 262 | underlying    | 263 | fewest         | 264 | enterprise   |
| 265 | artificial   | 266 | journalist    | 267 | hydrogen       | 268 | legislative  |
| 269 | virus        | 270 | document      | 271 | vision         | 272 | creed        |
| 273 | convey       | 274 | interestingly | 275 | administrative | 276 | portrait     |
| 277 | complex      | 278 | intend        | 279 | dialogue       | 280 | relief       |
| 281 | deposition   | 282 | discipline    | 283 | deposit        | 284 | sediment     |
| 285 | simplicity   | 286 | arctic        | 287 | shoots         | 288 | folder       |
| 289 | muscle       | 290 | democracy     | 291 | library        | 292 | underline    |
| 293 | identified   | 294 | legal         | 295 | Continent      | 296 | combination  |
| 297 | clothing     | 298 | observe       | 299 | bridge         | 300 | later        |
| 301 | indigenous   | 302 | separated     | 303 | separate       | 304 | description  |
| 305 | associated   | 306 | bored         | 307 | variety        | 308 | originated   |
| 309 | historical   | 310 | nearest       | 311 | foundation     | 312 | structure    |
| 313 | Circulation  | 314 | young         | 315 | oceanographer  | 316 | summer       |
| 317 | vernacular   | 318 | certainly     | 319 | disorder       | 320 | industrial   |
| 321 | stitch       | 322 | distinctive   | 323 | lined          | 324 | shaped       |
| 325 | thick        | 326 | billion       | 327 | stolen         | 328 | key          |
| 329 | store        | 330 | intensive     | 331 | folder         | 332 | discipline   |
| 333 | opening      | 334 | simple        | 335 | later          | 336 | suppressed   |
| 337 | labor        | 338 | sugar         | 339 | frontier       | 340 | scape        |
| 341 | coercive     | 342 | habitant      | 343 | frequency      | 344 | shed         |





|     |                |     |               |     |               |     |                |
|-----|----------------|-----|---------------|-----|---------------|-----|----------------|
| 345 | observed       | 346 | stick         | 347 | section       | 348 | exhibit        |
| 349 | apologized     | 350 | solid         | 351 | skeptical     | 352 | ancient        |
| 353 | board          | 354 | dissent       | 355 | majority      | 356 | taught         |
| 357 | spreads        | 358 | queen         | 359 | autumn        | 360 | managers       |
| 361 | institution    | 362 | team          | 363 | shelter       | 364 | approach       |
| 365 | drop           | 366 | rustic        | 367 | technologies  | 368 | generated      |
| 369 | fundamental    | 370 | republicans   | 371 | option        | 372 | processes      |
| 373 | atmosphere     | 374 | celebrate     | 375 | culture       | 376 | conversion     |
| 377 | circular       | 378 | alternative   | 379 | editable      | 380 | coalition      |
| 381 | productivity   | 382 | chamber       | 383 | underneath    | 384 | potent         |
| 385 | recession      | 386 | irrational    | 387 | confess       | 388 | broadcast      |
| 389 | situational    | 390 | excellence    | 391 | pseudo        | 392 | engendering    |
| 393 | devolution     | 394 | navicular     | 395 | academy       | 396 | double         |
| 397 | market         | 398 | financial     | 399 | traditional   | 400 | overseen       |
| 401 | identity       | 402 | famous        | 403 | wanting       | 404 | former         |
| 405 | strength       | 406 | personalized  | 407 | diversity     | 408 | deliberately   |
| 409 | conference     | 410 | wondered      | 411 | efficient     | 412 | reverting      |
| 413 | honestly       | 414 | photos        | 415 | redact        | 416 | sale           |
| 417 | sofa           | 418 | Tokyo         | 419 | route         | 420 | accumulation   |
| 421 | passenger      | 422 | concentrate   | 423 | surveyed      | 424 | respondents    |
| 425 | ride           | 426 | impacting     | 427 | offsetting    | 428 | implications   |
| 429 | headed         | 430 | rewinding     | 431 | flattens      | 432 | droplets       |
| 433 | response       | 434 | explosion     | 435 | mimic         | 436 | exploring      |
| 437 | supposed       | 438 | terrestrial   | 439 | pollination   | 440 | identities     |
| 441 | supplementing  | 442 | trickery      | 443 | contemporary  | 444 | helpful        |
| 445 | dozen          | 446 | discovered    | 447 | perspective   | 448 | prepare        |
| 449 | essentially    | 450 | interact      | 451 | automatically | 452 | crisis         |
| 453 | boundaries     | 454 | symptom       | 455 | symptomatic   | 456 | service        |
| 457 | shortfall      | 458 | restrictions  | 459 | chairman      | 460 | Quite          |
| 461 | populations    | 462 | translocation | 463 | sustainable   | 464 | induced        |
| 465 | dispersal      | 466 | Benefited     | 467 | exposure      | 468 | journal        |
| 469 | substances     | 470 | remember      | 471 | acclimate     | 472 | pounds         |
| 473 | seemingly      | 474 | Investigators | 475 | randomly      | 476 | exercise       |
| 477 | concentrations | 478 | atmospheric   | 479 | gradually     | 480 | burning        |
| 481 | radiative      | 482 | cautionary    | 483 | magnitude     | 484 | bounds         |
| 485 | traumatic      | 486 | offspring     | 487 | scenario      | 488 | reconstruction |
| 489 | warmer         | 490 | trajectory    | 491 | splashes      | 492 | sitting        |
| 493 | dinosaurs      | 494 | increasingly  | 495 | interesting   | 496 | probability    |
| 497 | eventually     | 498 | predictable   | 499 | circling      | 500 | obtaining      |
| 501 | poverty        | 502 | published     | 503 | socioeconomic | 504 | countries      |
| 505 | obesity        | 506 | diseases      | 507 | invest        | 508 | particularly   |
| 509 | colleagues     | 510 | remaining     | 511 | diverse       | 512 | variables      |
| 513 | rapidly        | 514 | telescopes    | 515 | hundred       | 516 | stretching     |



|     |                |     |               |     |               |     |                |
|-----|----------------|-----|---------------|-----|---------------|-----|----------------|
| 517 | spinning       | 518 | intermediate  | 519 | distribution  | 520 | Propagating    |
| 521 | binary         | 522 | supermassive  | 523 | illustrative  | 524 | testify        |
| 525 | markings       | 526 | methodology   | 527 | convicted     | 528 | chlorophyll    |
| 529 | favorite       | 530 | overfishing   | 531 | indeed        | 532 | ecological     |
| 533 | Commerce       | 534 | Develop       | 535 | Everybody     | 536 | Compatible     |
| 537 | Corrosive      | 538 | occurs        | 539 | deformed      | 540 | disappeared    |
| 541 | Horror         | 542 | Fashions      | 543 | Followers     | 544 | Spirit         |
| 545 | alphabetic     | 546 | included      | 547 | climbing      | 548 | appreciate     |
| 549 | Listed         | 550 | Search        | 551 | Understand    | 552 | Economically   |
| 553 | communications | 554 | emulates      | 555 | demographic   | 556 | subconsciously |
| 557 | Movement       | 558 | Support       | 559 | subsiding     | 560 | Bulbs          |
| 561 | lenient        | 562 | arbitrated    | 563 | covered       | 564 | emit           |
| 565 | Nitrogen       | 566 | insurance     | 567 | envisions     | 568 | articles       |
| 569 | Intentionally  | 570 | Importance    | 571 | Subsidized    | 572 | manipulation   |
| 573 | Numerous       | 574 | Taken         | 575 | Elements      | 576 | question       |
| 577 | reformed       | 578 | Instructive   | 579 | histories     | 580 | existence      |
| 581 | squabble       | 582 | individuality | 583 | identical     | 584 | increasing     |
| 585 | Primarily      | 586 | Behalf        | 587 | Emphasize     | 588 | Accurate       |
| 589 | professionally | 590 | colloquial    | 591 | relatives     | 592 | universe       |
| 593 | Psychologist   | 594 | reform        | 595 | risks         | 596 | succeed        |
| 597 | bourgeois      | 598 | Control       | 599 | shadowing     | 600 | monitor        |
| 601 | cash           | 602 | success       | 603 | Confidence    | 604 | Evidence       |
| 605 | Consumption    | 606 | Moderation    | 607 | Force         | 608 | Head           |
| 609 | serve          | 610 | rush          | 611 | improvements  | 612 | aggressive     |
| 613 | boost up       | 614 | opt           | 615 | Tiny          | 616 | Clot           |
| 617 | Crucial        | 618 | Electricity   | 619 | Prices        | 620 | Supported      |
| 621 | occurring      | 622 | thrown        | 623 | foreshadowed  | 624 | Cluster        |
| 625 | weird          | 626 | recognize     | 627 | Intentional   | 628 | reality        |
| 629 | investigate    | 630 | optimizing    | 631 | different     | 632 | experiencing   |
| 633 | Critical       | 634 | Staring       | 635 | line          | 636 | education      |
| 637 | basically      | 638 | foreshadow    | 639 | regions       | 640 | manufacturing  |
| 641 | revolutionized | 642 | level         | 643 | regional      | 644 | electronics    |
| 645 | significantly  | 646 | emphasized    | 647 | dedicated     | 648 | few            |
| 649 | supporting     | 650 | principally   | 651 | Synthesis     | 652 | constitution   |
| 653 | focus          | 654 | growth        | 655 | really        | 656 | Declines       |
| 657 | community      | 658 | admit         | 659 | institutional | 660 | brought        |
| 661 | translate      | 662 | Manufactures  | 663 | Experimental  | 664 | Successful     |
| 665 | Main           | 666 | Researchers   | 667 | temporary     | 668 | inevitable     |
| 669 | Lands          | 670 | still         | 671 | workplace     | 672 | Quoting        |
| 673 | scary          | 674 | minimize      | 675 | stabilized    | 676 | materials      |
| 677 | extremely      | 678 | constituents  | 679 | Explanation   | 680 | tightly        |
| 681 | extreme        | 682 | predicament   | 683 | forecast      | 684 | system         |
| 685 | communist      | 686 | constructive  | 687 | virtues       | 688 | whole          |





|     |             |     |                 |     |                  |     |              |
|-----|-------------|-----|-----------------|-----|------------------|-----|--------------|
| 689 | omit        | 690 | subjects        | 691 | formed           | 692 | Reducing     |
| 693 | obscure     | 694 | situation       | 695 | graduate         | 696 | role         |
| 697 | distinction | 698 | technologically | 699 | pedal            | 700 | femininity   |
| 701 | cheaper     | 702 | increase        | 703 | chemical         | 704 | climate      |
| 705 | getting     | 706 | philosophy      | 707 | convincible      | 708 | qualitative  |
| 709 | innovator   | 710 | technological   | 711 | representatively | 712 | quantitative |
| 713 | Clout       | 714 | sculpture       | 715 | journalism       | 716 | Coaching     |
| 717 | purpose     | 718 | dispersion      | 719 | readably         | 720 | pragmatic    |
| 721 | prospective |     |                 |     |                  |     |              |



## Practice Test Questions

005

When the Tottenham riots broke out a ..... commented: this is criminality, pure and simple. To ..... Oscar Wilde: the riots were not very pure and the causes were not simple. It was clear, though, that social ..... was among the causes. The Guardian newspaper reported that of 1000 rioters going through the ..... fewer than 9 per cent had a job or were in training.

006

In Mexico and Brazil, they have developed Conditional Cash Transfer programs. They are what they say on the tin. Cash is given to women of low income, but there are conditions: children have to be taken to ..... and health clinics, older children have to remain in school. In Brazil, the result has been great reductions in poverty and ....., improvements in school attendance, especially of girls, and health ..... Questions have been raised as to whether the ..... is needed.

007

Political activists and ..... across a broad array of ideologies, from libertarians to social liberals to the hard left, are intrigued, or even ..... The Cato Institute, an American think-tank which spends much of its time calling for a smaller state, a sympathetic analysis of the policy in 2015. It feels that, though it might prefer a world with no government ....., a basic income is the simplest.

008

Migrant children who do ..... schools in cities usually get a worse education than their city-born ..... State schools that accept migrant pupils often operate what Pei-chia Lan of National Taiwan University refers to as 'apartheid school .....'. In these, migrant children are taught separately from ..... ones in the same school, and are even kept apart from them in the playground.

009

As yet, the new explanation is ..... So far, the researchers have only computed the effects ..... by one property of matter falling into a black hole, its electric charge. They have not shown the effect of its mass, which would also be important. Their ..... therefore account only for part of the information that is lost. But they have established a ..... that may lead to a full accounting of the matter. That would let physicists sleep easy in their beds, in the knowledge that reality is once again behaving, at least ....., how they think it ought to.

010

How to look after all these elderly folks is a different problem. Governments around the world are already ..... to support growing numbers of retired people who depend on a ..... working population. Eighteen OECD countries have raised pension ..... At the same time, workers are being asked to ..... deeper into their own pockets. None of this is enough.



011

In this method, a laser is used to create a line of ionization by removing electrons from ..... This laser is then directed at storm clouds in order to control ..... charges, a method which is less dangerous than using ..... . As protection for the lasers, the beams are..... firstly at mirrors.

012

In Italy, some of these cities were able to gain control of the ..... country and to become city states, resembling those of the ancient Greeks. Their..... was assisted by the continuing struggle between Popes and Emperors, between church and state, again, a thoroughly ..... Western experience. In these states, the modern world began to take form. Although the people were mainly Christians, their life and outlook became increasingly ..... . Here, and not only in Italy but in other cities north of the Alps, arose a worldview that celebrated the greatness and dignity of mankind, which was a very sharp turning away from the ..... Western tradition that put God and life in the hereafter at the center of everything.

013

The next topic is going to be black holes, and this is a similar situation. Fifteen, twenty years ago black holes were sort of poised ..... on the boundary between theoretical physics and science fiction. A boundary that is more ..... than you might believe. But again, in the past fifteen years or so this has been converted into a standard topic in observational ..... . There are dozens, probably hundreds of objects we can point to in the sky and say, "yes those things are black holes." And so now, the current topic of research is do these things that we are pretty sure are black holes actually behave in the incredibly ..... , science-fiction manner that the theoretical physicists have been talking about for the past thirty or forty years. So, to what extent are these very exotic behaviors actually ..... in real life?

014

In 1962, an English political scientist and ..... by the name of Bernard Crick wrote a short and very polemical and ..... little book called In Defense of Politics, and by politics Crick meant a distinctive type of human activity where ..... of interests among groups are adjudicated by discussion, persuasion and debate rather than by force or by .....

015

Now, the emergence of ..... medicine marked a transition, a transformation, from something that had preceded it, and that I hope won't be confusing. But from the middle of the eighteenth century, more or less, until the closing decade of the nineteenth century, there had been an older tradition that can be ..... under the label of "diseases of the tropics." And there were a couple of classic statements of this older tradition. One was a work, an important work, by James Lind, an eighteenth century ..... , who wrote "An Essay on Diseases Incidental to Europeans in Hot Climates," and this was built on the experience of Europeans in the West Indies. And then there was another work by James Johnson called "The Influence of Tropical Climates on European.....," built on the experience of Europeans in India.





016

Demand for this exotic fabric eventually created the ..... trade route now known as the Silk Road, taking silk westward and bringing gold, silver and ..... to the East. It was named the Silk Road after its most precious ....., which was considered to be worth more than gold. The Silk Road stretched over 6,000 ..... from Eastern China to the Mediterranean Sea, following the Great Wall of China, climbing the Pamir mountain ....., crossing modern-day Afghanistan and going on to the Middle East, with a major trading market in Damascus.

017

To biomedical researchers all over the world, twins offer a ..... opportunity to untangle the influence of genes and environment – of nature and..... . Because identical twins come from a single egg that splits into two, they share virtually the same genetic ..... . Any differences between them – one twin having younger looking skin, for example – must be due to environmental ..... such as less time spent in the sun.

018

Language often seems so ..... drafted that one can hardly imagine it as anything other than the perfected handiwork of a master ..... . How else could this instrument make so much out of barely three dozen measly morsels of sound? In themselves, these configurations of ..... – p, f, b, v, t, d, k, g, sh, a, e and so on – ..... to nothing more than a few haphazard spits and splutters, random noises with no ....., no ability to express, no power to.

019

Um, I'm responsible for student ..... to the college and I use a computer system to help process student enrollments and to do the ..... . But it really doesn't suit the way we work these days. It's over ten years old and although it was fine when it was first ....., it is just not good enough now. 20 years ago, the college was quite small and we didn't have the number of students and ..... that we have now. There's a lot more data now and it sometimes seems the system has ..... but, in fact, it just takes ages to go from one ..... to the next.

020

There are more than 160 known species of chameleons. The main ..... is in Africa and Madagascar, and other ..... regions, although some species are also found in parts of southern Europe and Asia. There are introduced..... in Hawaii and probably in California and Florida too. New species are still discovered quite ..... . Dr. Andrew Marshall, a conservationist from York University, was surveying monkeys in Tanzania, when he stumbled across a twig ..... in the Magombrea forest which, frightened, coughed up a chameleon and fled. Though a colleague..... him not to touch it because of the risk from venom, Marshall suspected it might be a new species.

021

One of the drawbacks of staying with the same organization is that the person may get stuck doing the same job year after year. In some cases, this can lead to ..... and disillusionment. Moving from one organization to another can be a ..... decision in order to have variety and ..... a range of skills and experience. The person may be incredibly ..... in a range of fields by working in different organizations.



022

Using the Internet has become a ..... part of everyday life for many people. They use it to book airline tickets, or to ..... news about world events, or to follow the ..... of their favorite football club. Millions of people across the world belong to social ..... groups where they keep in touch with their friends and, if they live away from them, their family. In my opinion, these are all good ways to use the Internet.

023

We don't have any databases on this sort of information. As well as that, these records of sound levels take no account of the fact that people vary in their ..... of noise-so someone like me with years of working in ..... might be very different from you in that regard. But anyway, even though these noise maps are fairly..... they've been useful in providing information and raising ..... that noise matters, we need to deal with it and so it's a political matter. And that's important-we need rules and ..... because noise can cause all sort of problems. Those of you who are ..... know that things go on 24 hours a day.

024

But the problem is that the amount of mercury in the environment's increasing. The main reason for this is the power ..... used to produce electricity. The main source of energy that most of them use is still ....., and when it's burned it ..... mercury into the atmosphere. Some of this gets deposited into lakes and rivers, and if it's ..... by a fish it's not excreted, it stays in the fish's body and it enters the food ..... So it's been known for some time that birds which eat fish may be affected, but what wasn't known until quite recently is that those that eat ..... can also be affected.

025

As with all human behavior, there are ..... reasons for it. But often it's caused by someone who feels the need to show their ..... over someone else, in order to feel that they aren't at the lowest level in ..... or a group of people. In some cases one person simply dislikes the other, on the ..... that the personality of one is in some way ..... with that of the other person.

026

The other teams tried to ..... on building the structure, and ..... into confusion, with everyone getting in each other's way. Our team leader solved the challenge ..... . She simply asked everyone in the team to move a piece a few centimeters, to ..... with the rule, and then let the person in the team with an ..... for puzzles like this build it alone.

027

For millions of years, carbon dioxide levels in the ..... have been regulated, in part, by a natural ..... between plants and microbes - tiny organisms in the soil. Plants absorb CO<sub>2</sub> from the air and ..... it into sugars and other carbon-based substances. While a ..... of these carbon products remain in the plant, some transfer from the roots to ..... and soil microbes, which store the carbon in the soil.



028

Another team of ..... researchers looked at how cell phones were used in Uganda, in Africa. They found that people who didn't have their own phones could pay to use the phones of local ..... Because these customers paid in ..... for their calls, they were ..... to know how much time they'd spent on the call so far. So the phone company designed phones for use globally with this added .....

029

The walls are made of several layers of ..... wood, all sourced from local ..... trees. In order to improve the acoustic properties of the ..... and to amplify the sound, they are not straight they are ..... The acoustics are also ..... according to the size of orchestra and the type of music being played.

030

What she was interested in was marine ..... things like ..... And she found three places in the oceans which were hotspots, and what these had in common was that these hotspots were all located at ..... between ocean currents, and this seems to be the sort of place that has lots of the ..... that some of these species feed on. So now people who want to protect the species that are ..... need to get as much information as possible. For example, there's an international project called the Census of Marine Life.

031

The ..... that you could create anything at all has major ..... for our health. It means that we'll ..... be able to ..... anything. This would have a ..... effect on our society. In time it could even lead to the ..... of famine through the introduction of machines that produce food to feed the hungry.

032

And many sufferers don't know the cause or the ..... to their problem. The majority of our patients at the clinic ..... to be women. They are especially ..... because of pregnancy but also because of....., which I personally believe to be the major cause of problems for women. I have many women patients who say they have completely given up exercise because the pain makes them so ..... . But of course that starts up a ..... circle.

033

Consumers will have much more choice - for instance, food products sold in Australia might be ..... in the USA, China, Finland and ..... of other countries. At the same time, and ..... mean that governments are actually losing power to major global ..... . We can probably all think of companies that ..... a great deal of influence, which may be good for consumers.





034

You wake up in the middle of the night in a ..... hotel miles away from home, most probably from....., when even the most expensive .....can seem empty and ..... You have paid a great deal of money to stay in this first-class hotel with its ..... technology , but according to recent research carried out by an international travel and public relations company, all is not well.

035

I'm left-handed myself and I actually didn't see any ..... to my own life when I happened to start reading an ..... by a sports psychologist called Peter Matthews. He spent the first part of the article talking about ..... in music instead of sport, which I have to say almost put me off from reading further. But what I soon became ..... by was the ..... volume of both observation and ..... he had done in many different sports and I felt ..... that what he had to say would be of real interest.

036

Living in the Antarctic hasn't always been so comfortable. Snow build-ups caused ..... problems for four ..... stations on the same site, which were buried and finally ..... by the weight. Fortunately no-one was hurt, but these buildings became a huge ..... to architects who finally came up with a remarkable solution the buildings are placed on ..... which can be raised above the changing snow level on legs which are..... .

037

The main reason why MSG is more commonly used in Japanese meals is ..... For many thousands of years the Japanese have ..... a type of ..... known as Kombu in their cooking, as they discovered it had the ability to make food taste better. But it wasn't until 1908 that the ..... in Kombu which was responsible for the ..... in flavor was actually discovered to be ..... by scientists working there.

038

So how was this reflected in the design of the building? Well, Harrison decided to create ..... access to the building and to make use of the ..... of water on the site. As people approach the ....., they therefore have to cross over a bridge. He wanted to give people a feeling of ..... as they see the building first from a distance, and then close-up, and the initial ..... he wanted to create from the shape of the building as a whole was that of a box.

039

So the phone company designed phones for use ..... with this added feature. .... research has also been carried out in computer companies. In one company, IT systems ..... were observed for several weeks. It was found that a large amount of their work involved communicating with ..... in order to solve problems, but that they didn't have a standard way of ..... information from ..... and so on. So the team came up with an idea for software that would help them to do this.



040

Carbon-rich soil is dark..... and fertile, and retains some water. But erosion can occur if soil is dry, which is a likely effect if it contains ..... amounts of carbon. Erosion is of course bad for people trying to grow crops or ..... animals on that ..... . In the 1970s and 80s, Lal was studying soils in Africa so ..... of organic matter that the ground had become extremely hard, like cement. There he met a ..... in the study of global warming, who suggested that carbon from the soil had moved into the atmosphere. This is now looking ..... likely.

041

Teamwork can also lead to ..... – a common cause of poor sales. In the case of a smartphone that a certain company....., one director wanted to target the business market, and another demanded it was ..... at consumers. The company wanted both directors to be ....., so gave the product a consumer-friendly name, but marketed it to companies. The result was that it met the needs of neither group. It would have been better to let one director or the other have his way, not both. Now ....., or hard work. It's easy to ..... people who say they work hard.

**New** (97/06)

042

Low fat, low salt, wholegrain, heart healthy, vegan, -----1-----, free-range, grass-fed, low carb, no added sugar. All these buzzwords, combined with shape-shifting -----2-----, befuddling labels and fad diets wrapped up in pseudoscience, can make buying -----3-----these days fraught. That's partly why anything that claims to cut a clear path through the confusion has ready appeal: witness the rise of the "clean eating" movement in the past few years. The -----4-----rules set out by self-appointed blogger gurus have since been shouted down as nonsensical notions of purity rather than coherent - -----5-----science.

043

Asteroid collisions can be destructive just ask the-----1----- but they also bring key ---2-----for life. Super-Earths can draw them to nearby worlds. Super-Earths – planets that are up to 10 times more massive than Earth — might play -----3-----with planetary systems. New simulations suggest that if a super-Earth existed in our own solar system, say between Venus and the Earth, far more asteroids would -----4-----with us. But that isn't necessarily a bad thing, if the timing is right. Understanding the effect of these massive planets on others nearby could help direct the search for life on exoplanets.

044

All earthquakes look the same when they start, making it unlikely we will be able to predict which will cause the most -----1-----from early -----2----- . Early warning systems rely on seismometers picking up -----3-----and sounding the alarm for nearby cities before major shaking starts. Even a few seconds' warning can make a lot of difference, both for individual people and for organisations like hospitals. For example, Mexico's early warning system gave everyone a 10 to 15 second heads-up before Tuesday's -----4-----7.1 earthquake.



045

Popular ride-sharing firm Uber has had its licence to operate in London -----1-----in a surprise move by the city's regulator. There were multiple reasons for the decision. TfL cited the company's approach to reporting criminal offences. In August, a senior officer within London's Metropolitan Police Service wrote to TfL about Uber's slowness to report a passenger's -----2-----that her driver had sexually -----3-----her. TfL said it was also concerned about how Uber obtained medical certificates and criminal records checks for drivers. The straw that broke the camel's back may have been the company's "Greyball" software – an internal application that Uber may have used to block regulators' -----4-----of the Uber app.

046

A new process for 3D-printing things could pave the way for lighter, faster aircraft that -----1-----fly further on the same amount of fuel. Today's aero planes are held together with thousands of metal rivets and fasteners. That's because the lightweight but strong ----2-----alloys used for their frames are considered unwieldable. Try to weld them and you get a phenomenon called hot-cracking, in which the finished alloy weakens and ----3-----as it cools. This and other adverse welding effects also stand in the way of 3D-printing high-strength aluminum alloy parts. When researchers have tried, the resulting laser-fused mass -----4-----away at the welding area like a stale biscuit.

047

Ebola virus, the -----1-----that causes plague, a -----2-----strain of flu – if any of these pathogens could be turned into bioweapons by terrorists or rogue nation states, they would threaten humanity. Most life scientists have little awareness of ----3-----issues, according to a National Academies report released today. And it says there are "multiple shortcomings" in the systems ---4-----to stop potentially risky research from being published.

048

Mobile applications are using third-party data collection and advertising -----1----- in order to ----2----- those applications. It happens across all ----3----- of apps, including ones that users may find fairly -----4-----, like health and fitness, and -----5-----applications.

049

Archaeologists look for clues that indicate that an area is worth ----1----- up. Clues may come from the ----2----- of someone in the past who has described the ----3----- of a particular town or burial site. Sometimes sites are accidentally discovered during ----4----- for the construction of buildings, roads, dams or railways.

050

Historians can represent events that have happened in past -----1----- on a timeline, showing the four major -----2----- of human history. A timeline is a good way to help us get history into ----3----- . It shows events from the past in a clear -----4----- order – that is, from the earliest to the latest event.





051

We can gain an accurate ----1----- of the past only if we know the age of the different sources being -----2----- . Without this information, historians and archaeologists could not be sure of the order in which different areas were settled, used and -----3----- . They would not always be sure if a particular object was real or -----4----- .

052

There are some common reasons to explain why early civilizations developed in different places and different -----1----- around the world. Each ancient civilization that has been discovered developed in places where there was a ----2----- water supply (usually on the ----3----- of major rivers), and where the soil was ----4----- enough to grow crops.

053

Some ecotourism offers visitors close ----1----- with different species. But new research suggests that these activities may not be so great for the animals. Researchers tagged stingrays in Stingray City in the Cayman Islands to ----2----- their movements and behavior. Compared to stingrays outside of the tourism area, those in Stingray City switched their activity -----3----- from night to day, when tourists handed out food, and mated year round instead of seasonally. The stingrays also had more bite -----4----- , which suggests increased aggression towards one another. The study is in the journal PLoS ONE. Past research has found increased-----5----- and more intra- and inter- species aggression among animals that have been fed by humans. Interactive tourism is a growing business. But researchers say that more study is needed to -----6-----the health and safety of humans and animals alike. Ecotourism may be good for a given species, as humans become engaged in its-----7----- . But for the individual members of that species tasked with ----8----- with people, it may not be a walk in the park.

054

Millions of roses get handed out on Valentine's Day. But growing roses has an-----1----- impact worse than many other crops. Start with climate change: most roses in the U.S. and Europe are imported from warmer climes. All that flying and trucking adds thousands of metric tons of carbon dioxide to the atmosphere. Then there's all the water needed to, well, water the flowers. And the runoff fouled by copious-----2----- of pesticides needed to make the roses look perfect. There's also the wildlife and workers poisoned by all that fumigation. Add to that habitat-----3----- where floral plantations displace native forest and wetlands. Finally, there's the refrigeration needed to keep those blooms fresh. The -----4----- is often produced by burning fossil fuels, and the refrigerant gases also exacerbate climate change. A more sustainable and, possibly, more romantic ----5----- is to go with flowers certified by outfits like VeriFlora, or even better, whatever flowers are in season locally. Of course, that's not much help for those of us in wintry climes. Maybe try writing a poem. Let's see: Roses are red, violets are blue...



055

Let's say you've saved up 200 grand for a trip to space with Virgin Galactic. Lucky you. But are you healthy enough to fly? You'll have to talk with your doctor. A new study in the BMJ -----1----- the role that general practitioners will have to play in -----2----- spaceflight. After all, astronauts typically have to be in tip-top shape. But opening the door to the paying public means that less healthy individuals will soon have access to space, too. And the stress of spaceflight, -----3----- - with the negative effects of weightlessness on muscle and bone, could cause real problems. It may be up to your personal physician to make the go/no-go call based on your-----4----- history. Among the potential hypotheticals floated in the BMJ study: "Can my patient with stable angina and a pacemaker for complete heart block -----5-----in a suborbital Virgin Galactic flight? What is the maximum allowable time that my patient with osteoporosis can spend on a planned - -----6----- at a space hotel?" There are no official answers, yet. But the study's authors note that such questions may be in the air—or lack thereof—in the not-too-distant future.

056

Ladybugs love to snack on aphids and other pests. So people began-----1----- an Asian species called the harlequin ladybird as natural pest control. But in their new environments, the harlequins wiped out native ladybugs. And they have their parasites to thank. That's according to research in the journal Science. A parasite called microsporidia lies dormant in the circulatory-----2----- of harlequin ladybirds. But when scientists injected microsporidia into a common European ladybug species, the insects died within two weeks. When the ladybugs were injected with dead microsporidia or a control substance most -----3----- . Harlequin ladybirds' immune systems, on the other hand, have learned to deal with microsporidia— which lets the insects use them as biological -----4----- . Because one way ladybugs compete is by consuming the eggs and larvae of rival species. When European ladybug species eat the harlequin ladybird eggs and larvae, they also-----5----- the microsporidia. And die. The discovery -----6----- an important role of immunity in evolutionary selection. And it shows that there are many ways to lose a food fight.

057

It's a given that most babies wear diapers, in western cultures anyway. But diapers may trap more than waste—they may also confine a baby's-----1----- to walk. Scientists compared the walking gaits of 60 babies who were either naked, wore a thin disposable diaper or a thick cloth diaper. Half the babies were 13-month-old novice walkers and the other half 19-month-old -----2----- - walkers. When the 30 13-month-olds walked naked only 10 fell, but while wearing the cloth diaper 21 of them fell, and while wearing the disposable 17 of them fell. Among the 19-month-olds only four fell while naked or wearing disposables, while eight fell when wearing cloth diapers. But both age groups took wider and shorter steps while wearing diapers as-----3-----to walking naked. The research is in the journal Developmental Science, the study cannot predict if wearing diapers has a long-term impact. Nonetheless, the researchers believe walking naked would speed up walking-----4----- . But then we are left with the issue of covering the entire house in plastic and relying heavily on the child's ability to-----5----- his or her elimination intentions.



058

Unless you're at a Chaucer convention, speaking middle English is not going to impress a potential -----1-----partner in 2013. Similarly, male Savanna sparrows have to make sure their vocalizations are up to date. Researchers -----2----- three decades of -----3-----of male Savanna sparrows. And birds that changed their tune over the years did better with the ladies. The research is in the journal *Animal Behavior*. While introductory notes of the sparrow's song stayed the same, the middle and end parts changed over time. In the 1980's, songs -----4----- with longer, high-pitched trills. More recent songs -----5----- a series of clicks in the middle and a shorter, low-pitched trill at the end. Researchers found that the male sparrows that -----6----- the newer songs had higher rates of sexual reproduction. Because you don't want to be seen as behind the times. Indeed, Chaucer might have had his pick of the ladies in the 14th -----7----- . But few today can make heads or tails of his tales.

059

In planet formation, as in adolescence, you've got your late bloomers. Such is the case for a -----1----- star called TW Hydrae. At some three million to 10 million years of age, it's relatively old for a young star. That is, TW Hydrae -----2-----much more recently than our sun but is past the point at which most fledgling stars are still encircled by a -----3----- disk of dust and gas—the stuff of planet formation. But a new analysis shows that TW Hydrae retains a surprisingly hefty circumstellar disk, -----4----- that the star could still be forming giant planets. The study appears in the journal *Nature*. Researchers from the U.S., Germany and the Netherlands -----5-----the European Space Agency's orbiting Herschel Space Observatory at TW Hydrae to investigate the star's disk. They-----6----- a heavy hydrogen molecule called hydrogen deuteride. From that-----7----- they were able to estimate the abundance of ordinary hydrogen, which makes up the bulk of the disk. The result: TW Hydrae still has enough raw material left to make 60 Jupiters or so,-----8----- its maturity. For aging stars, then, perhaps 10 million is the new 30.

060

Roosters greet the rising sun with crowing sound. But they also crow at other times. So are they -----1----- to the light? Or do they simply know that it's morning? New research says the latter: roosters crow because of internal time cues. The finding is in the journal *Current Biology*. Scientists-----2----- the light levels in rooster habitats. For two weeks, the birds experienced 12 hours of light followed by 12 hours of dim light.-----3----- with the pre-dawn noises observed in wild fowl, the roosters began to crow about two hours before their rooms lit up. Then, for two weeks, the roosters lived in -----4----- dim light. Yet they continued to crow about once a day—at intervals of 23.7 hours to be precise. Even without morning light, their circadian rhythms told them when dawn should be breaking. The birds also -----5----- in response to sudden light, and to the sounds of other roosters. But they were more likely to react when those stimuli -----6----- near dawn. Showing that you can't really keep a rooster in the dark about the time.





061

Advertising and media companies often get lobbied to use models that-----1----- the average woman's body— rather than ultra-thin models, whose images may influence some women to have an unhealthy-----2----- with food. Now a study supports that idea that observed images affect what people consider to be acceptable body types. The report is in the journal PLoS ONE. Researchers surveyed subjects about their-----3----- of their own bodies and those of others. Then they presented the subjects with photos of large or thin women. Some photos were of beauty queens in evening gowns or other high-status clothing. Other photos were of women who were either very large or very thin, -----4----- neutral grey leotards. Following those viewings, the subjects were again surveyed about their body preferences. Subjects who originally preferred thin bodies only increased their preference for thinness after being shown photos of thin women. But they -----5----- -- their preference for thin bodies after being shown photos of larger women. And the attire of the women in the photos made no difference to the subject's latter preference. The researchers say that this study provides strong evidence that images of female bodies-----6----- by the media and ad agencies could have a real -----7----- on women's preference and subsequent thoughts about body type.

062

When summer hits, I dread jogging outside. But a study finds that elephants can be in true danger in the heat. As -----1----- get bigger, they have smaller surface-area-to-body-volume ratios. Fully grown Asian elephants thus pack a lot of mass into a body with a relatively small surface area. And surface area -----2----- how much body heat you can dissipate. For the study, two female elephants in the Audubon Zoo in New Orleans walked around a half-mile track under various conditions. The outdoor temperature during these-----3----- ranged from a chilly 8 degrees Celsius to a scorching 35 degrees. Sunny hot days were the worst. The already limited hide is now itself heated by the sun. With the -----4----- of a busted radiator, the elephants retained 56 to 100 percent of their body heat internally. Which could make a mere four hours of-----5----- fatal. The research on elephant exertion is in the Journal of Experimental Biology. Fortunately, elephants have ways to beat the heat: shift activity to after dark and, of course, go for a dip.

063

People with asthma, chronic obstructive pulmonary disease and other breathing -----1----- need fast relief when their airways tighten up. Unfortunately, the most commonly used medication has obnoxious side effects. But scientists recently discovered that a bitter taste can be a more effective-----2----- — and now they know why. The work is published in PLoS Biology. When an asthma attack hits, the airway shrinks and makes breathing difficult. To keep air flowing, the sufferer must take medication to relax the passage's -----3----- and open it back up. But a couple years ago, researchers discovered airways contain bitter taste-----4----- like the ones on the tongue. After exposure to bitter -----5-----, the receptors can expand the airway more quickly and more effectively than the most commonly used treatment. Researchers -----6----- airway tissue to learn why bitterness makes the muscles relax. During an asthma attack, calcium flows into the cells of the airway and contributes to muscle contraction. But bitter substances block the -----7----- that allow calcium into cells, which relaxes the tightened tissue. And that's the opposite of a bitter pill.



064

A lot of people just don't feel quite human without that morning cup of coffee. Now a study finds that the -----1----- sense of well-being that caffeine can cause is reflected in our perception of words. Specifically, caffeine increases the ability to recognize words -----2----- with positive thoughts, but doesn't provide the same boost for words with negative or even neutral associations. The research is in the journal PLoS One. Scientists assigned 66 -----3----- to one of two groups. Half got a 200-milligram caffeine tablet, a dose equal to almost three cups of coffee. The other half -----4----- a sugar tablet. Thirty minutes later the volunteers were shown strings of letters, and had to decide as fast as they could if a string formed a word or was just gibberish. The volunteers-----5----- words with positive associations much faster than either negative or neutral words. Other studies have shown that positive words tend to be recognized more quickly, but the caffeine increases the gap. So next time you wake up with a grumpy sweetheart, your compliments might be-----6----- more if they have a cup of coffee first.

065

What's the first thing you do when you get to a hotel room? Turn on the light, kick off your shoes and turn on the tube? If so, congratulations: you've likely just made a quick tour of the -----1----- - in the room that harbor the most bacteria. Sure, there are a lot of bacteria in the bathroom. But that's not the hottest spot for bugs. Some of the highest -----2----- of microbes were on the light switch, the carpet and the television remote. The findings were -----3----- at the American Society for Microbiology's 2012 general meeting. The researchers sampled 19 surfaces from nine hotel rooms in three different states. They found that 81 percent of those-----4----- had at least some fecal bacteria on them. But, of course, not all of these bugs are going to make you sick. The study was in part to help inform cleaning protocols. Some hotel chains are already pledging to keep their - -----5----- a little more germ-free. So your next stay might be a little cleaner. Just don't -----6----- - CSI-style with a black light. You'll never be able to sleep.

066

"I think what is most remarkable about Dexter is his -----1----- for stress management." Michael C. Hall, in a -----2----- about his TV character at the Rubin Museum of Art in New York City on October 24th. He spoke with psychologist Kevin Dutton, author of *The Wisdom of Psychopaths*. "And I think that's because of his ability to, as the heat goes up, his-----3----- temperature goes down. The crazier things get, the cooler he feels. He almost craves chaos. He seems to attract it, cultivate it, encourage it, because it's the only thing that somehow soothes him." "Yeah, it's very-----4----- - actually, because what you find is that the more chaotic a situation, the more that psychopaths have to make decisions under pressure, the better their decision-making gets. And we've seen it with Dexter, the more the pressure builds, the cooler he gets. And that is-----5----- what you see with psychopaths, it really is."





067

Beneath its adorable exterior, is your cat hiding the heart of a killer? Researchers now -----1-----  
- that each year, domestic cats kill billions of birds and mammals in the United States alone. The report is in Nature Communications. We already knew that -----2----- cats can wreak havoc on islands, causing 14 percent of species extinctions and ranking as one of the world's 100 worst invasive species. But now, scientists have -----3----- previous studies to find just how much damage cats do on the mainland. Cats kill some 1.4 to 3.7 billion birds and 6.9 to 20.7 billion small mammals in the U.S. each year. These -----4----- mean that felines may be the biggest human-related cause of death for American birds and mammals. And cats tend to prey on -----5----- species, which can cause major ecosystem damage. The worst feline killers are those without owners, and reducing feral cat populations is an -----6----- problem. But you can still reduce the impact of domestic cats by keeping your pet indoors, thus leaving the neighborhood a little less red in tooth and claw.

068

Last week on the podcast we talked about space health. Specifically, we told you about a new paper discussing the role that -----1----- will have to play in determining which citizens are fit enough for -----2----- jaunts into space. Now let's leap ahead, and much farther afield. What kinds of issues might a crew of astronauts face on a longer -----3----- —say, a round-trip to Mars? To find out, six volunteers spent a record 520 days confined to a simulated space -----4----- near Moscow. They emerged in 2011. Now a report in the Proceedings of the National Academy of Sciences shows that the -----5----- spaceflight did have real effects. Removed from natural light and the rhythms of everyday life, four crewmembers -----6----- some type of sleep disturbance. And one exhibited signs of chronic sleep deprivation during regular alertness tests. Overall, the crew also became more sedentary with time. The researchers conclude that a real Mars mission would need to incorporate tactics such as timed light -----7----- or exercise to keep astronauts' circadian rhythms on beat. Because it would be a bad idea to land on Mars sleepy and out of shape.

069

The Curiosity rover has achieved plenty of firsts in its six months on Mars. And the last first is especially noteworthy: On February 9th, Curiosity made the inaugural run of its drill, boring into a rock to extract a sample from the -----1----- . It thus became the first robot ever to drill on Mars. -----2----- has now gotten some use from most of its science instruments, but not all of them are working. At a -----3----- at U.C.L.A. , deputy project scientist Ashwin Vasavada explained that problems are facing the rover's wind and humidity sensors: "The humidity sensor is being calibrated. They think it's going to produce some good data—it's -----4----- a good signal. It's just the physical units don't quite make sense right now. "Worse is the wind sensor, damaged during the rover's landing. "The wind sensor is actually six different sensors. We lost two of them during landing, and the other four are -----5----- pretty hard to interpret as well. So we actually have no wind data yet." A few glitches are to be expected. After all, the Curiosity rover—with its unprecedented size and -----6-----—is a first in and of itself.





070

Medicinal tablets are nothing new. Doctors have been dispensing pills for thousands of years. And now archaeologists have turned up some of those -----1----- medicines, which were preserved in a shipwreck for close to two millennia. The 2nd-century Pozzino wreck was -----2----- in 1974 off the coast of Italy. Its cargo included medical equipment like a cupping vessel, iron probe, and tin boxes of -----3----- . And in one of those boxes, researchers recovered five gray tablets. Now, they've analyzed the antique -----4----- . The work is in the Proceedings of the National Academy of Sciences. The pills primarily -----5----- zinc compounds, probably the active medicinal ingredients. But researchers also detected starch, pollen, charcoal, fats and linen fibers. Those fibers helped the tablets hold their round, loaf-like shape, which may be the key to the medication's use: the Greek word meaning "small round loaves" also -----6----- the word collyrium, or eye-wash. The pills were probably either dissolved in liquid or ground into a powder and used to treat eye conditions. Who knows, maybe Hippocrates used them on his pupils.

071

Kids today may be more -----1----- with the sound of a rushing highway than a rushing river. But imagine that the internal combustion engine could be set aside and we could -----2----- the soundscape of our future. What aural environment would you choose for traffic? For the National Highway Traffic Safety Administration, the answer is that new cars should sound like old cars. Hybrid and electric vehicles can be so quiet that people outside the vehicle can't hear them. So these too-quiet cars will be -----3----- to sound something like this. The Obama administration wants a million electric vehicles on the road by 2015. Slow sales of cars like the Chevy Volt and Tesla Model S may keep that ----4---- from being reached. But there are still hundreds of thousands of EVs and hybrids on the road today. It's hoped that the new rule will help prevent thousands of -----5----- and cyclist deaths. But the rule also hews to a possibly outdated -----6----- , like people who set their cellphone ringtone to sound like an old rotary phone. And it's wasting a chance to reimagine what our cars, roads and even cities could sound like.

072

When you don't clean your plate, microbes feast. And Americans are awfully good at feeding microbes, -----1----- some 222 million metric tons of food a year. That's a quarter of our food. Much of that wasted food ends up in garbage dumps, turned by microbes into methane, a powerful greenhouse gas and one of the -----2----- culprits behind global warming. Now government officials in Massachusetts would like to ensure that restaurants, universities, hospitals and other large -----3----- don't exacerbate that problem. The idea is to make sure all that wasted food doesn't end up in landfills but instead becomes either compost or energy. The same microbes that turn food into methane in a landfill can turn food into methane in a bio digester, and that methane can then be used as a fuel. More importantly, from the Bay State's -----4----- , it will keep the state's landfills from filling up. Of course, the methane from landfills can also be ----5----- , and often is. And, as the Pilgrims knew, it would be even smarter not to waste the food in the first place. But let's give thanks for another helping of new ways to curb climate change.



073

An Arctic storm tore a drilling rig loose from its tow ship and forced it aground near Alaska's Kodiak Island this week. Just a few months ago, the rig and another began preliminary drilling of the first offshore oil wells in the Arctic. Shell's -----1----- to drill in the Beaufort and Chukchi Seas have been plagued by problems. But that's just part of the cost of doing -----2----- business in this new era. Consider drilling rig operator Transocean, which agreed to pay the U.S. government \$1.4 billion this week for its part in the disastrous three-month long blowout in the Gulf of Mexico in 2010. Meanwhile, the thirst for oil ----3---- the mining of tar sands in Alberta and the flooding of old wells with steam or CO2 in California and Texas. And, of course, there's the accelerating -----4----- of greenhouse gases in the atmosphere from all that fossil fuel burning. The-----5----- climate change is part of what makes drilling for oil offshore in the unfreezing Arctic possible, just as it has opened once mythical shipping routes such as the Northwest and Northeast Passages. That's a positive feedback loop with negative-----6----- .

074

Sharing is one of the hallmarks of human -----1----- : give me a cookie and I'm more likely to give you one later. But our bonobo cousins have an odd variation on the practice. They share with strangers before friends. The finding is in the journal PLoS ONE. Researchers tested bonobo sharing in experiments -----2----- fourteen of the apes. All were born in the wild. In the primary experiment, bonobos were placed in a cage with food, and they could choose to -----3----- either a known member of their group, a stranger, or both. In 51 trials, most bonobos shared the feast, but they let the stranger in first. Why choose an outsider over a friend? In another experiment, the scientists found bonobos only shared when doing so led to a social -----4----- . Giving up some food to strangers lets these apes expand their social network. This behavior may have evolved to -----5----- social tolerance, in contrast with chimps' sometimes deadly aggression against strangers. Which means that even when food is -----6----- , there's still no such thing as a free lunch.

075

Ultraviolet rays don't just bronze sun seekers on the beach. Underwater, they can give hammerhead sharks a suntan. And worse—give fish skin cancer. So says a study in the journal PLOS ONE. Researchers caught 136 coral trout in the southern Great Barrier Reef. Fifteen percent of them had black lesions on their skin: melanoma. Pathogens, toxic -----1----- or UV rays can all cause melanoma. But DNA tests ruled out the presence of pathogens. And the fish were caught in the pristine waters of a marine sanctuary, so-----2----- wasn't to blame. Turns out, the trouts' cancer cells looked just like those of fish who'd been hit with UV radiation in the lab. So the researchers -----3----- that sunshine was the culprit. Makes sense, they say, because these trout live near the world's biggest hole in the ozone layer— meaning more -----4----- to UV rays. Another recent study, this one in the journal Science, says the severe storms -----5----- by climate change could punch new holes in the ozone layer, upping our dose of radiation on land and at sea. And that's no fish story.





076

Mosquitoes are an -----1----- fact of summer. But 2012 has been especially bad for running into these irritating insects. Because some -----2----- West Nile Virus. And they're known to have-----3----- -- some 2,000 people in 48 states this year. At least 87 people have died from the infection, which can cause swelling in the brain. Almost half of the cases have been in Texas. And to lower the risk of infection, some areas have taken extreme -----4----- , including aerial pesticide spraying. But people can take some simple measures on their own to reduce their risk. In an essay in Annals of Internal Medicine, public health -----5----- make recommendations. First, simply avoid areas likely to have mosquitoes. And if you can't—or don't want to—stay indoors, wear long clothes that cover your skin and use insect repellent. -----6----- standing water, such as that pooled in puddles or unused containers, can also help reduce mosquito-----7----- grounds and populations overall. Stopping the mosquitoes' spread helps in the long run—which is what we have to deal with. Because scientists say that West Nile virus is, unfortunately, here to stay.

077

Being physically active has -----1----- benefits. Now a study has looked closely at the effects of fitness in the midlife years for preventing debilitating chronic diseases later. The ongoing study -----2----- - fitness stats for more than 18,000 adults, and followed their health status into old age. -----3----- - 40 years of that data, the analysis finds that those who had higher fitness levels in their 30s, 40s and 50s were -----4----- less likely to have a chronic condition between the ages of 70 and 85. The findings are in the Archives of -----5----- Medicine. Physical fitness seemed to stave off heart disease and heart failure, which might not be a big surprise. But it also reduced rates of diabetes, kidney disease and even Alzheimer's disease. Current recommendations suggest adults make time for at least 20 minutes of moderate to vigorous-----6----- activity a day, such as fast walking, jogging, biking or swimming. Busy middle-aged people might find it especially hard to make time for such exercise. But a small investment looks like it could pay big health dividends for -----7----- to come.

078

Here's one way bats might get their next meal: by eavesdropping on flies having sex. Bats eat a lot of seemingly -----1----- flies. To find out how the winged mammals find the insects, researchers set up a video-----2----- inside a cowshed that was home to a bat colony and lots of bugs. The video showed that bats rely on their echolocation skills to detect flies at a specific time: when they're-----3----- in rather noisy sex. Flies are usually quiet in bat territory and sit on cluttered ceilings in caves where-----4----- noise masks the echoes from their movement. But when flies are feeling frisky, males can't help but flutter their wings, emitting a burst of click sounds that the bats pick up on. During more than one thousand sexual encounters caught in the act on video, five percent of the insects were -----5----- in the act by bats. The research is published in the journal Current Biology. The study shows that-----6----- can be safer than carnal knowledge when predators are on the prowl.





079

"What we're bringing for our users is basically an immersive experience of a -----1----- portion of the NASA Kennedy Space Center facility." Ryan Falor, project manager of Google's Street View. In honor of the center's 50th-----2-----, Street View is adding more than 6,000 images of the Space Center, the starting point for Apollo and space shuttle missions. "So you can go into the-----3-----, you can go into some of the large -----4----- there, like the Vehicle Assembly Building. You can go down to the launch pad and actually go up several floors of the launch pad and see where the -----5----- would walk and where they would go as they were boarding the shuttle." The shuttle is now a thing of the past. But someday Kennedy will host a new -----6----- of spacecraft. "When we were there we actually got to take a snapshot of these structures and these systems in place before all those transitions happened. Many of those facilities are going to be decommissioned or -----7----- to different uses. So the opportunity to kind of capture that moment in Street View and preserve it, and make it -----8----- to people around the world, is I think really valuable and important."

080

The Chukchi Sea lies between Alaska and Russia just north of the Bering Strait. Shell Oil hopes to begin -----1----- in these Arctic waters in the next few days—if the U.S. government grants-----2----- . The ship Noble Discoverer will drill two exploratory wells to determine what, if any, hydrocarbons are beneath the seabed—and how well drilling equipment can withstand the rigors of the far north. Those rigors include everything from swirling-----3----- and floating ice chunks to migrating whales. There's coral there—scientists sent to the region by Greenpeace have found sea raspberry, a soft, deep sea species. Other such deep sea corals bore the brunt of BP's catastrophic blowout in the Gulf of Mexico in 2010. It-----4----- to be seen whether offshore drilling in the Arctic can be any safer than drilling in balmier waters. Already, Russia spills some 30 million barrels of oil in the Arctic each year, according to Greenpeace, and that's on land. Regardless, burning oil is one of the-----5----- causes of climate change. Such global warming has thawed the Arctic above all, opening access to yet more oil. Humanity's thirst for oil has yet to gauge its own -----6-----.

081

Birds face many man-made mortal threats: windows, cats, habitat -----1-----, even climate change. And now, there's poison—in their bird seed. You see the Scotts Miracle-Gro Company had been in the habit of applying banned-----2----- to its wild bird food products. In particular, the company applied a chemical known as Storcide II to its bird food despite a warning label for that product that reads "Storcide II is extremely toxic to fish and-----3----- to birds and other wildlife." Why add a compound toxic to birds to food meant to be eaten by birds? Because Scott didn't want bugs infesting its bird food during -----4----- . By the time Scotts stopped adding the pesticide in March 2008, the company had sold some 70 million bags of adulterated bird food. The company also -----5----- false documents to the U.S. Environmental Protection Agency, distributed pesticides with misleading labels and distributed illegal pesticides. As a result, the EPA slapped the company with \$12.5 million in criminal fines and civil-----6----- . So when you put out new bird seed this winter, at least you won't be inadvertently poisoning any chirpers. Oh, and keep those cats inside, too.



082

Our Milky Way galaxy has two large -----1----- galaxies orbiting it. They're known as the Large and Small Magellanic Clouds. And humans have been aware of the -----2----- of these celestial objects for at least a millennium. Recently, researchers were curious about whether our configuration is fairly -----3-----, or an astronomical anomaly. In other words, is our corner of the cosmos ordinary? Now a new study finds that the Milky Way and its -----4----- galaxies are an unusual combination, but they're not one of a kind. Astronomers in the U.K. and Australia looked at thousands of galaxies to try to find an analogue of our-----5----- . The search turned up two close replicas: each with a Milky Way-like galaxy accompanied by two galaxies -----6----- to the Magellanic Clouds. But the researchers also concluded that such arrangements are pretty rare. Only half a -----7----- of Milky Way-like galaxies have companions like ours. The Magellanic Clouds may be transitory features. In a few billion years the Milky Way may absorb them completely. So someday our corner of the cosmos could be pretty -----8----- after all.

083

The eyes are the windows to the soul. As such they can-----1----- if someone is lying, right? Cop shows, advice shows, even some-----2----- training courses hold that if somebody looks up and to the right, they're probably lying. Up and to the left means they're telling the truth. Now a study says that there is no -----3----- between eye movement and lying. The work is in the journal Public Library of Science ONE. Researchers tested eye movement and honesty in -----4----- ways. For example, they tracked the eye movements of subjects who were lying or telling the truth about things they had recently done. There was no-----5----- between lying and eye direction. The researchers also closely analyzed 52 archived news videos of real people, making a public plea for the safe return of a missing-----6----- .In half the videos the plea was sincere—but in half there was strong evidence that the speaker was involved in the crime. Again, no eye movement clue was -----7----- . So when judging the honesty of a speaker, remember: the eyes do not have it.

084

You might picture Neanderthals as cavemen gnawing on bones around a campfire. Which wouldn't be -----1----- . But Neanderthals may have also dined on roasted vegetables and known a bit about medicinal plants too. So says a study in the journal Naturwissenschaften (The Science of Nature) . Researchers -----2----- hardened dental plaque from five Neanderthals found in El Sidrón cave, in northern Spain. Yes, 50,000-year-old dental plaque. And they found a lot lurking between the teeth. Like evidence of nuts, grasses and green veggies, -----3----- traces of wood smoke, and tiny, intact starch granules, proof Neanderthals ate their carbs. And in one individual, they detected compounds found in the -----4----- herbs chamomile and yarrow. The herbs have no nutritional value, and since Neanderthals did have the gene to detect the herbs' bitter taste, the researchers-----5----- that the cave dwellers were munching on them not as food—but to self-medicate. Not too far-fetched, they say, because primates like chimps also use medicinal plants. Luckily for the scientists doing this - -----6----- work, Neanderthals may have known a thing or two about medicine, but they didn't get regular check-ups at the dentist.





085

You just bought peanut butter. You chose the jar because, well, you've always eaten the crunchy variety. In reality, however, something else may have-----1----- your choice— the product you picked was centrally located on the store shelves. Researchers tracked eye -----2----- of 67 subjects scanned a 3 by 3 matrix of fictitious brands. The tracking found that consumers tend to focus on the objects in the middle—specifically, five seconds before they make their choice. And they do this for all kinds of products, from -----3----- to online movies. Also, subjects continued to go for the centrally-located brand even if the product was not in the middle of their specific visual field. So it's not in-----4----- to one's view, it is literally about the product being central within the entire shelf-----5----- . Past studies have shown that people tend to make a lot of choices based on central locations, like choosing the middle bathroom stall in a public washroom, a middle seat at a table, or even the middle items in a series of arbitrary objects. The test consumers had no conscious -----6--- --- that they had chosen centrally located brands. Makes you wonder what you've taken home without-----7----- why.

086

Ronald Cotton went to prison for rape. The victim picked him from a lineup-----1----- she was accurate. She picked him again years later when his case was reopened. This second lineup included the actual rapist. After 11 years behind bars, Cotton was later exonerated by DNA-----2----- . Experts say that the current lineup format pressures -----3----- to identify a suspect, even when they lack confidence. So researchers are trying to improve the -----4----- of such identifications. One recent study had more than 900 participants watch a short film of a staged crime. Up to a week after watching the film, the viewers looked at photos of -----5----- one at a time, and rated how confident they were about each one's guilt. Half of the participants could take as long as they wanted to look at the photos. The other half had to decide within a few seconds. And the fast group was up to 66 percent more accurate. The study is in the Journal of Psychological Science. Strong -----6----- are accessed more quickly than weak memories, which may explain why choosing fast tends to mean--- --7----- right. Another factor that's putting the standard police lineup itself on trial.

087

One day the banana is perfect. Bright yellow, firm, flavorful. But even within that same day brown spots appear on your perfectly ripe banana, its flesh turns mushy, and it's destined for the compost or at best, banana bread. But scientists are developing a way to-----1----- the life of ripe bananas. It's a spray-on coating made from chitosan—a substance found in crab and shrimp shells. The new gel can be -----2----- on bananas to slow the ripening process by up to 12 days. Like other fruit bananas remain alive after being -----3----- and they actually continue to respire. This means they take in oxygen and release carbon dioxide. The more the banana -----4----- the faster it ripens and then rots. Bananas ripen more quickly than most fruit because they don't naturally slow the -----5--- --- after being picked, in fact it speeds up, causing bananas to become mushy. Chitosan not only kills the-----6----- on banana's skin that then leads to rot, it also-----7----- slows down the respiration in the first place. So bananas won't drive you bananas.





088

It's a dirty job, but two NASA spacecraft are ready to do it. On August 23rd, NASA plans to launch two spacecraft into the -----1----- belts around Earth. The twin Radiation Belt Storm Probes will investigate high-energy particles held in place by Earth's -----2----- field. Those fast-moving protons and electrons form two bands known as the Van Allen radiation belts, after-----3----- James Van Allen, who discovered them in 1958. The two NASA probes will study how the belts formed, and what makes them swell up from time to time. The outer radiation belt in particular can change quickly in response to the sun's outbursts of charged particles, also known as -----4----- storms. The Van Allen Belts are a nuisance to some spacecraft, and they could pose a hazard to future manned-----5----- - as well. But the Radiation Belt Storm Probes will call those harsh environs home. The spacecraft will fly through the belts for two years, -----6----- charged particles, plasma waves and magnetic fields in Earth's vicinity. NASA hopes that the mission will help illuminate the -----7----- physics of the stormy near-Earth environment. And, perhaps, help future spacecraft weather that storm.

089

In electronics there's an -----1----- that silicon and other elements are responsible for bringing our gadgets to life, while plastic -----2----- as the supporting structure. But what if that plastic could be both the brains and the brawn? Better yet, what if plastic was pliable enough to form, all sorts of wearable electronics and even implantable -----3----- devices? In fact, electronics made from conductive plastic have been in the works for at least a decade. One of the -----4----- has been overcoming a loss of conductivity when plastic electronics are -----5----- too far. A team of researchers from the U.S., South Korea and China say, they have found a way to keep an electrical -- -----5-----, even after stretching their specially made plastic more than four times its normal size. The key—make a highly porous polymer, and then fill those pores with liquid metal. Imagine these "3-D stretchable -----6-----" being used to make artificial eyes, that restore vision or synthetic skin that monitors blood glucose levels. A bit out-there, I know, but science has a knack for catching up with -----7----- fiction.

090

Vaccines are desperately needed in the developing world. Even when they're available and-----1----- - , there's still a major problem: most vaccines need to be refrigerated. Reaching the -----2----- - populations often means traveling to areas, where electricity and refrigeration are spotty at best. Nearly half of the vaccine doses around the world are lost to the heat. Also, the cost of refrigeration-----3----- to about 80 percent of the cost of the vaccines. So silk experts at Tufts University have come up with a potential solution: encase the vaccines in silk protein. Silk proteins-----4----- - nanoscale pockets that can hold and protect biological compounds. Inside the silk protein wrap, the compounds stay-----5----- stable. In the lab, they were able to stabilize the measles, mumps and rubella vaccine for more than 6 months at a variety of -----6----- temperatures. The technology also worked with antibiotics. Stored at a month at temperatures reaching 140-----7----- Fahrenheit, the antibiotics kept their potency. The research is in the Proceedings of the National Academy of Sciences. If the lab results hold up out in the world, the silk -----8----- could save billions of dollars, and millions of lives.



091

You've probably-----1----- you're more likely to catch a cold if you pull a lot of all-nighters. But lack of sleep can also compromise your immune system's-----2----- to vaccines. And in some cases, make the shots useless. So says a study in the journal *Sleep*. Researchers gave 125 healthy, middle-aged men and women the Hepatitis B vaccine—a three-part vaccine given at one, two and six months. And during that time, volunteers-----3----- their sleep habits. Six months after the final booster, researchers took blood samples to see if the patients had rallied sufficient numbers of antibodies against Hep-B. Eighteen patients had not—the-----4----- had failed. Turns out the vaccine was almost 12 times as likely to fail in volunteers who regularly slept fewer than six hours a night compared to those who snoozed more than seven. Makes sense, because -----5----- studies have shown that sleep deprivation cuts numbers of B and T cells— which -----6----- the immune system's attack on bad guys. So remember, vaccines aren't magic. You still need a good night's sleep to give 'em a fair shot.

092

You've probably heard of peanut or shellfish -----1----- . But a meat allergy? Not as common. Even weirder is what might be causing it—tick bites, according to a study in the *Journal of General Internal Medicine*. A few years back, folks started showing up in ----2----- rooms in the southeast U.S. with hives, swelling or worse—anaphylaxis—after eating red meat. For this study, researchers looked at three of those cases. And they found that tick bites, specifically those of the Lone Star tick, seem to be the cause. The bitten victim's immune system appears to become sensitized to a -----3-----called alpha-gal. And whereas all the major food allergies are -----4----- by proteins, the culprit here—alpha-gal—is a carbohydrate. Alpha-gal is found in the meat and fat of hooved mammals, like cows, sheep or pigs. So eating a burger can expose you to alpha-gal, which -----5-----antibodies and leads to the release of histamines. Researchers say something -----6----- to alpha-gal in the tick saliva may set off the immune system— which then goes after the alpha-gal in meat. And leaves a steak lover ticked off.

093

Are human beings inherently -----1----- or selfish? A new study finds that when people have to make the choice instantly, their first impulse is -----2----- —which indicates that generosity is innate. Only when they have more time to consider their choice do they behave more selfishly. The research is in the journal *Nature*. In the study, researchers ran several tests in which each -----3----- in a small group received money, and then had to decide how much to -----4-----in a shared group fund. The more time people had to choose how much to donate, the less they gave. Subjects told they had to make a decision within 10 seconds even gave more than others who were told they had to wait the same 10 seconds before deciding. Because snap decisions are based on intuition, the researchers -- -----5----- that generosity is the intuitive human response. But given time, we can reason our way to a more selfish decision. This intuitive cooperation might be either genetically hardwired, or a -----6----- construct. Either way, next time I run a fundraiser, I'm -----7----- a stopwatch.





094

Most of our serious illnesses and deaths in the U.S. now come from -----1----- diseases, such as heart disease. But we know what works to improve health. A new report recommends 43 changes that can make big -----2----- . To arrive at their recommendations, researchers reviewed more than a thousand studies of public health. Their findings are in the American Heart -----3----- journal Circulation. Some of the suggestions, such as tightening -----4----- on smoking, are already paying off in many areas. Others, such as increasing taxes for unhealthful foods, might face stiff -----5-----, but could pay off large dividends in health savings later. But some surprisingly simple suggestions could be easiest to -----6----- . Try extending the hours for public parks and schools' recreation-----7----- . Or improving sidewalks and visual appeal of neighbourhoods to make people want to walk, bike or run there more often. The authors of the paper argue that the next step is just for policy makers to put these -----8----- into action.

095

Telling people to change unhealthy -----1----- doesn't work. Otherwise, we would all already be slim, fit, non-smokers. Whether it's habit, the -----2----- of an ad or just the easiest option, we often rely on-----3----- behaviours to get us through the day. And even though we know taking the elevator, grabbing a beer or drowning a salad in ranch dressing are not the healthiest choices, we keep making them. Unless those bad choices become too -----4----- . Making bad choices harder is actually the best way to help people get healthier, argues a new essay in the journal Science. Simply -----5----- elevator doors to close really slowly actually -----6----- more people to climb stairs. Limiting the places that sell tobacco cuts overall consumption. And then there's the trusty old salad bar trick: put healthier -----7----- closer than other choices and more people pick them. Little changes like these reach everyone—not just the people -----8----- with a health message. And they get us healthier just by letting us stay on autopilot.

096

In lab tests, music and lighting can affect how much people eat. Now a study has found that -----1----- -- the ambiance of a fast food restaurant to more of a fine-dining -----2----- lessened the amount of food people crammed into their pie holes. To quote the paper, “softening the lighting and music led people to eat less, to rate the food as more enjoyable, and to spend just as much. “That last finding means that fast food joints, which are accused of -----3----- to the obesity epidemic, might actually try it. The study was led by well-known eating behaviorist Brian Wansink from Cornell University and -----4----- in the journal Psychological Reports. The researchers converted part of a Hardee's so that it had soft lighting and slow jazz instrumentals. The patrons were -----5----- to possibly eat more in the relaxed section, because they'd linger, maybe get dessert. But they actually averaged 18 percent fewer calories per meal than the folks in the rowdy section—down from an average of 949 calories to 775. The overall -----6----- appears to have been a more satisfying meal. Even if there was less of it.





097

Doctors know a lot about prescribing medications. “Take two brisk walks and call me in the morning. “But for many patients, a light get-moving plan might be just what the doctor should have -----1---- --ordered. Many of us aren't exactly in peak physical condition. But a large number of people are actually deconditioned. So says the Mayo Clinic's Michael Joyner in an essay in The Journal of Physiology. After surgery, illness, pregnancy or extended inactivity for any reason, people might feel faint or -----2----- when they try even mild exercise. These signs, Joyner argues, should be -----3----- - by doctors not as symptoms that should be treated with drugs, but rather as a medical state of deconditioning that might be better helped with a gentle, guided -----4----- program. It might sound counterintuitive that fatigue can be beat back with exercise. But remember Newton—Isaac, not Fig. A body at rest stays at rest. And a body in motion needs to resist -----5----- forces acting upon it that might slow it down.

098

Malaria is a ---1--- disease, right? Actually, malaria parasites can be found as far north as Alaska—at least in birds. And a warming climate may push avian malaria even farther north by the end of the ---2---, according to a study in the journal PLoS ONE. Researchers took blood from nearly 700 birds around Anchorage, Fairbanks and a truck stop called Coldfoot, Alaska, above the Arctic Circle at 67 degrees north ---3---. And they found the parasite in 7 percent of the birds at the two southerly sites. Some were ---4-----, and may have picked up the disease down south. But others were hatchlings and resident birds—indicating the parasite can complete its full life cycle in the Great White North. The ---5--- doesn't seem to have hopped north of Fairbanks yet. But temperatures in the Arctic are rising at twice the global average, and researchers say malaria could cross into the Arctic Circle by 2080. Once it gets there, it could attack species like snowy owls, which have never been ---6--- to malaria, and may not have resistance to the -----7----. Talk about a buzzkill.

099

Macular degeneration causes visual distortion and even complete loss of sight. When the wife of ---1--- Nobel laureate Walter Kohn was---2---- with macular degeneration, he wanted to do something. I spoke with him at the recent Lindau Nobel Laureate meeting in Germany. “We are developing a corrective device, including -----3----- with the patient, who is following a certain routine and who tells us his---4--- that arise.” A macular degeneration patient looks at a completely regular grid on a computer screen. But because of the condition, the grid will appear distorted. The patient uses a mouse to adjust the grid to appear normal. “We will receive from the patient an edited piece of graph paper. And from the way the patient edits it, we can tell what the distortions are that he perceives, and from these we can then develop -----5----- that correct his distortions.”



100

Black holes are common. But actually counting them is no easy task. Even the brightest can be hard to see. Of course, "bright black holes" is a bit of an oxymoron. But when super massive black holes at the center of a galaxy feed, the material falling into them heats up, giving off a bright glow across the electromagnetic ---1--- . Infrared light in ---2--- is good to look for when black-hole hunting. Some feasting black holes are obscured by gas and ---3--- , which absorbs much of their glow—but they still shine in the infrared. It's no surprise, then, that NASA's infrared WISE spacecraft found a bunch. WISE launched in 2009 to survey the entire sky in the infrared. Now researchers have used WISE data to count the luminous black holes in a well-known corner of the sky called the COSMOS field. In just that tiny region, WISE found about 130 glowing black holes, or active galactic nuclei. The study will appear in the Astrophysical ---4---. Extrapolating from this small area, at least two million active black holes dot the sky, ---5--- that these extreme astrophysical objects are common indeed.

101

Presidential hopeful Mitt Romney pledged to achieve North American energy ---1--- by 2020 this week. That's a presidential move because every president since Richard Nixon has ---2--- some version of the same thing, including Romney's opponent President Barack Obama. Obama's version is called the all of the above ---3--- : more domestic oil production to reduce imports. More electricity derived from wind, sunshine and natural gas added to the U.S. grid. Even more coal, as long as it has CO2 capture and storage attached. Romney's plan ---4--- only in the details. That increased domestic oil production should come from drilling in the Arctic National Wildlife Refuge and other public lands, for example, as well as off the Eastern seaboard. Both ---5--- love biofuels, even ethanol from corn. The candidates share another similarity as well: an inability to discuss climate change on the campaign trail. And global warming is one of the largest environmental ---6--- of U.S. energy policy or, for the past half century, the lack of a coherent one. Until issues like climate change are included in the discussion, any energy plan is just a lot of hot air.

102

Beijing often suffers choking air. But there's now one more thing ---1--- to dissipate it: an Olympics. The 2008 summer games impelled those in charge of the Chinese ---2--- to clear the air. Not only did they banish smog and smoke, they also inadvertently cut greenhouse gas emissions by as much as 96,000 metric tons during the games. That's according to a new analysis ---3--- in Geophysical Research Letters on July 20th. The key was banning half of all the private cars in the city from driving on any particular day during the event. The finding suggests that individual choices like whether to drive or take public transit to work have major ---4--- effects. London's so-called ---5--- charge for driving in town likewise cuts traffic and pollution. This year, London is bidding to have the most ---6--- friendly Olympics ever. That includes building new stadiums atop former industrial sites and urging fans to choose public transit, walking or cycling. But the British may not match the Chinese ---7--- , or even attempt to make the London games carbon neutral. The Olympics that finally achieves zero carbon would really merit a gold, for green.





103

How many rolls, cookies or baby carrots would you have to eat to feel full. It's probably more than you'd want to ---1--- . It may not even be possible with carrots. But what if you ate that volume of filet mignon? Hunger and fullness are controlled by hormones that send ---2----- between your gut and your head. And different foods send different messages. Some say eat more and others warn you to slow down. Now a study finds that protein is, indeed, key in generating signals of fullness. The work is in the journal Cell. Mice that lack-----3----- to sense that they were eating protein kept chowing down without ---4---- to feel full. Whereas normal mice would stop eating much sooner while eating a high-protein meal. The results of the study make it extra ---5----- , that Joey Chestnut wolfed down 68 hot dogs at the Nathan's July 4th hot dog eating contest—with more time he likely would have felt full after a few. But for people eating sensibly, -----6----- chicken or fish supply satiating protein too.

104

Olympic athletes submit their bodies to grueling training. And then they soar around the world to meet the competition . American east coast athletes traveled five time zones to get to London. West coast -----1----- leapt over eight. And increased the odds that they'll get a cold, if not the gold. So says a study in the British Journal of Sports Medicine. Researchers tracked 259 elite rugby players in the 2010 Super 14 Rugby Tournament. The 16 weeks of games took place in Australia, South Africa and New Zealand. On average, there were 21 -----2----- per thousand player-days. But players in their home countries endured only 15 illnesses per thousand days. And when a team traveled more than five time zones in either direction, illnesses rates more than doubled. The number dropped back to 10 after they flew back home. The illnesses were primarily -----3-----, such as respiratory or intestinal illnesses. A weakened immune system does not appear to be a factor. The researchers suggest that - ----4----- in temperature, pollution, allergens and different foods and local microbes are the likeliest culprits. One more -----5----- that might give European Olympians a home field advantage.

105

Emmanuel Kant spoke often about the sublime, and specifically how art becomes more sublime when beauty mixes with terror. Now research provides some support for this philosophical -----1--- ---. Scientists had 85 subjects experience one of five different things. One group watched a brief scary movie, another group watched a happy movie, and two other groups -----2----- either 30 or 15 jumping jacks. The control group did nothing. Then all the subjects looked at four abstract-----3----- , for 30 seconds each, by a Russian artist, El Lissitzky. And they rated the art—based on qualities of how -----4-----, stimulating, rousing, boring, forgetful or uninteresting the piece was for them. The group that watched the scary movie rated the art as more sublime and -----5----- than any other of the groups. In fact the other four groups did not significantly -----6----- in their ratings. We might not think of describing art as frightening. The researchers note, however, that art can “...be surprising, elicit goose bumps, and inspire awe.” Who knew that pairing The Walking Dead with a trip to the Museum of Modern Art would make the entire -----7----- more sublime?





106

If you're thinking about -----1----- to Apple's new iPhone 5 when it debuts in a few weeks, you're going to have to figure out what to do with your -----2----- device. Given how much we've come to rely on these gadgets for storing pictures, contacts and personal information, some serious -----3--- -- issues should be considered before selling, recycling or trading in your old phone. -----4-----, you restore factory settings on your smart phone before parting ways. But a couple of recent articles on NBCNews.com and Yahoo.com find that factory resets are -----5-----, depending on the phone. Blackberry and Apple resets appear to delete and scrub personal data the best, according to data retrieval -----6----- described in the articles. But Android and Microsoft smart phones weren't as good at wiping important information. In the Yahoo article computer analyst Steve Burgess recommends that, in addition to the factory reset, you should remove a phone's -----7----- and SIM cards before turning it in. Robert Siciliano's advice in the NBCNews.com story was a bit more severe. He recommends a drill, a sledgehammer and bucket of salt water.

107

Having a kid changes everything, from your sleep schedule to the status of that formerly spare room. The stable of bacteria that live in a woman's gut is also transformed when their host becomes -----1----- . So finds research in the journal Cell. The study looked at women in Finland. The women's microbial makeup changed -----2----- between the first and third trimesters. The array of microbes in the gut went from looking normal in the first three months of a pregnancy to resembling what's found in patients -----3----- from metabolic disease in the last three. But some of the symptoms of that condition—like weight-gain and slower sugar metabolism— can be -----4----- to pregnant women, supporting energy storage that helps a fetus develop. Other symptoms, like inflammation, - -----5----- that the immune system is -----6----- properly as a pregnancy comes to term. Scientists don't yet fully understand what brings about the changes in gut bacteria—immune function is a suspect, but factors like hormonal -----7----- aren't ruled out. The research suggests that other changes to the body, like puberty or old age, could also bring about microbial makeovers.

108

"Touchdown confirmed. We are safe on Mars. .... The control room at NASA's Jet Propulsion -----1----- late in the evening of August 5th, Pacific time, when word arrived that the Curiosity rover had landed safely on Mars. The one-ton rover, which dwarfs all Mars landers that came before it, will now spend a planned two years -----2----- the Martian surface. The mission is expected to cost \$2.5 billion. Curiosity's task is to investigate the inside of Gale Crater, where a giant mound of sedimentary -----3----- may provide evidence of a wetter, possibly habitable Mars billions of years ago. But first it had to survive an elaborate landing -----4-----, which appears to have gone smoothly. Curiosity landed on time and on target and soon beamed back grainy photos of its wheels and its shadow. Given the carlike size of the rover and the challenges of landing on Mars, Curiosity's -----5--- -- goes down as one of the greatest parking jobs in history.



109

With more and more car accidents attributed to " -----1----- driving" it's become clear just how dangerous it can be to fiddle with your cell phone while behind the wheel. Now it seems more and more people are -----2----- to safely use their mobile gadgets while walking. The number of distracted walkers injured seriously enough to be treated at hospital -----3----- rooms have more than quadrupled in the past seven years, according to the Associated Press. That's not even counting the untold -----4----- of stubbing your toe or doing that little trip-run move across the sidewalk. These hospital cases are people who get hit by cars, fall off curbs or even onto train tracks because they're too busy ----5----, surfing the Web or in some other way too distracted to watch where they're going. There were about 1,150 such incidents last year. There isn't any hard ----6---- yet that proves pedestrian gadget distraction increases the chances of pedestrian mishaps. Still, it's hard to argue with the anecdotal evidence available at the nearest street corner. Perhaps you've seen the video of the walker in California who's -----7----- so hard on his mobile device that he almost bumps into a bear? Don't be that guy.

110

As a kindergarten teacher might say, sharing is caring. She might not -----1----- that cooperation is also a great way to form a community, and thus improve everyone's chances of survival. Humans aren't the only ones to apply this ----2----- marine -----3----- **bacteria** also form cooperative populations, according to a study in the journal Science. Researchers -----4----- the genomes of bacteria belonging to the Vibrionaceae family. In the lab, they grouped together bacteria with similar -----5----- that coexist in the same micro-habitat. The scientists expected that within any given population, individuals capable of producing ----6----- would use these chemical weapons against others. But when they looked at -----7----- between different strains of Vibrionaceae, they found that only a few members of any given population could produce the bacteria-killing substances, and the rest of that community was resistant to those -----8----- compounds. But the antibiotics could fight off foreign populations, while leaving members of the home group unharmed. This -----9----- implies a bacterial social structure where individuals help the group as a whole. Crayon-hoarding toddlers might want to take note.

111

Japan's Fukushima Daiichi nuclear power plant suffered three meltdowns last year. Paired with hydrogen -----1-----, these meltdowns allowed radioactive material to escape. So what's the effect on the environment and human health? The first clues come from what's called the pale grass blue -----2----- . This delicate insect's wings change color and pattern in response to environmental changes. The offspring of female butterflies caught in the Fukushima region six months after the meltdowns sported such colour-pattern changes, as well as ----3----- legs, antennae, wings and even eyes. The deformities persisted and got worse in the second generation of ----4----- as well. The same deformities were found in butterflies collected from the wild. And the researchers induced similar effects by ----5----- normal butterflies to radiation from caesium particles like those that escaped Fukushima Daiichi. The research is in the journal Nature Scientific Reports. As for people, more than 3,000 individuals from a town 23 kilometres north of the stricken nuclear plant also bore detectable levels of radioactive caesium in their bodies. Their total dose of less than one milliSievert is -----6----- safe, and no radiation sickness was observed. But, says a report in the Journal of the American Medical Association, the men, women and children exposed need to be watched for the long-term effects of the -----7----- —for the rest of their lives.





112

Meetings, calls, kids, dogs, errands, -----1-----and all those emails! Who doesn't feel starved for time these days? But a new study suggests that you can feel like you have more time—by -----2----- some to others. The research is in the journal *Psychological Science*. There really are only 24 hours in a day—seven or eight of which are (ideally) spent sleeping. And a time commitment does take time. But researchers found that if people felt like they had done something for others, their -----3----- was that they had gotten more done than people who killed time, spent time on themselves or got -----4----- free time. And that made them feel like they had more time overall. You don't even have to spend your whole Sunday -----5----- . The helping tasks in the study took only about 5 to 15 minutes. They -----6----- things like editing a student's -----7----- or writing a note to a sick child. Time donators also felt like they could do more with their time, making them even more willing to give time in the future.

113

Are we smarter than the -----1-----? Specifically, are we clever enough to avoid their fate? If we don't want to be blown away by an asteroid, it would help to know what's out there. That's the idea behind the Sentinel -----2----- . Sentinel is an infrared space telescope -----3----- to spot near-Earth asteroids. But it won't be near-Earth. It will launch in 2017 or '18 and adopt a Venus-like orbit around the sun. From there it will search space for any asteroids that might come dangerously close to Earth. It could double the known count of near-Earth asteroids in a matter of weeks. With enough warning, we'd have a chance to -----4----- an inbound asteroid. Sentinel is the brainchild of the B612 Foundation. B612 was the asteroid home of literature's Little Prince. The group -----5----- their plans for Sentinel on June 28th. But those plans depend on funding. The B612 Foundation is a nonprofit that aims to finance Sentinel through philanthropy. Former NASA astronaut Ed Lu heads the -----6----- . He says Sentinel needs a few hundred million dollars to get off the ground. That's a lot of cash, but the B612 Foundation might make it. After all, when it comes to fundraising, humans leave the dinosaurs in the dust.

114

Kids from the ages of two to 19, -----1----- about seven trillion calories in sugar-sweetened beverages per year, according to Steve Gortmaker of the Harvard School of Public Health. He spoke at the Obesity Society Annual Scientific Meeting in San Antonio on -----2----- 23rd. Seven trillion is a lot of -----3----- in sugar-sweetened beverages. At, for example, 50 cents per can, it's about \$24 billion a year. All of those dollars and sugary calories are stoking the childhood obesity epidemic. Currently, in the U.S. , about 17 percent of children and adolescents are -----4-----—that's more than 12.5 million kids. And new research in the *British Medical Journal* suggests that obese children will have much higher risk factors for cardiovascular disease as adults. Even as kids, their hearts are changing -----5----- to look like those of adults at risk for heart disease. But the good news is that simply cutting out an about of 64 calories a day from kids' diets could start to level out the steep rise in childhood obesity. That's -----6----- to less than half a can of most non-diet sodas.





115

Sweet potatoes contain fiber, vitamin A and -----1----- . But the way that scientists think they can make them even more healthful is literally shocking. Researchers found that giving a jolt of -----2----- to sweet potatoes increased the level of antioxidants known as polyphenols by 60 percent. The -----3----- placed sweet potatoes in a solution of sodium chloride. They found that 0.2 amps of direct current gave the potatoes nearly one and a half times more antioxidants than potatoes that weren't shocked. The research was presented at the National Meeting of the American Chemical Society. It seems that the electric zap -----4----- the potatoes into producing more polyphenols as a protective -----5----- . And the treatment did not sacrifice flavor. Previous research has shown that electrically supercharging white potatoes increases antioxidant levels. So perhaps it's only a matter of time before other fruits and vegetables get shock -----6----- , too.

116

Icy objects such as comets may have helped start life on Earth by -----1----- water and carbon-based molecules to the young planet. Because putting something on ice doesn't -----2----- keep it from changing: a new study finds that even in frigid, deep space environments, simple hydrocarbon molecules can react to become more complex ones. The process even works when -----3----- drop to near absolute zero. But just what kind of -----4----- molecules would exist on the icy bodies of a forming solar system? Researchers at the Jet Propulsion Laboratory in Pasadena, California, investigated how organic molecules might evolve toward greater -----5----- even in the cold of interstellar space. The scientists found that ultraviolet light, which radiates from stars and galaxies, can -----6----- rapid changes in icy hydrocarbon molecules cooled to 5 kelvin—that's a frosty minus 451 degrees Fahrenheit. The chemical reactions resulted in molecules of more complexity— which is the right -----7----- to go if you want to eventually make amino acids and biological molecules. The study appears in the *Astrophysical Journal Letters*. It just goes to show—if you really want to -----8----- something in place, you'd better encase it in carbonite.

117

Secret identities aren't just for superheroes anymore. Researchers have found that a -----1----- present in everything from amoebas to people is living a double life. Once it binds to DNA, the protein, called RfaH, rips -----2----- and then refolds into a different shape , to do a different job. RfaH is a transcription protein—attached to or freed from a stretch of DNA, it -----3----- if a gene is expressed or not. But once the protein has carried out its task, its helical -----4----- unravels. Within seconds, it refolds into a barrel structure, which has a new role, this time in -----5----- , where it helps the cell produce amino acids for new proteins. The study is in the journal *Cell*. The next step is to find out if the barrel can refold into the helix. After that, researchers want to see if proteins -----6----- to RfaH— which are present in all life on Earth—are capable of -----7----- molecular contortion. Which would mean a lot more bang for our protein buck.



118

Some people turn their homes into packrat middens. Such hoarding was thought to be a type of obsessive-compulsive disorder, OCD. But in the most recent diagnostic manual of -----1----- disorders, hoarding is proposed to be a unique condition— it's now thought to be more about avoiding making decisions about -----2----- than a general obsession with them. In a recent study, scientists compared the brain activity of hoarders with that of those with OCD, while the subjects were deciding whether to keep or toss their own junk mail and the junk mail of others. -----3----- did not affect the brain activity or choices of those with OCD. But the hoarders were different. Their decision-making brain circuit was quiet when contemplating others' mail, but became overactive for decisions about their own mail. Not surprisingly, hoarders kept -----4----- more of their own mail than the OCD group did. The study is in the Archives of General Psychiatry. Hoarders' self-ratings of indecisiveness -----5----- with the amount of activity in brain circuits related to exaggerated -----6----- of the risk of a wrong decision. The researchers suggest that hoarding behavior has its own specific symptoms and should be treated differently than OCD.

119

We sign our names to various documents all the time. Some -----1----- seal a legal contract. Others pledge us to an action. Now a study finds that when and where someone sign a document can influence the -----2----- of them being honest or cheating. Scientists had people sign more than 13,000 auto -----3----- forms—one group signed at the top of the form, the other at the bottom. And those who signed at the top admitted to nearly 2,500 more miles of usage than those who signed at the bottom. Which translated into a \$48 difference in annual premiums. According to the researchers, because the top-signers put their names on the document before they were even tempted to -----4----- information, they are less likely to act dishonestly. The study is in the Proceedings of the National Academy of Sciences. Many people routinely deceive themselves to ----5----- dishonest behaviour. The \$345-billion gap between what people should be paying in U.S. taxes and what they claim isn't just due to -----6----- liars. It also depends on normally honest people stretching the truth. Perhaps having taxpayers sign their forms before filling them out would cut down on that -----7-----.

120

You might not know how many calories were in that sandwich. But if you got lunch at the Massachusetts General Hospital cafeteria, you could tell with one glance whether you'd made a ----1----- choice: offerings are color-coded. Simply posting calories does not always get consumers to make healthier choices. So researchers tried something different. Mass General's cafeteria food and beverage options were -----2----- as least, somewhat or most healthful with red, yellow or green labels. Green is healthiest. Researchers then tracked some 4,600 employees. About six months after the changes were made, the purchases of "red" label food decreased by more than 15 percent, and "red" -----3----- dropped by 39 percent. "Green" food and drink purchases increased, according to the study in the American Journal of Preventive Medicine. Making healthy food choices easier could -----4----- help the poor the under educated, the very populations most affected by the obesity ----5-----.





121

The London Olympics are about to begin, and -----1----- will again be riveted by feats that would have been impossible when the modern Olympics began in 1896. Jaw-dropping records are attainable in part because of advances in materials science. New materials have led to equipment like super light and strong vaulting poles, and bathing -----2----- that improve the flow of bodies in water. Such developments are detailed in a series of articles in the journal Nature Materials. The scientists say other advances are afoot that build sensors into athletes' clothing for, for instance, measuring -----3----- in training. Or protective gear that repairs itself when damaged. And advances in materials science can help Olympians internally as well. Elite -----4----- may tear cartilage or break bones. But cartilage doesn't have enough blood and cells to mend well, and sometimes bones just can't naturally bridge the break. So scientists are homing in on the best -----5----- of bio-compatible materials, along with growth factors and other compounds, as well as implanted cells and proteins, to help mend what have been until now nearly intractable injuries. So that world-class athletes can push the limits of sports and science.

122

It's not easy being yellow: bananas now face two separate fungal epidemics, which threaten to pluck the fruit off of our tables. -----1-----, researchers have now sequenced banana DNA, producing the genome of a banana variety that may hold the secret to defeating the diseases. The report is in the journal Nature. Today, half of all bananas, including the ones you probably buy, belong to the Cavendish -----2-----, whose popularity stems in part from having no seeds. But this trait also removes sexual -----3----- from the equation. The bananas are thus all genetically identical —and identically -----4----- to the two fungal epidemics, Panama disease and black leaf streak disease. Researchers sequenced the genome of a banana variety called DH-Pahang, whose genes -----5----- to the Cavendish. While the genome shows where this fruit fits in the history of plant evolution, it could also help researchers understand why DH-Pahang, unlike its -----6-----, is resistant to the funguses behind both Panama and black leaf streak disease. Knowing the genes responsible for this -----7----- could help breeders create stronger, more resistant bananas. Which has a lot of appeal.

123

Interesting sound. I would have guessed a Wild West performer was -----1----- with a bullwhip while also vacuuming. But no. That sound is apparently produced by the aurora borealis, the northern lights. Since 2000 researchers at Finland's Aalto University have been -----2----- audio, as part of what's called the Auroral Acoustics project. Folk tales have long held that the lights also produce odd sounds, but the claims were hard to prove. And some researchers thought that any noises produced by the -----3----- particles, that cause the light show would be far too high in the sky to be heard on the ground. But the latest results indicate that at least some sounds are produced very close to the ground. A setup of three ground-based -----4----- allowed researchers, to estimate that the sounds occur perhaps just 70 meters up. The results were just presented at the International Congress on Sound and Vibration in Vilnius, Lithuania. More information about the sounds of the northern lights could lead to a more complete understanding of the -----5----- . So if you see an aurora, keep your ears open.





124

Just like corporations, stars, too, can engage in mergers and acquisitions: a new study has -----1---- -- a pair of white dwarf stars heading toward a merger. White dwarfs are the hot, super dense remnants of spent stars. In a binary system called J0651, two white dwarfs circle each other very rapidly. The binary pairing -----2----- an orbit in less than 13 minutes. And that already rapid orbital dance is speeding up as the two white dwarfs spiral in on each other. Each year their orbital period - -----3----- by 0.3 milliseconds. That's actually a pretty dramatic change on astronomical -----4----- . In about a million years, the white dwarfs will get so close that the larger one will start to cannibalize its smaller -----5----- . Before long, the two stars will likely become one. The study appears in the Astrophysical Journal Letters. The tightly wound white dwarf binary should also be radiating gravitational waves—ripples in the -----6----- of space and time. But today's gravitational wave detectors are not sensitive enough to detect them. That's okay—astronomers have another million years, before things get really interesting, to build an -----7----- that's up to the task.

125

Scientists are looking for Earth like -----1----- around other stars. But one way to limit the search can be to figure out where an Earth like planet cannot exist and -----2----- those types of systems. In a new study, astronomers turned their attention to so called hot Jupiters. These are Jupiter sized planets that have an orbit of only about three days. The scientists looked at 63 hot Jupiters to see if they could find -----3----- for any nearby Earth like planets. They found none. But it could be that the companion planets are too small in size or mass or just aren't -----4----- with the current techniques. So the researchers then turned to hot Neptunes, and warm Jupiters—these are Jupiters with -----5----- longer orbits. They found only 2 potential nearby planets among 222 hot Neptunes. And of the 31 warm Jupiters, five showed evidence of a companion. The -----6----- are in the Proceedings of the National Academy of Sciences. The current theory is that hot Jupiters formed and then migrated in towards their stars. The researchers say that the -----7----- might have “disrupted the formation of Earth like planets. Good thing our Jupiter kept its cool.

126

Does an ice cold drink actually taste better than the same beverage at room temperature? Depends on what its taste is: a new study finds that the -----1----- of some flavours varies with temperature. The work is in the journal Chemosensory Perception. Researchers took -----2----- that tasted bitter, sour, sweet, or astringent — a flavour found in legumes and raw produce that creates a dry, puckering feel in the mouth. They either chilled the solutions to 5 degrees Celsius, the recommended temperature for keeping food cool... or heated the solutions to 35 degrees Celsius, a couple -----3----- below human body temperature. -----4----- then rated the tastes. Both sour and astringent solutions tasted stronger at warm temperatures, and the intensity lasted longer than it did with chilled drinks. Bitter flavours came through best when -----5----- . And temperature had no effect on - -----6----- of sweetness. For most people, temperature can enhance flavours. But for some, dubbed - -----7----- tasters, temperature alone can be a flavour. Heating or cooling parts of the tongue creates the sensation of taste without food— a finding that's hard to swallow.



127

As it ages, white paper turns a -----1----- yellow. But why? To find out, scientists artificially aged modern paper to reveal the changes on the molecular level. The research is in the journal Physical Review Letters. For 48 days, three unbleached paper -----2----- aged rapidly in reactors that simulated different environmental conditions. The researchers then compared the -----3----- aged samples to the real deal: three pieces of paper crafted in 15th century Europe. This -----4----- allowed them to gauge the types and amounts of changes going on. About 90 percent of the weight of old paper is cellulose, the sturdy -----5----- that makes up plant cell walls. But over time cellulose fibers oxidize. The process -----6----- parts of various molecules and turns them into what are called chromophores, which absorb light. White paper is white because it reflects all colors of light. Aging paper filled with chromophores reflects wavelengths that make it look yellow. The non-destructive technique used in this study could inform research to -----7----- and even whiten ancient texts and art. And give paper conservation a brighter outlook.

128

On election day, where do you vote? If it's in a church, you might be -----1----- to vote more conservatively than if you cast your ballot at a school or government building. That's according to research published in the International Journal for the Psychology of Religion. And the effect seems to hold, whether you're Christian, Muslim or agnostic, -----2-----, independent or conservative. The study found that when random people were -----3----- in front of a church, they gave more socially and politically conservative responses than people surveyed while standing in front of a government building. The shift in people's attitudes, the researchers suggest, was likely a result of visual priming -- meaning that people who could see the -----4----- building were, consciously or not, getting cues that influenced their response. The surveys were conducted in Europe, so it's possible American voters might react differently. But the survey included subjects from more than 30 countries to try to -----5----- a particular national bias. So before you cast your vote this election year, think about whether your view is influencing your views.

129

Music, film and video game makers face a new online, digital world. And some are testing a -----1----- -- pricing system : pay what-you want. But a new study finds that when -----2----- can name their own price, many may opt out of buying at all. The study is in the Proceedings of the National Academy of Sciences. For the research, tour boat passengers posed for photos. Each boat ride announced a price of 15 dollars per picture. But they then charged either 15 dollars, 5 dollars, or the option to pay what you want. As -----3-----, the fewest -----4----- purchased photos when they had to pay full price. But more customers bought photos when they cost 5 dollars than when prices were pay what-you want-which could have saved passengers even more The researchers suggest that choosing to pay less than an announced lower than-expected price made people feel cheap. With choices then limited to spending more money or feeling like a tightwad, -----5----- customers simply opted out of the purchase. So on sea or land, a low, set price may catch the most fish.





130

If you enjoy sharing all your likes and dislikes on Facebook, you're -----1----- not alone: research finds that broadcasting personal opinions gives people the same sense of reward as earning money. The study is in the Proceedings of the National Academy of Sciences. Study subjects had their brains -----2----- while they either talked about their opinions or judged the beliefs of another. And sharing their own point of view stimulated more activity in the -----3----- processing parts of the subjects' brains. In another experiment, participants got to choose among reporting their own opinion, judging someone else's opinion or answering a true or -----4----- question. And for each choice, they could earn -----5----- amounts of money. Rather than maximize their winnings by answering the questions that were worth the most cash, people preferred to talk about themselves -- even though they -----6----- an average of 17 percent of their potential earnings to do it. For the participants, sharing personal information was its own reward. Which means that people like comedian Patton Oswalt, who tweets photos of what he's having for lunch, -----7----- feel like a million bucks.

131

Americans still fall short of the recommended daily portions of fruits and vegetables. And kids are notoriously -----1----- to veggies at the school cafeteria. So researchers -----2----- whether visual cues of healthful foods could increase consumption at a grade school with 800 students. First the scientists -----3----- how many kids put carrots and green beans on their trays and how much they ate. Three months later they did the same analysis. But on the second day, the trays had pictures of carrots and green beans in the trays' compartments. On the day with the photo cues, more than twice as many kids took green beans as on the control day, and more than three times as many kids took carrots. Average -----4----- per student went up as well. The study was published in The Journal of the American Medical -----5----- . The researchers note that the effect needs to be tested elsewhere for longer than two days. And the amount of veggies eaten still did not meet government -----6----- . But if pictures of burgers can sell meaty meals, maybe fresh fruit and veggie food photos can play a part in the -----7----- for healthier kids.

132

Global warming might seem like a -----1----- boon. After all, milder temperatures and more carbon dioxide and nitrogen should feed flora. But a ten year study has found that any initial positive effect on plant growth from climate change may soon disappear. The report is in the journal Nature Climate Change. Researchers transplanted vegetation from four grassland -----2----- to lower, warmer elevations. They also modified the precipitation at the transplant sites based on altered rainfall estimates. For the first year, the plants did great, producing more biomass and churning out more -----3----- for us. But their productivity went down for the rest of the decade. What happened? Warming did speed up the nitrogen cycle, which should have increased nitrogen's -----4----- as plant fertilizer. But a lot of the nitrogen left the soil through run off or -----5----- into the atmosphere. In addition, productive native plants began to lose out to species that thrive at higher temperatures, but are less productive than the natives. Warmer temperatures may spur immediate growth, but in the long term, we can't -----6----- plants to like it hot.





133

Every time you inhale, oxygen passes from your windpipe to your lungs and on into your bloodstream. But what if your windpipe was blocked? Getting the gas straight to your blood could save your life. Wait, put down that syringe—a large air bubble in a blood -----1----- can kill you. But what if the bubbles were only a few millionths of a meter in -----2-----? Researchers coated tiny amounts of oxygen gas with fatty molecules to create micro -----3----- . Suspended in solution, the micro particles formed a foam containing 50 to 90 percent oxygen. In a beaker of blood, the foam was able to quickly -----4----- its oxygen to the cells. Then the researchers tested it in animals. Normally, a blocked windpipe cuts off the blood's supply of oxygen, leading to brain damage and death. But when -----5----- with blocked windpipes received -----6----- of the micro particles, their blood oxygen levels and heart rates remained stable. The work is in the journal Science Translational Medicine. The foam may someday buy time for human patients. So that even someone with a closed airway can -----7----- easy.

134

Dogs are not just man's best friend. Previous studies have shown that kids with dogs are less likely to develop asthma. Now a new study may show how— if results from mice apply to us. The work was presented at a meeting of the American Society for Microbiology. The study tests what's called the -----1----- hypothesis. The idea is that extreme cleanliness may actually promote disease later on. Researchers collected dust from homes that had a dog. They fed that house dust to mice. They then infected the mice with a common -----2----- infection called respiratory syncytial virus —or RSV. Mice who ate the dog dust were protected against RSV infection symptoms , like inflamed, mucus coated airways, suggesting -----3----- helped them stave off the virus. Those mice also had more diverse communities of gut bacteria than control mice did. The researchers say our pet's microbes may -----4----- our gut too, and help the immune system learn to -----5----- to infections. That's important because when kids develop severe RSV their risk of asthma goes up. So next time buster sheds all over the couch, think of it as a -----6----- dose of probiotics.

135

True to their name, boa ----1----- squeeze the life out of their prey. But how does a boa know it's snuffed out a rat? The snake listens for a heartbeat. When it stops, that's the cue to let go. According to a study in the journal Biology Letters. Researchers outfitted rat cadavers with -----2----- beating hearts. They used dead rats to control for other signs of passing, like muscle spasms. Then they warmed up the rats, set the hearts pumping, and dangled them in front of hungry boas. The snakes - -----3----- . And as long as that rat heart kept thumping, the boas -----4----- tightening their coils and applying bursts of pressure , sometimes for more than 20 minutes. But as soon as scientists killed the heartbeat, the boas loosened up. Even captive born boas who'd never hunted live prey paid ---- --5----- to the pulse -- suggesting the behavior is innate. And for good reason. The -----6----- say constriction takes a lot of energy . And it can be dangerous, say, if an enemy strikes while the snake's coiled around its quarry. But by following the telltale heart, boas can keep the pressure on just long enough. Before a -----7----- meal.



136

Every year, about 10 million tons of paper winds up in American landfills and incinerators, which is not only wasteful but adds CO<sub>2</sub> to the -----1----- . Recycling helps, but even that material has to be repulped and paper ized before you can use it to print out that recipe you 'll never make. But what if you could wipe the page clean and use it again? Light amplification by -----2----- emission of radiation to the rescue. A new study shows that laser light can -----3----- the toner from a piece of printed paper. The approach appears in the Proceedings of the Royal Society A. Taking a page from the art restoration -----4-----, scientists sampled a variety of light sources to see if any could be used to strip the ink from laser printed documents without damaging or discoloring the paper. UV and infrared were too harsh. But a bright green laser applied in 4 nanosecond pulses -----5----- the print, leaving paper that looks as good as new. Such imprinters will probably run about 30,000 bucks, so they probably will not catch on for home use. But people in the recycling world might find that the green laser fits the -----6----- --for making paper that's really green.

137

Jack Nicholson, playing the crazed caretaker in The Shining, makes me reach for a blanket. Now a study finds that people we find, well, creepy can actually make us feel colder. The research will be published in the journal ----1----- Science. Researchers interviewed 40 college undergraduates. During each interaction, the experimenter was either chummy with the student or very stiff and ----2----- . The investigator also alternated between mimicking students ' posture -- a signal of rapport - - and not doing anything at all. Participants then completed a questionnaire designed to find out how hot or cold they felt. The results showed that the subjects actually felt colder when the investigator acted inappropriately or sent mixed signals. The researchers conjecture that because the brain tries to interpret social cues and purely physical ones -----3-----, people unconsciously associate icy stares and chilly interactions with actual physical coldness. So the next time you have to visit your doctor with the creepy -----4-----, bring a sweater

138

For a company that made its name by building one of the world's most popular social networks , Facebook itself often comes across as, well, antisocial. Facebook is -----1----- as a forum for finding long-lost friends, not to mention sharing links, photos and personal videos. For better and worse, the site has even redefined the word "like." Of course Facebook manages to use all of this ----2----- to its own advantage. And the company often needs to be reminded that there are limits to how much it can exploit user information for profit. Facebook has settled a class-action lawsuit that -----3----- it to be more clear that clicking on the "Like" button, means your name and photo can be used to endorse whatever movie, product or politician you "liked." Most recently, Facebook surreptitiously modified user profiles to replace their original e-mail -----4----- with @facebook. com addresses. Mail sent to that address becomes a Facebook message to a user. You'd think that a company with so many loyal followers would have -----5----- this ahead of time. That's a definite dislike.





139

Have you ever wanted to turn down the volume at a deafening -----1----- or noisy bar? Envy the whale: a new study finds that toothed whales can reduce their own auditory sensitivity when they expect a loud sound. The work is presented at this week's Acoustics 2012 meeting. Whales and dolphins rely on their responsive hearing to interpret returning echolocation -----2----- . Previous research suggested that these marine mammals could dull their hearing before uttering outgoing echolocation clicks, which are very loud. Could they use the same coping mechanism for -----3----- noises? To find out, researchers trained a false killer whale that a loud noise would always follow a brief warning signal. Then, they attached suction cup sensors to the outside of the whale's head and played the -----4----- . The sensors -----5----- brainwaves that indicated the whale did reduce its hearing sensitivity in expectation of a clamor. The researchers hope to test other species as well. Loud noises from ships can disturb whales. To accommodate -----6----- life, perhaps vessels could emit signals before making a ruckus, warning whales to tune us out.

140

Sound and touch may seem completely -----1-----, except possibly when playing the game Operation. But it turns out that the two senses are actually quite entwined: a new study finds that people with hearing issues often also have problems with touch. Researchers -----2----- sets of twins, some identical and some fraternal. The -----3----- twins, obviously, have the same genome and thus the same mutations. The fraternal twins have -----4----- differences. Other subjects in the study were congenitally deaf. To determine how acute their hearing was, the subjects reported whether they could hear various high -----5----- . To evaluate touch they were asked to differentiate different surfaces with their fingertips. The research -----6----- that touch sensitivity was highly heritable and connected closely with hearing ability. The better the twins could sense touch, the better they could hear, and vice versa. One in five subjects that had congenital deafness also had a poor sense of touch. The research is in the journal Public Library of Science Biology. Next the researchers want to figure out which genes are faulty. After all, addressing the problem could kill two birds with one stone.

141

Here's a tale of genes, smells and pigs. Most people have two -----1----- of a gene that enables them to detect a steroidal pheromone called androstenone -- which is found in male mammals, particularly porkers. But most pigs in developed countries have been chemically castrated. Which means much less androstenone in the meat. So, no strong smell. Now Europe is considering a ban on castration. Might pork from these intact males smell bad to people with the right genes? Researchers -----2----- - 23 volunteers, who were screened for the ability to smell androstenone. Tests showed that those who were sensitive to the compound did indeed have two copies of the gene. And those who did not notice it or did not think it smelled bad mostly had one or no copies. The researchers then -----3----- - the subjects with pork to which androstenone was added to match levels that would be found in meat from uncastrated males. And the sensitive subjects thought the meat smelled and tasted much worse than did the -----4----- tasters. The research was published in Public Library of Science One. The scientists say ending pig castration could thus make some pork unpalatable to people with the common genes -----5-----.





142

Now's a great time to break out that backyard -----1----- . Because Saturday, March 3, is the Mars opposition. It's one of the times that the Earth and Mars pass the -----2----- to one another. The name -- the Mars opposition -- means that Mars and the sun are on, well, opposite sides of us. And it happens only once every two years and two months. But if you do not have such equipment -----3-----, you might want to head over to the online Slooh Space Camera. It's usually a members only site that allows users to look at web images -----4----- from telescopes around the world and to click to snap photos. The pictures get integrated into Google Earth/Sky. The site also offers free weekly space shows. But Saturday there'll be a free live streaming of the Mars Opposition, hosted by -----5----- experts. It'll include views of the planet from a variety of -----6----- including those in Arizona and the Canary Islands. You'll be able to pick out surface features such as canyons, -----7----- and polar caps. The online broadcast will begin on Saturday at 11 P.M. Eastern time. Head over to the online Slooh Space Camera.

143

If you've ever spent time watching chimps at the zoo, you've probably -----1-----: what are they thinking? Well, the answer might be simple: could be they're fixin' to hurl a rock at your head. One chimp in Sweden actually hides stones and other potential projectiles, and then acts casual before chucking them at visitors— behavior that suggests an -----2----- degree of primate planning and deception. His duplicity is -----3----- in the journal Public Library of Science ONE. The chimp, named Santino, had long been known to fling things at -----4----- onlookers. For years he's calmly gathered stones and chunks of -----5-----, stacking them in piles, which he visits when some human particularly irks him. But lately Santino has gotten more cunning. For one, he's taken to concealing his arsenal -- -----6----- little heaps of hay that he carries out from his enclosure. And his attacks are also more stealthy. Santino used to pitch a fit before pitching a stone. But now he acts all nonchalant, even thoughtfully munching an apple before letting the missiles fly. The researchers say the data show that chimps are capable of social planning and deception. Unless, of course, that's just what the chimps want us to think.

144

One family generally dines on Chinese takeout while their -----1----- eat home cooked meatloaf. You say potato, I say potato. And humans aren't the only primate -----2----- with cultural differences: even in the same -----3-----, different groups of chimpanzees use different tools. The work is in Current Biology. Chimps living in a national park in Cote d'Ivoire like eating Coula nuts. They hammer them open with stone or wood. At the beginning of the season, the nutshells are harder. So you might expect all the chimps in the forest to initially use stone hammers and then switch to easy to-find wooden tools when the nut cracking requires less force. But researchers examined the tool use of three different chimpanzee -----4----- and found that despite sharing genes and a -----5-----, each group chose their hammers differently. For example, one group preferred stone hammers throughout the Coula nut season. Another gradually transitioned from primarily stone to primarily wooden tools. And the third community switched from stone to wood more quickly. Hammer size also -----6----- from group to group. As a chimp might explain, you say tomato, I say "chimpanzee calls".



145

Does your puppy turn his nose up at his own chow- because he wants some of whatever it is that you're having? A new study finds that, when it comes to food, dogs recognize human -----1----- signals about what's good. The work is in the journal Public Library of Science ONE. Researchers let pet dogs choose between two plates , one with a single piece of food and the other with six pieces . -----2-----, the animals generally went for the larger portion . But when a human being showed a clear liking for the smaller plate, the canines likewise went for the skimpier choice. The dogs -----3----- recognized and responded to the humans ' social cues. And not all cues were equally effective. When the human approached but did not touch the smaller portion, dogs -----4----- the attention drawing gesture. For a social signal to influence behavior, it had to demonstrate intention . And the most effective cues also involved -----5-----, such as looking from the food to the dog and back while talking encouragingly. For dogs, choosing a bite may depend on another's bark.

146

Obese people have higher risks for -----1-----, heart disease, arthritis -- and injuries in car accidents? Yes, in part because they're far less likely to wear a seat belt. That's the finding of a study out of the University of Buffalo that will be presented at an upcoming meeting of the Society for Academic Emergency Medicine in Chicago. The researchers analyzed data in the national Fatality Analysis Reporting System of the National Highway Traffic Safety Administration . The study included a third of-a million drivers involved in -----2----- crashes. Two years ago, the research group found that morbidly obese people were 56 percent more likely to die in a car crash than normal weight car occupants. The new study -----3----- that drivers of normal weight are 67 percent more likely to wear a seat belt than are obese drivers -- which could account for at least part of the increased death risk. The researchers hypothesize that -----4----- people find belts uncomfortable and difficult to buckle. A weight loss -----5----- can address the problem in the long run. An inexpensive seat belt extension can solve it today.

147

Tens of millions of sharks are killed for their fins each year. It's not just a tragic -----1----- of the animals. It's bad business. "They're basically swimming dollar signs, whether you're trying to kill them for their meat or their fins or you're interested in looking at them for ecotourism." That's Austin Gallagher, a doctoral student at the University of Miami. I spoke with him on February 26th. "We did some calculations and the results were remarkable. We determined that the average shark was worth about \$200,000 over the course of its life. And when you compare it to finning that animal -- a one-time extractive use -- seeing it for diving is worth about 40 percent more." Gallagher and his doctoral advisor Neil Hammerschlag -----2----- the study last year in Current Issues in Tourism. "Since this paper came out, I got an e mail from somebody in Bali just a weeks ago saying, 'We're using your paper to stop illegal -----3----- of thresher sharks in Bali at a local dive community .'"





148

It's tough to pick a ----1----- face out of a crowd -- but focusing on a known voice in a noisy room is easy. And a new study scanned volunteers' brains to look at how we solve the so called cocktail party problem. The work is in the -----2----- Nature. Researchers recorded the activity of the subject's cerebral cortexes while playing them sentences spoken by different voices. First, the subjects listened to individual sentences and reported key -----3----- of each one. Then, they heard two different sentences played at the same time, but had to listen to and recall details from only one voice. Each voice drew a particular response from the auditory cortex. And even with an extra sentence playing -----4-----, researchers saw that the cortex responded specifically to the voice that the subject was focusing on. This finding indicates that our brains process sound based not only on the audio input they -----5-----, but also on our listening goals. And it could lead to speech recognition systems that are -----6----- in crowds -- even at a cocktail party.

149

If you have paraskevidekatriaphobia, today is not your day. That's right, paraskevidekatriaphobia is fear of Friday the 13th and the accidents, mishaps and misfortunes thought by some to occur on that day. But is there anything really to fear? In fact, a study was -----1----- and published back in 1993 in the British Medical Journal that looked at hospital admissions due to accidents on one Friday the 13th -----2----- with the previous Friday the 6th. The researchers tracked traffic on a highway in one area and found that many fewer cars were on the road on the 13th. Perhaps due to people being leery of driving on that day. But hospital -----3----- in that area due to traffic accidents was actually higher. Forty five people were admitted on the 6th but 65 people were admitted on the 13th. The researchers -----4----- that a few people were indeed unlucky. On that Friday the 13th. In that part of England. Then again, what you really needed for this study was a -----5----- group that stays home, only to slip in the bathtub.

150

Spring is in the air. And so are those dang ----1-----, hungry for a blood meal. The victim can wind up with a bunch of bites, red and itchy. So what drugs can quench that itch? Maybe none, according to a study in the Drug and Therapeutics Bulletin. Researchers reviewed the -----2----- on a variety of treatments. Topical antihistamines? Generally not recommended. They're only marginally effective and should not be used for longer than three days. Oral analgesics like ibuprofen are sometimes recommended, but the scientists say there's no evidence supporting that. Topical anaesthetics such as lidocaine are only marginally effective and can sensitize the skin -- meaning the itching could -----3----- get worse. And common topical steroids like hydrocortisone? The problem here is that they're not -----4----- to be used on broken skin. And if you've been scratching, that skin may already be broken. The authors recommend a simple approach: clean the area, and use a cold pack to tamp down inflammation and numb the nerves. If you have not -----5----- the skin, try the steroid cream. But your best approach may be ice.





## Answer Keys

|     |   |
|-----|---|
| 001 | insight, characters, merchant, prosperous, surrounding            |
| 002 | Mysterious, sources, church, gaps                                 |
| 003 | Depict, scenes, landscapes, portraits                             |
| 004 | Patterns, contract, modes   |
| 005 | politician, paraphrase, deprivation, courts                       |
| 006 | nutrition, inequality, improvements, conditionality               |
| 007 | thinkers, keen, published, redistribution                         |
| 008 | attend, counterparts, models, urban                               |
| 009 | incomplete, caused, calculations, principle, approximately        |
| 010 | struggling, shrinking, ages, dig                                  |
| 011 | atoms, electrical, rockets, aimed                                 |
| 012 | surrounding, autonomy, unique, secular, medieval                  |
| 013 | precariously, porous, astronomy, bizarre, manifested              |
| 014 | journalist, influential, conflicts, fright                        |
| 015 | tropical, summarized, physician, constitutions                    |
| 016 | lucrative, wool, commodity, kilometers, range                     |
| 017 | precious, nurture, code, factors                                  |
| 018 | skillfully, craftsman, mouth, amount, meaning                     |
| 019 | admissions, timetabling, introduced, tutors, crashed, screen      |
| 020 | distribution, tropical, populations, frequently, snake, persuaded |
| 021 | boredom, strategic, acquire, knowledgeable                        |
| 022 | normal, access, fortunes, networking                              |



- 023 perceptions, acoustics, crude, awareness, regulations, city-dwellers
- 024 plants, coal, releases, ingested, chain, insects
- 025 numerous, superiority, hierarchy, basis, incompatible
- 026 collaborate, descended, brilliantly, comply, aptitude
- 027 atmosphere, partnership, transform, proportion, fungi
- 028 ethnographic, entrepreneurs, advance, eager, feature
- 029 honey-colored, beech, auditorium, curved, adjustable
- 030 mammals, seals, boundaries, plankton, endangered
- 031 notion, implications, eventually, replicate, phenomenal, eradication
- 032 solution, tend, vulnerable, osteoporosis, miserable, vicious
- 033 manufactured, dozens, mergers, takeovers, corporations, exert
- 034 strange, disoriented, jet lag, surroundings, dispiriting, contemporary
- 035 relevance, article, handedness, struck, sheer, investigation, persuaded
- 036 enormous, previous, crushed, challenge, platforms ,extendable
- 037 tradition, incorporated, seaweed, ingredient, improvement, glutamate
- 038 pedestrian, presence, entrance, suspense impression
- 039 globally, Ethnographic, administrators, colleagues, exchanging, spreadsheets
- 040 crumbly, inadequate, breed, terrain, devoid ,pioneer, increasingly
- 041 inconsistency, launched, aimed, involved, industriousness, mock
- 042 1-organic 2-guidelines 3-groceries 4-rigid 5-nutritional
- 043 1- dinosaurs destructive 2-ingredients 3-billiards 4-collide
- 044 1-devastation 2-observations 3-tremors 4-magnitude
- 045 1-revoked 2-accusation 3-assaulted 4-oversight



- 046 1-potentially 2-aluminium 3-fractures 4-flakes
- 047 1-bacteria 2-pandemic 3-biosecurity 4-designed
- 048 1-tools 2-monetize 3-types 4-sensitive 5-wellness
- 049 1-digging 2-writings 3-existence 4-excavation
- 050 1-centuries 2-periods 3-perspective 4-chronological
- 051 1-knowledge 2-investigated 3-abandoned 4-forgery
- 052 1-times 2-reliable 3-banks 4-fertile
- 053 1-encounters 2-monitor 3-patterns 4-marks 5-stress 6-ensure 7-survival 8-dealing
- 054 1-environmental 2-quantities 3-destruction 4-electricity 5-approach
- 055 1-outlines 2-commercial 3-combined 4-medical 5-participate 6-vacation
- 056 1-importing 2-systems 3-survived 4-weapons 5-consume 6-demonstrates
- 057 1-ability 2-experienced 3-opposed 4-development 5-communicate
- 058 1-romantic 2-analyzed 3-recordings 4-concluded 5-contain 6-adopted 7-century
- 059 1-nearby 2-formed 3-massive 4-implying 5-pointed 6-detected 7-measurement 8-despite
- 060 1. responding 2. controlled 3. consistent 4. constant 5. crowded 6. occurred
- 061 1. represent 2. relationship 3. opinions 4. wearing 5. decreased 6. promoted 7. impact
- 062 1. creatures, 2. limits, 3. sessions, 4. equivalent, 5. exercise
- 063 1- disorders 2- treatment 3- muscles 4- receptors 5-substances 6-examined 7-channels
- 064 enhanced, associated, subjects, received, recognized, appreciated





- 065 places, concentrations, presented, surfaces, properties, investigate
- 066 capacity, conversation, internal, realistic, exactly
- 067 estimate, domestic, reviewed, numbers, native, ongoing
- 068 physicians, commercial, journey, habitat, simulated, experienced, exposure
- 069 interior, Curiosity, conference, measuring, proving, complexity
- 070 ancient, discovered, supplies, medication, contained, inspired
- 071 familiar, design, required, number, pedestrian, tradition
- 072 wasting, primary, institutions, perspective, harvested
- 073 efforts, energy, drives, accumulation, resulting, consequences
- 074 behavior, involving, admit, interaction, promote, offered
- 075 chemicals, pollution, concluded, exposure, delivered
- 076 unpleasant, carry, infected, measures, experts, Eliminating, breeding
- 077 numerous, gathered, Assessing, substantially, Internal, physical, decades
- 078 undetectable, camera, engaged, background, caught, ignorance
- 079 huge, anniversary, facility, areas, astronauts, generation, converted, accessible
- 080 drilling, permission, currents, remains, primary, depths
- 081 destruction, pesticides, toxic, storage, submitted, penalties
- 082 satellite, existence, typical, companion, arrangement, comparable, percent, ordinary
- 083 reveal, organizational, connection, multiple, correlation, relative, evident
- 084 inaccurate, analyzed, chemical, medicinal, speculate, detective
- 085 influenced, movements, vitamins, reference, layout, awareness, realizing
- 086 convinced, evidence, witnesses, accuracy, suspects, memories, choosing



- 087 extend, sprayed, picked, breathes, respiration, bacteria, significantly
- 088 radiation, magnetic, physicist, solar, missions, measuring, complex
- 089 understanding, serves, medical, difficulties, stretched, connection, science
- 090 inexpensive, relevant, contributes, contain, biologically, tropical, degrees, safeguard
- 091 noticed, response, tracked, vaccine, previous, coordinate
- 092 allergies, emergency, substance, triggered, activates, similar
- 093 generous, cooperation, participant, invest, concluded, cultural, bringing
- 094 preventable, improvements, association, restrictions, opposition, institute, facilities, changes
- 095 behaviours, temptation, automatic, inconvenient, programming, motivates, options, targeted
- 096 changing, atmosphere, contributing, appears, expected, experience
- 097 ordered, fatigued, recognized, exercise, external
- 098 tropical, century, latitude, migrants, parasite, exposed, disease
- 099 chemistry, diagnosed, interaction, perceptions, devices
- 100 spectrum, particular, dust, journal, confirming
- 101 independence, pledged, strategy, differs, candidates, results
- 102 proven, capital, published, cumulative, congestion, environmentally, achievement
- 103 admit, messages, receptors, appearing, impressive, grilled
- 104 athletes, illnesses, infections, differences, element
- 105 viewpoint, performed, paintings, inspiring, positive, differ, experience
- 106 upgrading, current, privacy, Typically, inconsistent, experiments, memory
- 107 pregnant, dramatically, suffering, beneficial, demonstrate, functioning, signals
- 108 laboratory, exploring, deposits, sequence, landing
- 109 distracted, failing, emergency, incidents, texting, evidence, concentrating



- 110 mention, strategy, bacteria, examined, genetics, antibiotics, interactions, particular, arrangement
- 111 explosions, butterfly, deformed, offspring, exposing, considered, radiation
- 112 exercise, donating, perception, unexpected, volunteering, included, essay
- 113 dinosaurs, mission, designed, deflect, announced, foundation
- 114 consume, September, calories, obese, shape, equivalent
- 115 Calcium, electricity, investigators, stressed, mechanism, therapy
- 116 delivering, necessarily, temperatures, organic, complexity, induce, direction, freeze
- 117 Protein, apart, determines, structure, translation, similar, comparable
- 118 psychological, possessions, ownership, significantly, correlated, perception
- 119 signatures, likelihood, insurance, fabricate, rationalize, chronic, stretching
- 120 healthful, classified, beverages, especially, epidemic
- 121 spectators, suits, performance, athletes, combinations
- 122 fortunately, variety, reproduction, vulnerable, contributed, descendant, resistance
- 123 practicing, collecting, energetic, microphones, phenomenon
- 124 identified, completes, shrinks, timescales, companion, fabric, instrument
- 125 planets, eliminate, evidence, detectable, slightly, findings, migration
- 126 intensity, solutions, degrees, volunteers, chilled, perception, thermal
- 127 distinctive, samples, artificially, technique, material, modifies, preserve
- 128 inclined, progressive, surveyed, religious, minimize
- 129 revolutionary, consumers, expected, tourists, potential
- 130 definitely, scanned, reward, false, varying, sacrificed, probably
- 131 averse, tested, determined, consumption, association, recommendations, campaign
- 132 Botanical, ecosystems, oxygen, availability, uptake, expect





- 133 vessel, diameter, particles, transfer, rabbits, injections, breathe
- 134 hygiene, childhood, exposure, colonize, respond, bonus
- 135 constrictors, artificial, attacked, kept, attention, authors, relaxing
- 136 atmosphere, stimulated, erase, handbook, vaporizes, bill
- 137 psychological, professional, simultaneously, receptionist
- 138 invaluable, goodwill, forces, addresses, announced
- 139 concert, clicks, external, signal, measured, marine
- 140 separate, compared, identical, genetic, frequencies, revealed
- 141 copies, recruited, challenged, insensitive, construct
- 142 telescope, closest, handy, broadcast, astronomy, observatories, volcanoes
- 143 wondered, unprecedented, described, annoying, concrete, beneath
- 144 neighbors, species, environment, communities, habitat, varied
- 145 social, Unsurprisingly, apparently, ignored, communication
- 146 diabetes, fatal, revealed, overweight, program
- 147 abuse, published, harvest
- 148 familiar, journal, features, simultaneously, receive, accurate
- 149 conducted, compared, admissions, concluded, control
- 150 insects, literature, ultimately, supposed, broken