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# Changes on the ACT and SAT

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Subtlety can  
be big

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# Student perspective vs. Ours

A student come out of a test saying, “It was completely different than the other exams I’ve taken!”

Our reaction:



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# We do a little digging...

...and the details are usually vague.

Generalization and recency biases contribute to exaggerated anecdotal feedback.

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# Translations

ACT Student: “The Math was so much harder than usual.”

Reality: The final ten questions threw more curveballs than usual.

SAT Student: “There were so many vocab questions on the Reading!”

Reality: There were two vocabulary questions per passage, and the final one happened to be difficult.

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# But students aren't totally crazy

Some things *have* changed

- Distribution of question types
  - Style of passages
  - Breadth of content
-

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# Changes on the ACT

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# English

- Still overall similar, but with more challenging questions
  - Comma rules
  - Dangling modifiers
  - “Ambiguous” sentences
-



# Tougher Dangling/Misplaced Modifiers

geologic dating. [C] Resistant to chemical change after  
23  
they crystallize, scientists can analyze the gemstones  
to determine the temperature and pressure of the

Jun 2019 B 02

moved a greater distance with each step. Marching far  
9

past their nest on the way home, the researchers  
10  
determined that ants count their steps.

[5]

23. A. NO CHANGE  
B. Because garnets are resistant to  
C. Since they resist  
D. Resisting

9. A. NO CHANGE  
B. So when the ants marched  
C. So as they marched  
D. By marching
10. F. NO CHANGE  
G. passed there  
H. passed their  
J. past there

Dec 2015 72E

# Sentences With Initially Ambiguous Structures

It was commonly held that the Himalayas had formed approximately 55 million years ago when India drifted<sup>17</sup> north on a layer of semimolten rock, collided with Asia.

17. A. NO CHANGE  
B. India, has been drifting  
C. India, drifting  
D. India had drifted

Jun 2019 B 02

Now, I'm not fond of iguanas. [C] They're strange, unpredictable creatures that belong deep in a rain forest, walking on the ground<sup>2</sup> or resting

high in the trees, which are<sup>3</sup> hidden in the canopy.

- H. living underneath the treetops  
J. moving about down low
3. A. NO CHANGE  
B. trees, they are  
C. trees,  
D. trees;

Jun 2017 74C

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# Math

- Probability, arrangements (counting), combinations
  - Statistics
  - “Gotcha” questions
-

# Probability Examples

50. Tom is in Ms. Zhu's class. To choose 4 students from her class of 24 students to answer questions, Ms. Zhu will put 24 cards, each with the name of a different student from her class on it, in a box. Next, Ms. Zhu will randomly draw 4 cards from the box without replacing any of the cards. What is the probability that Tom's card will NOT be drawn?

- F.  $\frac{1}{24}$
- G.  $\frac{1}{6}$
- H.  $\frac{19}{24}$
- J.  $\frac{5}{6}$
- K.  $\frac{23}{24}$

24. The probability that Event A will occur is 0.2. The probability that Event B will occur is 0.6. Given that Events A and B are mutually exclusive, what is the probability that Event A *or* Event B will occur?

- F. 0.12
- G. 0.2
- H. 0.3
- J. 0.4
- K. 0.8

53. A club has 30 members. The positions of president, vice president, and treasurer will be assigned to 3 distinct members. Which of the following expressions gives the maximum number of distinct assignments that can be made?

- A.  $30^3$
- B.  $30(3)$
- C.  $30(29)(28)$
- D.  $30(29)(28)(3)(2)(1)$
- E.  $\frac{30(29)(28)}{3(2)(1)}$

# Probability Examples

20. The application for a license plate states that the license plate number has 3 letters followed by a 3-digit number, for example, AEE123. The letters O and I and the digit 0 cannot be part of the license plate number. Any of the other letters and digits may be used up to 3 times. Which of the following expressions represents how many different license plate numbers are possible?

- F.  $24(23)(22)(9)(8)(7)$
- G.  $24(23)(22)(10)(10)(10)$
- H.  $24(24)(24)(9)(9)(9)$
- J.  $26(25)(24)(10)(9)(8)$
- K.  $26(26)(26)(10)(10)(10)$

54. A fair spinner with 4 equally sized regions and an arrow has regions numbered 1, 2, 3, and 4, respectively, and a second fair spinner with 5 equally sized regions and an arrow has regions numbered 1, 2, 3, 4, and 5, respectively. The arrows are both spun at the same time, and the numbers the 2 arrows land on are multiplied together. What is the probability that this product is an odd number?

- F.  $\frac{1}{2}$
- G.  $\frac{4}{5}$
- H.  $\frac{4}{9}$
- J.  $\frac{5}{9}$
- K.  $\frac{3}{10}$

33. Two fair coins are repeatedly tossed simultaneously. What is the probability that both coins land heads up on the 36th toss?

- A.  $\frac{1}{144}$
- B.  $\frac{1}{108}$
- C.  $\frac{1}{36}$
- D.  $\frac{1}{9}$
- E.  $\frac{1}{4}$

# Probability Examples

56. Each of 100 distinct playing cards is 1 of 5 solid colors and is numbered with 1 integer. There are 20 each of blue, red, yellow, green, and orange cards numbered 1–20. One of the 100 cards will be selected at random. What is the probability that the selected card will be blue OR numbered 17?

- F.  $\frac{5}{100}$
- G.  $\frac{17}{100}$
- H.  $\frac{20}{100}$
- J.  $\frac{24}{100}$
- K.  $\frac{25}{100}$

All December 2018 B05

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

58. Four golfers will be randomly split into 2 groups of 2 for a tournament. If Jill and Ramona are among the 4, what is the probability that they will be paired together?

- F.  $\frac{1}{12}$
- G.  $\frac{1}{8}$
- H.  $\frac{1}{6}$
- J.  $\frac{1}{4}$
- K.  $\frac{1}{3}$

All December 2018 B05

58. Five balls, numbered 1, 2, 3, 4, and 5, are placed in a bin. Two balls are drawn at random without replacement. What is the probability that the sum of the numbers on the balls drawn is 7?

- F.  $\frac{1}{5}$
- G.  $\frac{2}{5}$
- H.  $\frac{4}{5}$
- J.  $\frac{5}{9}$
- K.  $\frac{4}{25}$

June 2018 A11

# Probability Examples

48. The probabilities that each of 2 independent events will occur are given in the table below.

Event	Probability
A	0.20
B	0.40

What is the probability that both Events A and B will occur—that is,  $P(A \text{ and } B)$ ?

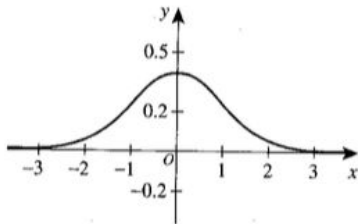
- F. 0.08
- G. 0.20
- H. 0.30
- J. 0.50
- K. 0.60

All June 2019 B02

- And the “people sitting in a circle” probability problem from Dec 2019

# Statistics Examples

57. The standard normal probability distribution function ( $\mu = 0$  and  $\sigma = 1$ ) is graphed in the standard  $(x,y)$  coordinate plane below. Which of the following percentages is closest to the percent of the data points that are within 2 standard deviations of the mean in any normal distribution?



- A. 50%
- B. 68%
- C. 90%
- D. 95%
- E. 99%

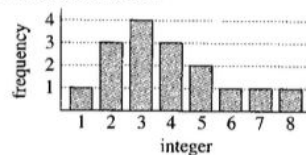
52. The table below gives some statistics based on the points Veronica earned on each of her first 3 math exams.

Statistic	Points
Median	80
Range	11
Maximum	90

If it can be determined, what is the mean number of points Veronica earned on her first 3 math exams?

- F. 79
- G. 80
- H. 83
- J. 85
- K. Cannot be determined from the given information

45. The graph below shows the distribution of a data set consisting of 16 positive integers. Which of the following statements about the mean, median, and mode of the data set is true?



- A. The mode is less than the median, and the median is less than the mean.
- B. The mode is less than the mean, and the mean is equal to the median.
- C. The mode is equal to the mean, and the mean is less than the median.
- D. The mean is less than the median, and the median is less than the mode.
- E. The mean is equal to the median, and the median is equal to the mode.

April 2019 Z15

April 2019 Z15

April 2019 B04



# Statistics Examples

54. At the school carnival, Ann is playing a game involving a stack of 10 index cards. Each card has a single number written on it: 1 card has a 1, 2 cards have a 2, 3 cards have a 3, and 4 cards have a 4. Ann will choose 1 card at random, and she will be awarded the number of points equal to the number written on the card. Let the random variable  $X$  represent the number of points Ann receives on any 1 draw. What is the expected value of  $X$ ?

- F. 0.4
- G. 1
- H. 2.5
- J. 3
- K. 4

December 2017 A10

41. Set A and Set B each consist of 5 distinct numbers. The 2 sets contain identical numbers with the exception of the number with the least value in each set. The number with the least value in Set B is greater than the number with the least value in Set A. The value of which of the following measures *must* be greater for Set B than for Set A?

- A. Mean only
- B. Median only
- C. Mode only
- D. Mean and median only
- E. Mean, median, and mode

June 2017 74C

56. The mean of the set of 5 numbers  $\{42, 3, 11, 27, x\}$  is 24, and the median of the set of 4 numbers  $\{53, 8, 29, y\}$  is 38. If it can be determined, which of the following values is equal to  $x - y$ ?

- F. -38
- G. -10
- H. 10
- J. 38
- K. Cannot be determined from the given information

December 2017 A10

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# “Gotcha” Questions

- Matrices
  - Multiplication (defined?)
- Vectors
- Conic sections

60. Suppose the equations  $(x - 4)^2 + (y - 3)^2 = 4$  and  $\frac{(x - 4)^2}{4} + \frac{(y - 10)^2}{16} = 1$  are graphed in the same standard  $(x, y)$  coordinate plane. How many points of intersection do these graphs share?

- F. 0
- G. 1
- H. 2
- J. 3
- K. 4

51. The vector  $i$  represents 1 mile per hour east, and the vector  $j$  represents 1 mile per hour north. According to her GPS, at a particular instant, Tia is biking  $30^\circ$  west of north at 16 miles per hour. One of the following vectors represents Tia's velocity, in miles per hour, at that instant. Which one?

- A.  $-8i - 8\sqrt{3}j$
- B.  $-8i + 8\sqrt{3}j$
- C.  $8i + 8\sqrt{3}j$
- D.  $8\sqrt{3}i - 8j$
- E.  $8\sqrt{3}i + 8j$

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# Science

- Question depth
    - Fewer straight data regurgitation
    - More multi-step thinking
  - Question types
    - Fewer quantitative
    - More descriptive/wordy
    - More experimental procedure
-

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# April 2019 B04 Science Passage 1

1. Suppose that in a new experiment the researchers repeated Experiment 3 except that they recorded the color of each cricket eaten by a spider during 2 hr. Assuming that the spiders ate crickets for the entire 2 hr, would the total number of crickets eaten by the spiders more likely have been less than or greater than the total number of crickets eaten in Experiment 3 ?
- A. Less, because the amount of time the spiders spent eating crickets would have been one-third as great.  
B. Less, because the amount of time the spiders spent eating crickets would have been one-half as great.  
C. Greater, because the amount of time the spiders spent eating crickets would have been two times as great.  
D. Greater, because the amount of time the spiders spent eating crickets would have been three times as great.
2. Were the results of the experiments consistent with the researchers' prediction?
- F. Yes; in each experiment, on average, the spiders ate the same number of crickets of each color in 1 hr.  
G. Yes; in each experiment, on average, the spiders ate more blue crickets than crickets of any other given color in 1 hr.  
H. No; in each experiment, on average, the spiders ate the same number of crickets of each color in 1 hr.  
J. No; in each experiment, on average, the spiders ate more blue crickets than crickets of any other given color in 1 hr.
3. What was the total number of spiders needed to conduct Experiments 1–3 ?
- A. 100  
B. 200  
C. 300  
D. 400
4. A student wanted to determine if the results for wild-caught spiders tested shortly after they were captured would be the same for different species of prey. Which of the following experiments should the student conduct?
- F. Repeat Experiment 1 with *A. domesticus* as the species of prey.  
G. Repeat Experiment 3 with *A. domesticus* as the species of prey.  
H. Repeat Experiment 1 with a species of prey other than *A. domesticus*.  
J. Repeat Experiment 3 with a species of prey other than *A. domesticus*.
5. Each of the values plotted in Figure 1 was most likely calculated using which of the following expressions?
- A.  $\frac{\text{Total number of crickets that were eaten by laboratory-raised spiders}}{\text{Number of laboratory-raised spiders}}$   
B.  $\frac{\text{Total number of crickets that were eaten by wild-caught spiders}}{\text{Number of wild-caught spiders}}$   
C.  $\frac{\text{Number of crickets of a particular color that were eaten by laboratory-raised spiders}}{\text{Number of laboratory-raised spiders}}$   
D.  $\frac{\text{Number of crickets of a particular color that were eaten by wild-caught spiders}}{\text{Number of wild-caught spiders}}$
6. Which, if either, of the statements given below about the spiders tested in the experiments is(are) consistent with the information in the passage?
- I. All the spiders belonged to the same genus.  
II. All the spiders belonged to the same species.
- F. I only  
G. II only  
H. Both I and II  
J. Neither I nor II
7. Which of the following statements is best supported by the results of Experiments 1 and 2 ? After the wild-caught spiders had been kept in cages for 4 weeks, they ate, on average:
- A. more green crickets in 1 hr than did the laboratory-raised spiders.  
B. fewer green crickets in 1 hr than did the laboratory-raised spiders.  
C. more crickets in 1 hr than they did when they had recently been captured from the wild.  
D. fewer crickets in 1 hr than they did when they had recently been captured from the wild.
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# Changes to the SAT

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# Writing & Language

- Renewal of faulty comparison
    - “...than that of...” / “...than those of...”
    - Teach students to look for *than*, *as*, *(un)like*, *compared*
  - More difficult word choice questions
-

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# Examples

significantly less regular volunteer work in the twelfth grade

**20** than the service hours of those not required to volunteer.

Helms concluded that compulsory volunteering does not

**20**

- A) NO CHANGE
- B) than did students who were
- C) than hours worked by students
- D) compared with students

October 2018

advances allow park designers to address both concerns.

Turning the **11** disgusting problem into an advantage,

Freshkills uses a gas-collection system that converts

**11**

- A) NO CHANGE
- B) noxious
- C) gross
- D) foul

May 2018

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# Math

- Notable decrease in variety of “tough” problems
  - Even more emphasis on linear relationships
  - Emphasis on percent questions
  - Fewer higher degree polynomial/exponential questions than the first few released tests would have had us prepare for
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**What Does it  
Mean?**

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# This affects whom?

Mostly the students looking for the highest scores

But highlighting these for all students can be effective

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# Would anyone like to share?

Have you noticed changes?

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# Thank you!

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