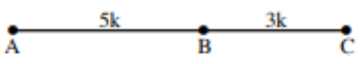


SAT PREP

These problems are very similar to actual SAT test questions. Use a calculator whenever you need one. On multiple choice questions, choose the best answer from the ones provided. When a picture has a diagram, assume the diagram is drawn accurately except when a problem says it is not. These questions address more topics than you have done in class so far.

- If $x + 9$ is an even integer, then which of the following could be the value of x ?
 - 4
 - 2
 - 0
 - 1
 - 2
- If $(m + 5)(11 - 7) = 24$, then $m = ?$
 - 1
 - 4
 - 8
 - 11
 - 17
- The fractions $\frac{3}{d}$, $\frac{4}{d}$, and $\frac{5}{d}$ are in simplest reduced form. Which of the following could be the value of d ?
 - 20
 - 21
 - 22
 - 23
 - 24
- A group of three numbers is called a “ j -triple” for some number j , if $(\frac{3}{4}j, j, \frac{5}{4}j)$. Which of the following is a j -triple?
 - $(0, 4, 5)$
 - $(5\frac{3}{4}, 6, 6\frac{1}{4})$
 - $(6, 2, 10)$
 - $(750, 1000, 1250)$
 - $(575, 600, 625)$
- A ball is thrown straight up. The height of the ball can be modeled with the equation $h = 38t - 16t^2$ where h is the height in feet and t is the number of second since the ball was thrown. How high is the ball two seconds after it is thrown?
 - 12
 - 16
 - 22
 - 32
 - 40
- In the figure at right, \overline{AC} is a line segment with a length of 4 units. What is the value of k ?

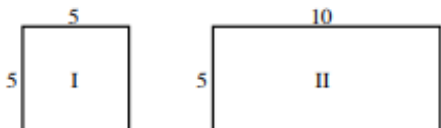
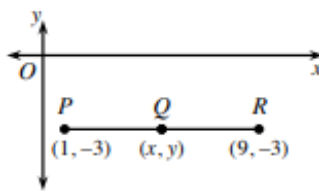
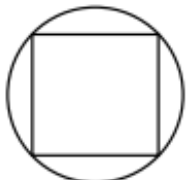
The diagram shows a horizontal line segment with endpoints A and C. Point B is located between A and C. The segment AB is labeled with the expression 5k, and the segment BC is labeled with the expression 3k.
- Let the operation \S be defined as $a \S b$ is the sum of all integers between a and b . For example, $4 \S 10 = 5 + 6 + 7 + 8 + 9 = 35$. What is the value of $(130 \S 170) - (131 \S 169)$?

8. An isosceles triangle has a base of length 15. The length of each the other two equal sides is an integer. What is the shortest possible length of these other two sides?
9. Assume that $\frac{1}{4}$ quart of cranberry concentrate is mixed with $1\frac{3}{4}$ quarts of apple juice to make cranapple juice for four people. How many quarts of cranberry concentrate are needed to make a cranapple drink at the same strength for 15 people?
10. A stack of five cards is labeled with a different integer ranging from 0 to 4. If two cards are selected at random without replacement, what is the probability that the sum will be 2?

Answers

- | | | | | |
|------------------|--------|------|--------------------|--------------------|
| 1. D | 2. A | 3. D | 4. D | 5. A |
| 6. $\frac{1}{2}$ | 7. 300 | 8. 8 | 9. $\frac{15}{16}$ | 10. $\frac{1}{10}$ |

SAT PREP

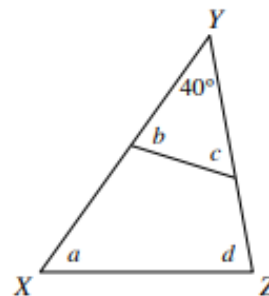
- If m is an integer, which of the following could *not* equal m^3 ?
 a. 27 b. 0 c. 1 d. 16 e. 64
- If n is divided by 7 the remainder is 3. What is the remainder if $3n$ is divided by 7?
 a. 2 b. 3 c. 4 d. 5 e. 6
- What is the slope of the line passing through the point $(-3, -1)$ and the origin?
 a. -3 b. $-\frac{1}{3}$ c. 0 d. $\frac{1}{3}$ e. 3
- If $x = 2y + 3$ and $3x = 7 - 4y$, what does x equal?
 a. -5 b. $-\frac{1}{5}$ c. $\frac{13}{5}$ d. $\frac{2}{3}$ e. 15
- A bag contains a number of marbles of which 35 are blue, 16 are red and the rest are yellow. If the probability of selecting a yellow marble from the bag at random is $\frac{1}{4}$, how many yellow marbles are in the bag?
 a. 4 b. 17 c. 19 d. 41 e. 204
- If $n > 0$ and $16x^2 + kx + 25 = (4x + n)^2$ for all values of x , what does $k - n$ equal?
 a. 0 b. 5 c. 35 d. 40 e. 80
- A rectangular solid has two faces congruent to the figure labeled I at right and four faces congruent to the figure labeled II at right. What is the volume of the solid?

- In the figure at right, $PQ = QR$. What is the x -coordinate of point Q ?

- The time t , in hours, needed to produce u units of a product is given by the formula $t = ku + c$, where k and c are constants. If it takes 430 hours to produce 100 units and 840 hours to produce 200 units, what is the value of c ?
- In the figure at right, a square is inscribed in a circle. If the sides of the square measure $\sqrt{3}$ and the area of the circle is $c\pi$, what is the exact value of c ?


Answers

1. D
2. A
3. D
4. C
5. B
6. C
7. 250
8. 5
9. 20
10. 1.5

SAT PREP

- If $\frac{x+4}{12} = \frac{4}{3}$, then x equals:
a. 3 b. 6 c. 8 d. 10 e. 12
- What is the least of three consecutive integers whose sum is 21?
a. 5 b. 6 c. 7 d. 8 e. 9
- Juanita has stocks, bonds, and t-bills for investments. The number of t-bills she has is one more than the number of stocks, and the number of bonds is three times the number of t-bills. Which of the following could be the total number of investments?
a. 16 b. 17 c. 18 d. 19 e. 20
- Through how many degrees would the minute hand of a clock turn from 5:20 p.m. to 5:35 p.m. the same day?
a. 15° b. 30° c. 45° d. 60° e. 90°
- The length of a rectangle is six times its width. If the perimeter of the rectangle is 56, what is the width of the rectangle?
a. 4 b. 7 c. 8.5 d. 18 e. 24
- If $m > 1$ and $m^n m^5 = m^{15}$, then what does n equal?
- In the triangle at right, what is the value of $a + b + c + d$?
- If x and y are positive integers, $x + y < 12$, and $x > 4$, what is the greatest possible value for $x - y$?
- If $(2x^2 + 5x + 3)(2x + 4) = ax^3 + bx^2 + cx + d$ for all values of x what does c equal?
- Four lines intersect in one point creating eight congruent adjacent angles. What is the measure of one of these angles?

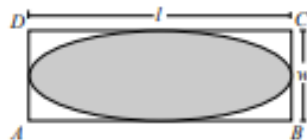


Answers

1. E
2. B
3. D
4. E
5. A
6. 10
7. 280°
8. 9
9. 26
10. 45°

SAT PREP

1. In the rectangle $ABCD$ at right, the area of the shaded region is given by $\frac{\pi lw}{6}$. If the area of the shaded region is 7π , what is the total area, to the nearest whole number, of the unshaded regions of the rectangle $ABCD$?



- a. 14 b. 15 c. 20 d. 22 e. 25
2. Consider the following equations: $a = p^3 - 0.61$
 $b = p^2 - 0.61$
 $c = (p - 0.61)^2$

If p is a negative integer, what is the ordering of a , b , and c from least to greatest?

- a. $c < a < b$ b. $a < c < b$ c. $b < a < c$ d. $a < b < c$ e. $c < b < a$
3. The figure at right represents six offices that will be assigned randomly to six different employees, one employee per office. If Maryanne and Ginger are two of the six employees, what is the probability that they will be assigned an office indicated with an *?



- a. $\frac{1}{6}$ b. $\frac{1}{8}$ c. $\frac{1}{15}$ d. $\frac{2}{15}$ e. $\frac{1}{30}$

4. Raul needed wire pieces 7 inches long. He cut as many as he possibly could from a wire 6 feet long. What is the total length of the wire that is left over?
- a. 2 inches b. 3 inches c. 4 inches d. 5 inches e. 8 inches
5. The n^{th} term of a sequence is defined to be $5n + 2$. The 35^{th} term is how much greater than the 30^{th} term?
- a. 5 b. 18 c. 25 d. 36 e. 40

6. Matilda remembers only the first four digits of a seven-digit phone number. She is certain that none of the last three digits is zero. If she dials the first four digits, then dials the last three digits randomly from the non-zero digits, what is the probability that she will dial the correct number?

7. Let $a\Delta b$ be defined as $\frac{1}{a} + b$ where $a \neq 0$. What is the value of $6\Delta 7$?

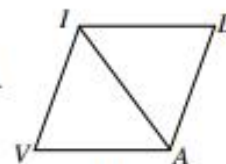
8. If $4xy + 1 = 1$, what is the value of xy ?
9. Eight consecutive integers are arranged in order from smallest to the largest. If the sum of the first four integers is 206, what is the sum of the last four integers?
10. If the points $A(4, 1)$, $B(4, 8)$, and $C(-3, 8)$ form the vertices of a triangle, what is the area of the triangle?

Answers

1. C
2. D
3. C
4. A
5. C
6. $\frac{1}{729}$
7. $\frac{43}{6}$
8. 0
9. 222
10. 24.5

SAT PREP

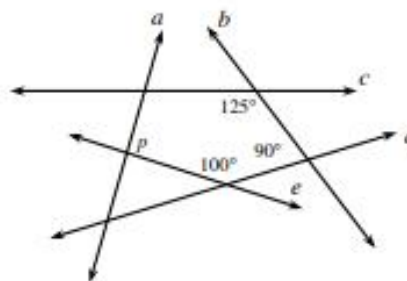
1. In the figure at right, $\triangle DAI$ is isosceles with $DI = 13$ and base 24. If $\triangle VAI \cong \triangle DAI$ what is the area of quadrilateral $DAVI$?



- a. 60 b. 75 c. 120 d. 156 e. 240
2. An experimental jet flies at a speed of 5280 miles per hour. How many miles can this jet cover in 10 seconds?

- a. 1.467 b. 8.802 c. 11.237 d. 14.667 e. 88.022

3. If the angle (not shown) where a and b intersect is three times as large as the angle (not shown) where e and b intersect, what is the value of p ?



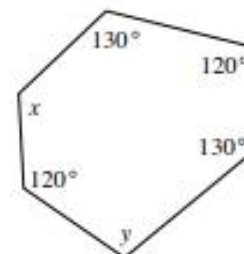
- a. 70° b. 85° c. 140°
 d. 160° e. Cannot be determined
4. Let $\zeta_x \zeta$ be defined for all positive integer values of x as the product of all even factors of $4x$. For example, $\zeta_3 \zeta = 12 \times 6 \times 4 \times 2 = 576$. What is the value of $\zeta_5 \zeta$?

- a. 1600 b. 6400 c. 7200 d. 8000 e. 9600

5. The table at right shows the distribution of topics covered in a particular business text, in chapters and pages per chapter. According to the table, how many total pages are in this text?

Topic	No. of Chapters	No. of pages
Development	3	12
Marketing	4	8
Public Relations	1	11

- a. 31 b. 39 c. 48 d. 65 e. 79
6. In the figure at right, what is the sum of x and y ?
 Note: The figure is not drawn to scale.



7. If $2^q = 8^{q-1}$, then $q = ?$

8. If a is 40 percent of 300, b is 40 percent of a , and c is 25 percent of b , what is $a + b + c$?
9. If $\frac{x}{4} = \frac{11}{20}$, what is the value of x ?
10. If $\frac{3}{5}$ of $\frac{1}{3}$ is added to 5, what is the result?

Answers

1. C
2. D
3. C
4. A
5. E
6. 220°
7. $q = \frac{3}{2}$
8. 180
9. $x = 2.2$
10. $5\frac{1}{5}$

SAT PREP

- If $k = 5t$ and $t = 6$, what is the value of $5k$?
 - 5
 - 6
 - 30
 - 36
 - 150
- Some integers in set U are negative.**

If the statement above is true, which of the following must also be true?

 - All integers in set U are negative.
 - All integers in set U are positive.
 - If an integer is negative, then it is in set U.
 - If an integer is positive, then it is in set U.
 - Not all integers in set U are positive.
- Squaring the product of x and 4 gives the same result as squaring the difference of x and 4. Which of the following equations could be used to calculate all the possible values of x ?
 - $4x^2 = x^2 + 4^2$
 - $(4x^2) = (x - 4)^2$
 - $4^2x = x^2 - 4^2$
 - $(4x)^2 = x^2 + 4^2$
 - $4x^2 = (x + 4)^2$
- To make Tam's tantalizingly tasty toffee cookies, flour, sugar, and salt are mixed by weight in the ratio 7:3:1, respectively. In order to make 11 pounds of the dough for this cookie, what weight of sugar, in pounds, is needed?
 - 7
 - 3
 - 1
 - $\frac{1}{3}$
 - $\frac{1}{7}$
- The local donut shop donated some donuts to Professor Galactic's astronomy class. If each student takes two donuts, there will be 16 donuts left. If four students do not take any donuts and the rest of the students take six donuts, there will be no donuts left. How many donuts were donated to the class?
 - 24
 - 30
 - 36
 - 40
 - 48

6. Tran can mow the lawn in three hours while it takes Collin four hours to mow the same lawn. How long will it take if they mow the lawn together? (They start at opposite sides and work toward each other.)
- a. 12 hours b. 7 hours c. ≈ 1.7 hours d. ≈ 42 minutes e. ≈ 9 minutes
7. On a certain map, 15 miles are represented by one-half inch. On the same map, how many miles are represented by 3.75 inches?
8. How many of the first one hundred positive integers contain the digit 1?
9. The sum of two consecutive integers is greater than three but less than 13. What is one possible integer fitting these conditions?
10. Give three values for k for which the trinomial $3x^2 + kx + 6$ is factorable.

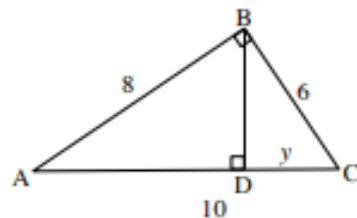
Answers

- | | |
|------------------------------------|-----------------------------|
| 1. E | 2. E |
| 3. B | 4. B |
| 5. C | 6. C |
| 7. 112.5 miles | 8. 20 |
| 9. Any of 2, 3, 4, or 5 will work. | 10. 19, 9, 11, -19, -9, -11 |

SAT PREP

- If $-1 < t < 0$, which of the following statements must be true?
 - $t^3 < t < t^2$
 - $t^2 < t^3 < t$
 - $t^2 < t < t^3$
 - $t < t^3 < t^2$
 - $t < t^2 < t^3$
- Without taking a single break, Mercedes hiked for 10 hours, up a mountain and back down by the same path. While hiking, she averaged 2 miles per hour on the way up and 3 miles per hour on the way down. How many miles was it from the base of the mountain to the top?
 - 4
 - 6
 - 9
 - 12
 - 18
- When a certain rectangle is folded in half, it forms two squares. If the perimeter of one of these squares is 28, what is the perimeter of the original rectangle?
 - 30
 - 42
 - 49
 - 56
 - Cannot be determined from the information given.
- A class of 50 girls and 60 boys sponsored a road rally race. If 60% of the girls and 50% of the boys participated in the road rally, what percent of the class participated in the road rally?
 - 54.5%
 - 55%
 - 57.5%
 - 88%
 - 110%
- The sum of four consecutive integers is s . In terms of s , which of the following is the smallest of these four integers?
 - $\frac{s-6}{4}$
 - $\frac{s-4}{4}$
 - $\frac{s-3}{4}$
 - $\frac{s-2}{4}$
 - $\frac{s}{4}$
- On a certain map, 30 miles is represented by one-half inch. On the same map, how many miles are represented by 2.5 inches?
- How many of the first one hundred positive integers contain the digit 9?
- The sum of n and $n + 1$ is greater than five but less than 15. If n is an integer, what is one possible value of n ?

9. In the figure at right, $\triangle ABC$ is a right triangle and $\frac{y}{6} = \frac{6}{10}$. What is the value of y ?



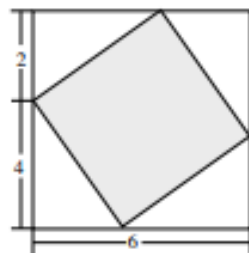
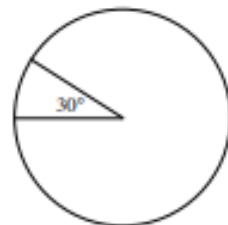
10. For three numbers a , b , and c , the average (arithmetic mean) is twice the median. If $a < b < c$, $a = 0$, and $c = kb$, what is the value of k ?

Answers

1. D
2. D
3. B
4. A
5. A
6. 150 miles
7. 19 integers
8. n can be 3, 4, 5, or 6
9. $y = 3.6$
10. $k = 5$

SAT PREP

- $(5 + 6)^2 = ?$
a. $(2 \cdot 5) + (2 \cdot 6)$ b. $5^2 + 6^2$ c. 11^2 d. 61 e. $5^2 \times 6^2$
- If $6x - 7y = 12$, what is the value of $-2(6x - 7y)$?
a. -24 b. 13 c. -1 d. 420 e. -42
- The average (arithmetic mean) of three numbers is 25. If two numbers are 25 and 30, what is the third number?
a. 35 b. 30 c. 25 d. 20 e. 15
- People from the country of Turpa measure with different units. Each curd is 7 garlongs long and each garlong is made up of 15 bleebles. How many complete curds are there in 510 bleebles?
a. 105 b. 15 c. 5 d. 4 e. 2
- If $x^2 - y^2 = 12$ and $x - y = 2$, what is the value of $x + y$?
- Five consecutive integers sum to 25. What is the largest of these consecutive numbers?
- For all positive integers m and n , we define $m \nearrow n$ to be the whole number remainder when m is divided by n . If $11 \nearrow k = 3$, what does k equal?
- At Pies R Us, each pie is cut into a slice as shown in the figure at right. Each slice of pie has a central angle of 30° . They sell the pies by the slice. If the weight of each pie is uniformly distributed, weighing 108 grams, how much does each slice weigh in grams?
- In the figure at right, what is the area of the shaded region if that region is a square?
- What is the sixth term in the sequence beginning 432, 72, 12, ... ?



Answers

1. C 2. A 3. D 4. D 5. 6
6. 7 7. 8 8. 9 g 9. 20 un^2 10. $\frac{1}{18}$

