

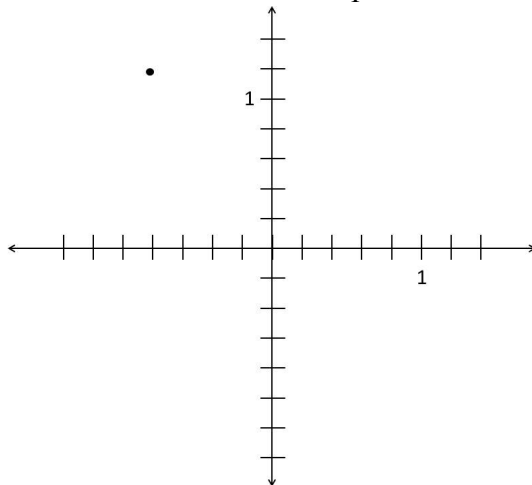
1. In a recent election, candidate A received approximately four votes for every three votes that candidate B received. If candidate B received 2,351 votes, about how many votes did candidate A receive?
 - a. 1,750 votes
 - b. 3,150 votes
 - c. 9,400 votes
 - d. 9,450 votes
 - e. 31,000 votes

2. A house painter works in a subdivision where each of the 23 houses has the same design. If the painter can paint 5 houses in 4 days, how long will it take the painter to paint all of the houses in the subdivision?
 - a. 28.75 days
 - b. 18.4 days
 - c. $\frac{5}{4}$ days
 - d. $\frac{4}{5}$ day
 - e. $\frac{23}{5}$ days

3. One knotted bracelet requires $12\frac{3}{8}$ inches of rope. There are 12 feet of rope on a spool. What is the greatest number of bracelets that can be made from that spool of rope?
 - a. 10 bracelets
 - b. 11 bracelets
 - c. 12 bracelets
 - d. 13 bracelets
 - a. There is not enough rope to make any bracelets.

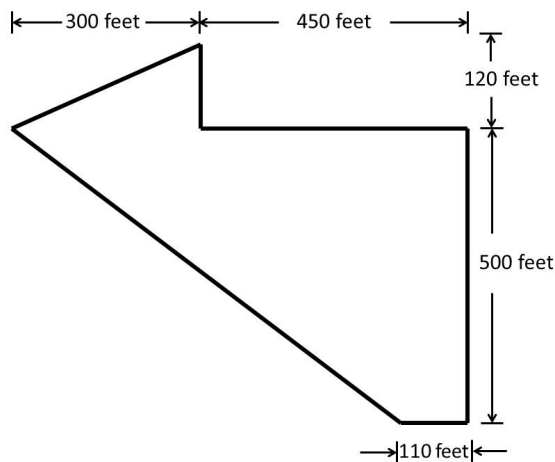
4. How many common factors do 45 and 63 have?
 - a. 1
 - b. 2
 - c. 3
 - d. 9
 - e. infinitely many

5. A winter storm has stranded 5745 passengers of Alpha Airlines at the airport in Capital City. When the airline is able to resume flights, the only aircraft available are ones that seat 237 passengers each. Because the roads are still blocked, no new passengers will arrive, and no one will leave by car. How many flights will be needed to get all of the 5745 passengers out of the airport?
- a. 237 flights
 - b. 26 flights
 - c. 25 flights
 - d. 14 flights
 - e. 24.2 flights
6. The peak of Mount Hermon in Syria is 2,814 meters above sea level. One hundred ninety kilometers to the south, the shore of the Dead Sea is 423 meters below sea level. What is the difference in elevation between the peak of Mount Hermon and the shore of the Dead Sea?
- a. 233 meters
 - b. 2391 meters
 - c. 2624 meters
 - d. 3004 meters
 - e. 3237 meters
7. What are the coordinates of the point indicated on the coordinate axes shown here?



- a. (-0.5, 1.5)
- b. (1.2, -0.8)
- c. (1.5, -0.5)
- d. (-1, 1)
- e. (-0.8, 1.2)

8. Which of the following inequalities is a true statement?
- a. $|-30| > |-50|$
 - b. $-30 > |-50|$
 - c. $|-30| > -50$
 - d. $|-30| > 50$
 - e. $-30 > 50$
9. An identity is an equation that is true for all values of the variable. Which equation below is not an identity?
- a. $15 + 12x = 3(5 + 4x)$
 - b. $15(4x - 2) = 60x - 30$
 - c. $60x - 30 = (12x - 6)5$
 - d. $18 + 3x = 6(3 + 2x)$
 - e. $60x + 30 = 6(10x + 5)$
10. The diagram shows a map of a field. Segments that appear to be perpendicular are. What is the area of the field?

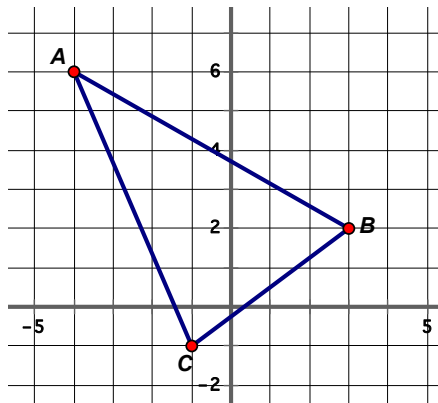


- a. 233,000 square feet
- b. 232,000 square feet
- c. 231,000 square feet
- d. 230,500 square feet
- e. 230,000 square feet

11. What value is associated with Point P shown on the number line below?



- 0.943
 - 0.95
 - 0.951
 - 0.955
 - 0.959
12. Suppose triangle **ABC** is reflected across the Y-axis to create a new triangle **PQR**, in which point **P** is the image of point **A**. What would be the coordinates of point **P**?



- (6, 4)
 - (-6, -4)
 - (6, -4)
 - (4, 6)
 - (-4, 6)
13. A stack of typing paper is stacked up straight forming a right rectangular prism (Prism A). When stack of paper is pushed, it forms an oblique prism (Prism B). Which statement is true?
- The volume of Prism A equals the volume of Prism B, and the surface area of Prism A is greater than the surface area of Prism B.
 - The volume of Prism A is greater than the volume of Prism B, and the surface area of Prism A is greater than the surface area of Prism B.
 - The volume of Prism A equals the volume of Prism B, and the surface area of Prism A is less than the surface area of Prism B.
 - The volume of Prism A is less than the volume of Prism B, but the surface area of Prism A equals the surface area of Prism B.
 - The volume of Prism A is less than the volume of Prism B, and the surface area of Prism A is less than the surface area of Prism B.

14. You have a dollar bill, 1 quarter, 2 nickels, and 2 pennies in your pocket. You want to buy an item that costs less than one dollar including tax. The item is not free. What is the probability you can pay for the item with exact change?

- a. $\frac{1}{11}$
- b. $\frac{17}{99}$
- c. $\frac{5}{33}$
- d. $\frac{23}{99}$
- e. $\frac{4}{9}$

15. To convert cricket chirps to degrees Celsius, count the number of chirps in 25 seconds, divide by 3, then add 4. Let t equal the temperature in degrees Celsius and c equal the number of cricket chirps in 25 seconds. Which equation below represents the described relationship between the cricket chirps and the temperature?

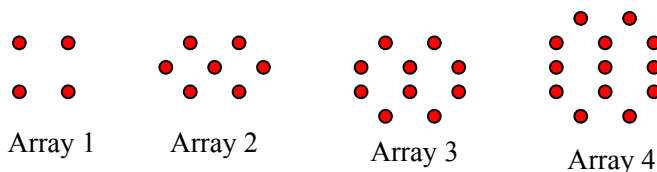
- a. $t = \frac{25c}{3} + 4$
- b. $t = \frac{25c + 4}{3}$
- c. $t = \frac{c + 4}{3}$
- d. $t = \frac{c}{3} + 4$
- e. $t = \frac{c + 4}{3 \cdot 25}$

16. To convert cricket chirps to degrees Celsius, count the number of chirps in 25 seconds, divide by 3, then add 4. If the temperature is 24 degrees Celsius, how many cricket chirps would you expect to hear in 25 seconds?

- a. 72 chirps
- b. 12 chirps
- c. 68 chirps
- d. 9.33 chirps
- e. 60 chirps

17. Jay knows it takes him 9.5 minutes to run a mile. He can walk a mile in 12 minutes. Jay uses a greenway loop for exercise. It takes him 30 minutes of running and 40 minutes of walking to complete the greenway loop. How long is the greenway loop? (Round to the nearest tenth of a mile.)
- 12.8 miles
 - 6.5 miles
 - 10.4 miles
 - 5.6 miles
 - 4.5 miles
18. Which set of five numbers is most likely to have a mean that is 10 more than the median?
- The number of m&m's in each of five bags that all weigh the same amount.
 - The ages in years of a man, his wife, and their 3 children.
 - The heights in inches of the five starting players on a college basketball team.
 - The weights in pounds of five puppies in a litter. (That would be five puppies born at the same time to the same mother.)
 - The lengths in inches of five puppies in a litter.
19. The Y was offering beginner, intermediate, and advanced swimming lessons. A bunch of children signed up for the lessons. One fourth of the children who signed up were boys. Two thirds of the boys wanted the advanced class. Half of the other boys wanted the intermediate class. The rest of the boys wanted the beginner class. Fifty four girls signed up. How many boys signed up for the beginner lessons?
- 14 boys signed up for beginner lessons.
 - 7 boys signed up for beginner lessons.
 - 27 boys signed up for beginner lessons.
 - 5 boys signed up for beginner lessons.
 - 3 boys signed up for beginner lessons.
20. These numbers are examples of doozers: 13, 61, 73, 109, 121, 145
These numbers are not doozers: 14, 29, 30, 71, 80, 95, 130
Which of the following numbers is a doozer?
- 25
 - 38
 - 51
 - 70
 - 100

21. Below is a sequence of arrays. Which of the following equations shows the relationship between the number of dots (d) and the array number (n)?



- a. $d = n + 3$
 b. $d = 3(n - 1) + 4$
 c. $d = 4 + 3n$
 d. $d = 3(4 + n)$
 e. $d = 3n - 1$
22. A circle sector has a radius of **6 centimeters**. The angle measure of the sector is 72° . How long is the curved edge of the sector? (Round to the nearest millimeter.)
- a. 75 millimeters
 b. 38 millimeters
 c. 113.1 millimeters
 d. 226 millimeters
 e. 7.5 millimeters
23. These are the first ten numbers in a Fibonacci sequence: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55. In what position in the sequence will the 20th even number occur?
- a. 20
 b. 45
 c. 60
 d. 65
 e. 90

24. When I calculate 0.5^{50} with my calculator, the display reads as shown here:

0.5^{50}
 8.8817842E -16

What does this number mean?

- a. It means 0.5^{50} is exactly equal to 0.000 000 000 000 000 881 784 2.
 b. It means 0.5^{50} is exactly equal to 0.000 000 000 000 000 088 178 42.
 c. It means 0.5^{50} is exactly equal to 0.000 000 000 881 784 2.
 d. It means 0.5^{50} is exactly equal to 0.000 000 008 817 842.
 e. It means the answer is approximately 0.000 000 000 000 000 881 784 2.

25. Warfarin is a blood-thinning drug. The body eliminates half of the drug every 2.5 days. After a single dose, the amount of warfarin (w) in the body after d days is $w = 10 \cdot 0.5^{(0.4d)}$. After one 10 mg dose how many days will it take for the amount of warfarin to drop to 1.25 milligrams in the person's body?
- 3 days
 - 4.5 days
 - 5 days
 - 7.5 days
 - 10 days
26. A snowman is built from 3 spheres. The radius of the middle sphere is twice the radius of the top sphere. The radius of the bottom sphere is twice the radius of the middle sphere. The top sphere weighs 6 pounds. All spheres have the same density. What is the total weight of the snowman?
- 42 pounds
 - 78 pounds
 - 126 pounds
 - 150 pounds
 - 438 pounds
27. The distance from the sun to Uranus is about 2.88 billion kilometers. The distance from Mercury to the sun is about 2.4% of that distance. How far is Mercury from the sun?
- 6.9 billion kilometers
 - 690 million kilometers
 - 69 million kilometers
 - 6.9 million kilometers
 - 690,000 kilometers
28. Lynn gets \$10 per week for allowance. Lynn is also paid an additional \$3 for each extra chore done. (For instance, for allowance plus 2 extra chores Lynn would have earned \$16 that week.) In eight weeks, Lynn will need \$200 to pay for summer camp. How many extra chores will Lynn need to average each week in order to have earned \$200 in eight weeks?
- 120 chores per week
 - 15 chores per week
 - 40 chores per week
 - 5 chores per week
 - 4 chores per week

29. A city proposed a tax on all the drinks sold in paper or plastic cups because they generated so much waste. They estimated that a 4¢ tax on each cup would generate about \$3 million each year. Approximately how many cups do they think are used each year in their city?

- a. 1.2 million cups
- b. 7.5 million cups
- c. 12 million cups
- d. 75 million cups
- e. 120 million cups

30. In base eight, each place value position has a value that is a power of eight, as shown in the table below:

Base eight numeral	1_{eight}	10_{eight}	100_{eight}	1000_{eight}	$10\ 000_{\text{eight}}$
Value (Written in base ten)	$8^0 = 1$	$8^1 = 8$	$8^2 = 64$	$8^3 = 512$	$8^4 = 4096$

What is the value of 0.5_{eight} written in base ten?

- a. $5 \times 8^{-1} = -40$
- b. $5 \times 10^{-1} = -50$
- c. $5 \times 8^{-1} = 0.5$
- d. $5 \times 8^{-1} = 0.625$
- e. $5 \times 8^{-1} = 0.125$