

1. In 2013, Mia's salary was a certain amount. In 2014, she received a 10% raise from 2013. In 2015, she received a 10% decrease in salary from 2014. How did her 2015 salary compare to her 2013 salary?
 - a) They were the same.
 - b) The 2015 salary was higher.
 - c) The 2015 salary was lower.
 - d) It depends on what her 2013 salary was.
 - e) There is no way to tell no matter what the 2013 salary was.

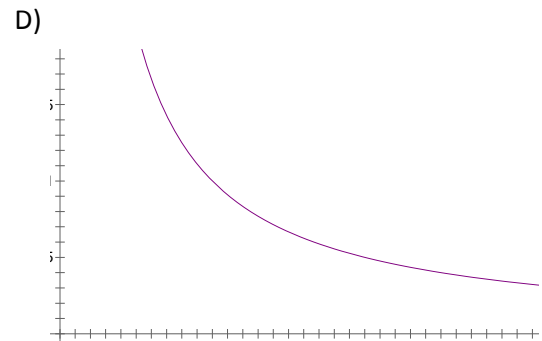
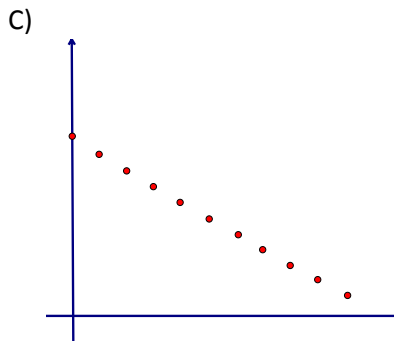
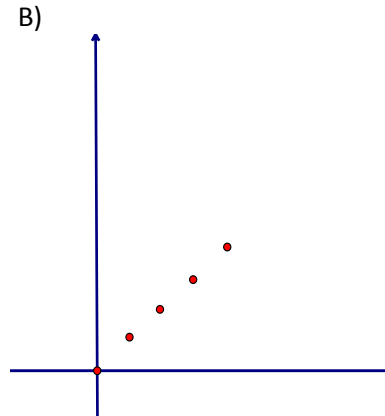
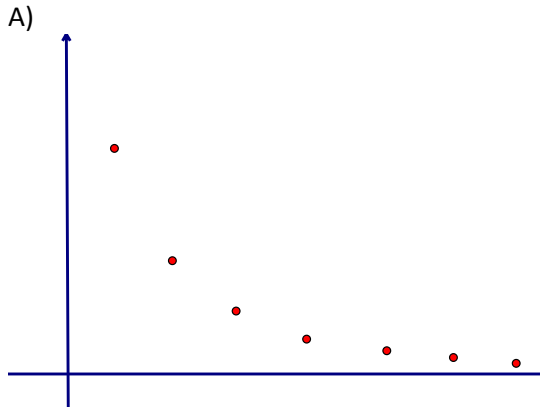
2. A parallelogram has vertices (1, 0), (2, 3), (9, 3), and (8, 0). What is the area of the region inside the parallelogram?
 - a) 10.5 square units
 - b) 18 square units
 - c) 20 square units
 - d) 21 square units
 - e) 42 square units

3. The parking garage charges \$1.25 to park for the first hour and then charges \$0.75 for each hour after the first. How much does it cost to park in the garage for 22 hours?
 - a) \$15.75
 - b) \$16.50
 - c) \$17.00
 - d) \$17.75
 - e) \$44.00

4. There are two buckets on the patio. One can hold a maximum of 36 L, but is only $\frac{5}{6}$ full. If the water from this bucket were poured into the second bucket, the second bucket would be $\frac{4}{9}$ of the way full. What is the maximum that the second bucket could hold?
 - a) $13\frac{1}{3}$ L
 - b) 30 L
 - c) 36 L
 - d) 67.5 L
 - e) 72 L

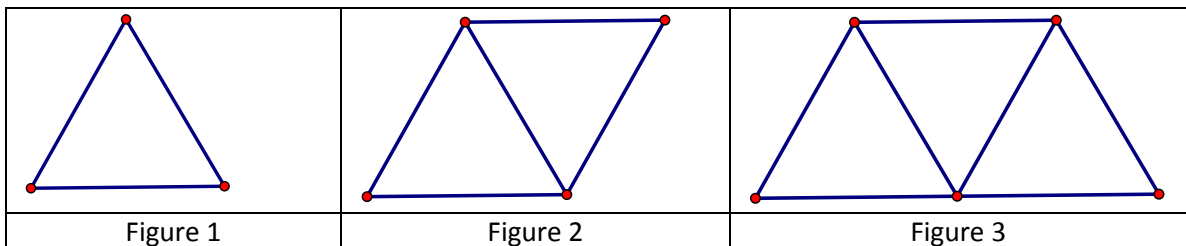
5. In how many ways can 5 toys be arranged in a line on a shelf?
- a) 5
 - b) 10
 - c) 25
 - d) 120
 - e) 3125
6. How many seconds are in 3.6 minutes?
- a) 36
 - b) 168
 - c) 180
 - d) 186
 - e) 216
7. The surface area of a certain cube is 11.76 square inches. What is the volume of that cube?
- a) 1.4 in^3
 - b) 1.96 in^3
 - c) 2.744 in^3
 - d) 37.5 in^3
 - e) 39.6 in^3
8. The mean of 8 different natural numbers is 30. What is the largest possible value for the largest of these 8 numbers? [The set of natural numbers is {1, 2, 3, 4, 5 ... }]
- a) 30
 - b) 59
 - c) 60
 - d) 212
 - e) 233
9. How many tens go into the number 523,491?
- a) 5.23491
 - b) 9
 - c) 9.1
 - d) 52,349
 - e) 52,349.1

10. Which graph best shows the portion of a single pizza one person would get as a function of the number of people sharing the pizza?



E) None of the graphs could possibly be correct

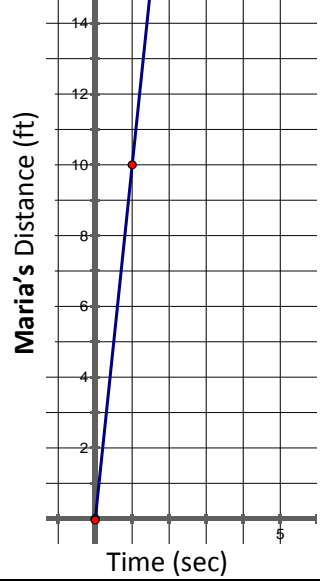
11. In the table below, Figures 1 through 3 are shown. The length of each side of one of the triangles is 5 cm. If the pattern continues, what will be the perimeter of Figure 100? (You may assume all triangles are equilateral and congruent).



- a) 510 cm
- b) 515 cm
- c) 1,005 cm
- d) 1,015 cm
- e) 1,500 cm

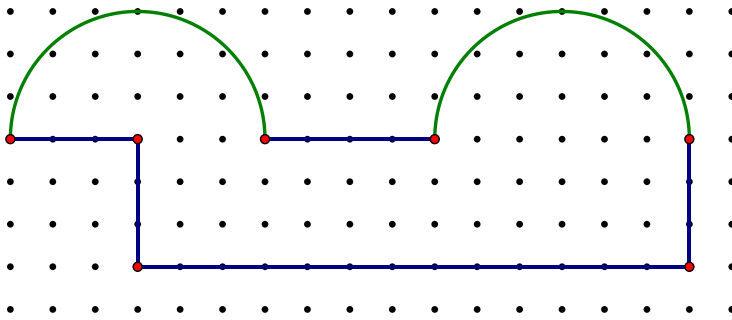
12. In Jaleigh's garden, she planted flowers, herbs, vegetables, and fruits. These plants covered all the area of her garden. She planted herbs in $\frac{2}{7}$ of her garden. She planted flowers in $\frac{2}{5}$ of her garden. She planted vegetables in $\frac{1}{4}$ of her garden, and planted fruits in the rest of the space left. If the entire garden is 280 square feet, how many square feet were covered with fruits?
- a) 9
 - b) 18
 - c) 36
 - d) 42
 - e) 131
13. To swim 400 yards in his rectangular pool, Justin could swim the length of the pool 25 times, or the perimeter of the pool 8 times. What is the area of the pool in square yards?
- a) 9
 - b) 16
 - c) 18
 - d) 144
 - e) 324
14. A mixture of 1500 mL of lemonade is 30% lemon juice, 10% sugar, and 60% water. Jovanni wants the mixture to taste more "lemony." How much lemon juice could be added to the existing mixture to make the mixture 50% lemon juice?
- a) 300 mL
 - b) 450 mL
 - c) 500 mL
 - d) 550 mL
 - e) 600 mL
15. Randy has 5 coins in his pocket. Three are dimes, one is a penny, and the other is a quarter. How many different amounts of money could Randy pull out of his pocket if he pulls out at least 2 coins?
- a) 4
 - b) 12
 - c) 16
 - d) 26
 - e) 120

16. Below is information, using various representations, about the distance and time of four different runners (Jacob, Maria, Demetrius, and Jan) who were in the same race. Which runner travelled at the fastest speed?

	<table border="1"> <thead> <tr> <th>Time (sec)</th> <th><i>Jacob's</i> Distance (ft)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>1</td> <td>12</td> </tr> <tr> <td>2</td> <td>24</td> </tr> <tr> <td>3</td> <td>36</td> </tr> <tr> <td>4</td> <td>48</td> </tr> <tr> <td>5</td> <td>60</td> </tr> <tr> <td>6</td> <td>72</td> </tr> </tbody> </table>	Time (sec)	<i>Jacob's</i> Distance (ft)	0	0	1	12	2	24	3	36	4	48	5	60	6	72	
Time (sec)	<i>Jacob's</i> Distance (ft)																	
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<p><i>Demetrius</i> runs 78 feet in 7 seconds.</p>	<p>The distance (d) in feet which <i>Jan</i> travelled in t seconds is given by the equation $d = 9.8t$</p>																	

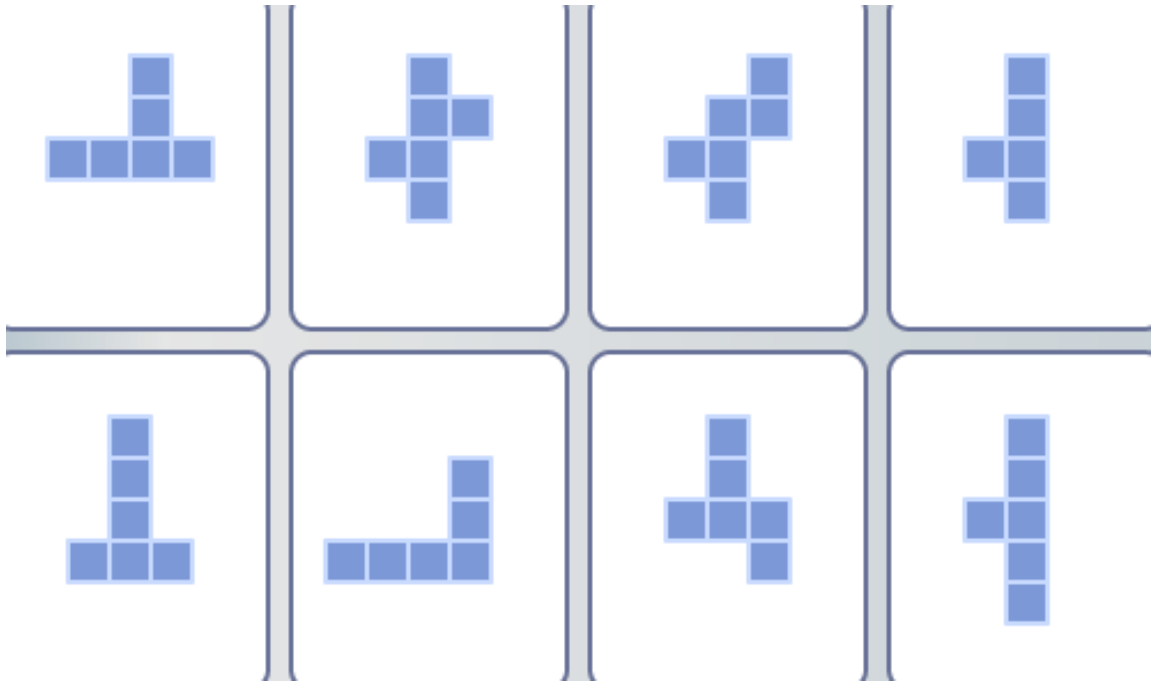
- a) Jacob
 - b) Maria
 - c) Demetrius
 - d) Jan
 - e) It is impossible to tell from the information given.
17. I multiply two integers and their product is 48. Their sum CANNOT be
- a) -16
 - b) 16
 - c) 19
 - d) 36
 - e) 49
18. Which of the following properties does **not** hold true for the set of real numbers?
- a) Commutative property of addition
 - b) Distributive property of multiplication over subtraction
 - c) Associative property of multiplication
 - d) Commutative property of subtraction
 - e) Distributive property of division over addition

19. Determine the perimeter of the figure below. Assume that the distance between two adjacent dots is 1 unit.



- a) $6\pi + 23$ units
- b) $6\pi + 26$ units
- c) $9\pi + 26$ units
- d) $12\pi + 23$ units
- e) $12\pi + 26$ units

20. How many of the following 8 nets would form a cube?



- a) 3
- b) 4
- c) 5
- d) 6
- e) 8

21. Sumen has x cups of flour. Each recipe of cookies uses y cups of flour. Exactly how many recipes of cookies could Sumen make, assuming he has plenty of all the other ingredients needed?

- a) $x + y$
- b) $x - y$
- c) $x \cdot y$
- d) $x \div y$
- e) $y \div x$

22. Of the amounts below, which is the greatest?

- a) $\frac{1}{3}$
- b) $33.\overline{3}\%$
- c) 0.3
- d) $0.\overline{3}\%$
- e) Two of the amounts are equivalent, and those two are the greatest.

23. The first three numbers in an arithmetic sequence are 124, 77, and 30, in that order. What is the 20th number in the sequence?

- a) - 816
- b) -769
- c) 77
- d) 923
- e) 970

24. Which of the following statements is false?

- a) All squares are rectangles.
- b) All rhombi have diagonals that are perpendicular.
- c) All parallelograms have diagonals that bisect each other.
- d) A right triangle may have an angle greater than 90° .
- e) All trapezoids are quadrilaterals.

25. A polygon cannot have ___ sides.

- a) 2
- b) 3
- c) 8
- d) 21
- e) Both A and D are numbers of sides that a polygon cannot have.

26. The table below gives the distances and times of 5 modes of transportation. Which is moving at the slowest average speed?

Bicycle	42 kilometers in 3 hours
Horse	54 miles in 120 minutes
Car	35,200 yards in 1 hour
Boat	7,040 feet in 1 minute
Airplane	3,000 meters in 2 hours

- a) Bicycle
 - b) Horse
 - c) Car
 - d) Boat
 - e) Airplane
27. What is the total number of times the second hand, minute hand, and hour hand go around a clock in a single day?
- a) 1,466
 - b) 3,600
 - c) 43,932
 - d) 86,400
 - e) 87,864
28. Of all the 3-digit numbers whose digits sum to 24, what is the product of the smallest and the largest of these numbers?
- a) 1,695
 - b) 778,743
 - c) 785,844
 - d) 689,913
 - e) 696,204
29. At Hilldale Farms, there are pigs and ducks. You can assume that all the pigs and ducks have all of their legs. Altogether, there are 118 legs between the pigs and ducks, and there are 5 more ducks than pigs. How many pigs are there?
- a) 18
 - b) 20
 - c) 23
 - d) 36
 - e) 46

30. The difference between the radii of two circles is 7 cm and the difference between the areas of the two circles is approximately $1,078\text{cm}^2$. What is the radius of the smaller circle?
- a) 8 cm
 - b) 21 cm
 - c) 24 cm
 - d) 28 cm
 - e) 42 cm