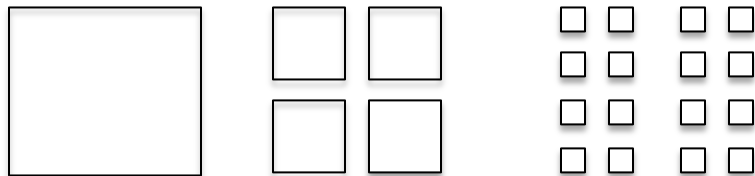
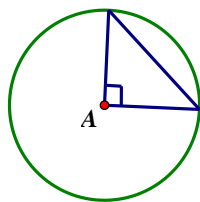


1. The pattern below shows a geometric sequence. Picture 1 has 1 big square. Picture 2 has 4 squares. Picture 3 has 16 squares. What is the first picture that will have 256 squares?



- A. Picture 4  
 B. Picture 5  
 C. Picture 6  
 D. Picture 7  
 E. Picture 8
2. Find the probability that a point chosen randomly inside the circle is within the triangle. Point A is the center of the circle. Round to the nearest hundredth.



- A. 0.16  
 B. 6.29  
 C. 12.57  
 D. 0.32  
 E. 2.00
3. A school's mock trial team has 10 members. A team of 6 students will be chosen to represent the school at a competition. How many different teams are possible?
- A. 24 teams  
 B. 5040 teams  
 C. 720 teams  
 D. 210 teams  
 E. 144 teams
4. George and Aaron work for different car dealerships. George earns a monthly salary of \$2500 plus a 5% commission on his sales. Aaron earns a monthly salary of \$3000 plus a 3% commission on his sales. How much must each sell to earn the same amount in a month?
- A. \$25,000  
 B. \$250  
 C. \$2,500  
 D. \$1,250  
 E. \$1,000

8<sup>th</sup> Grade Test 2014

5. Find all real solutions to  $x^2 = 49$

- A. -7
- B. 7
- C. -7 and 7
- D. 14
- E. 24.5

6. When  $\frac{1}{36}$  is written in decimal form, the decimal

- A. Terminates after 15 decimal places
- B. Terminates after 20 decimal places
- C. Is infinite, but repeats a sequence of digits or digit
- D. Is infinite, and does not repeat a sequence of digits or digit
- E. None of the above

7. When two die are rolled, what is the probability that the sum is even?

- A.  $\frac{3}{4}$
- B.  $\frac{1}{4}$
- C.  $\frac{1}{2}$
- D.  $\frac{1}{3}$
- E.  $\frac{1}{6}$

8. Which group of three side lengths could form a right triangle?

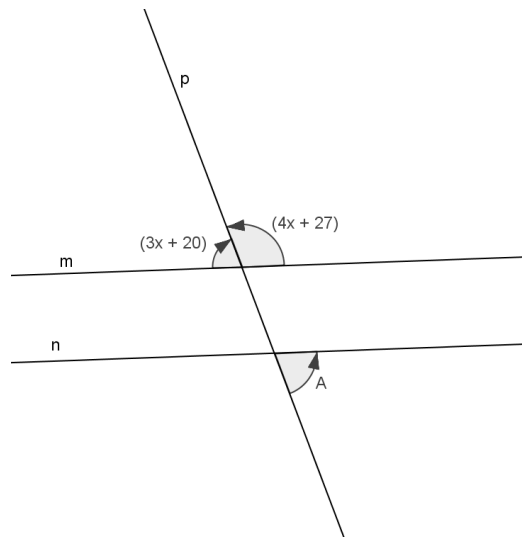
- A.  $2\sqrt{7}$  m, 12 m, 15 m
- B. 12 miles, 14 miles,  $3\sqrt{85}$  miles
- C. 9 inches,  $4\sqrt{10}$  inches, 13 inches
- D. 11 cm, 23 cm,  $2\sqrt{102}$  cm
- E. 13 ft., 16 ft.,  $6\sqrt{17}$  ft.

9. A cylindrical grain silo measuring 40 feet tall and 15 feet in diameter was 80% filled with grain. The silo was damaged in a storm, so the grain was moved to an empty cylindrical grain silo measuring 35 feet tall and 20 feet in diameter. To the nearest tenth of a percent, what percent of the empty grain silo will be filled if all of the grain from the damaged silo is moved to the empty silo?

- A. 39.4%
- B. 68.6%
- C. 91.4%
- D. 51.4%
- E. 64.3%

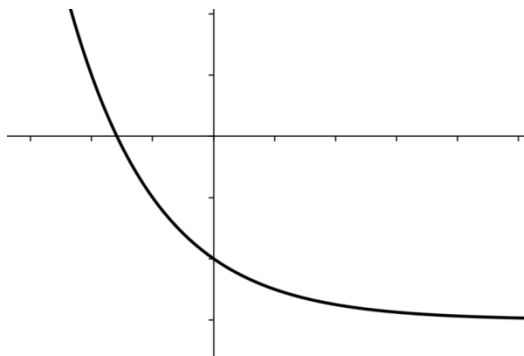
8<sup>th</sup> Grade Test 2014

10. Curtis and Barbara are asked to look up data on the Pacific Ocean and the Arctic Ocean for a class project. Curtis learns that the Pacific Ocean has a volume of  $6.6 \times 10^8 \text{ km}^3$ , while Barbara learns that the Arctic Ocean has a volume of  $1.875 \times 10^{16} \text{ m}^3$ . Which of the following statements is true?
- A. The Arctic Ocean is about  $2.8 \times 10^7$  times as large as the Pacific Ocean.
  - B. The Arctic Ocean is about  $2.8 \times 10^4$  times larger than the Pacific Ocean.
  - C. Just over 35 Arctic Oceans will fit into the Pacific Ocean.
  - D. About  $3.5 \times 10^8$  Arctic Oceans will fit into the Pacific Ocean.
  - E. About  $3.5 \times 10^2$  Arctic Oceans will fit into the Pacific Ocean.
11. Liliandra wants a job selling computers and has two job offers. In Job A, she will receive \$200 per week plus \$50 for every computer she sells during the week. In Job B, she will receive \$425 per week plus \$37.50 for every computer she sells during the week. Which of the following statements is true?
- A. She will make more money in Job A no matter how many computers per week she sells.
  - B. She will make more money in Job B no matter how many computers per week she sells.
  - C. She will make more money in Job A if she sells fewer than 18 computers per week.
  - D. She will make more money in Job A if she sells more than 18 computers per week.
  - E. She will make more money in Job B if she sells at least 18 computers per week.
12. In the picture below, lines  $m$  and  $n$  are parallel. What is the measure of the angle labeled  $A$ , if the measures of the other two labeled angles are  $(3x + 20)^\circ$  and  $(4x + 27)^\circ$ ?



- A.  $19^\circ$
- B.  $57^\circ$
- C.  $77^\circ$
- D.  $103^\circ$
- E.  $76^\circ$

13. When Charlie rides his bike to the store, he travels at 20 mi/hr and it takes him 15 minutes. When Charlie's older brother drives to the store, he travels at 30 mi/hr. How long does it take Charlie's older brother to get to the store?
- A.  $\frac{1}{6}$  of an hour  
B.  $\frac{1}{10}$  of an hour.  
C. 5 minutes  
D. 6 minutes  
E. Not enough information is given to solve the problem.
14. Which of the following functions is most likely to have given graph:



- A.  $f(x) = \frac{1}{2}x - 2$   
B.  $f(x) = 2x - 2$   
C.  $f(x) = x^2 - 2$   
D.  $f(x) = 2^x - 3$   
E.  $f(x) = \left(\frac{1}{2}\right)^x - 3$
15. After winning the lottery, John buys a Ferrari for \$100,000.00. Suppose the car loses 20% of its value every year. How much will the Ferrari be worth 5 years later?
- A. \$0.00  
B. \$32,768.00  
C. \$3277.00  
D. \$99,968.00  
E. \$67,232.00

16. A line passes through (3,4) and (6,8). Through which of the following points does the line not pass?

- A. (0,0)
- B. (1, 4/3)
- C. (3/4, 1)
- D. (12,18)
- E. It passes through each of the above points

17. Which of the following does not have the same value as 3?

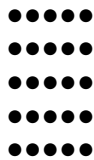
i.  $3^{\frac{1}{3}} + 3^{\frac{1}{3}} + 3^{\frac{1}{3}}$       ii.  $\sqrt[3]{3} \times \sqrt[3]{3} \times \sqrt[3]{3}$       iii.  $\frac{3^{100} + 3^{100}}{2 \times 3^{99}}$

- A. i only
- B. ii only
- C. iii only
- D. i and ii only
- E. ii and iii only

18. A fruit punch being planned for sale in supermarkets is 60% water and 40% fruit juice. Before it goes to mass production, the producers arrange for a large number of individuals to taste test the product. A majority of the taste testers feel that the product is too fruity and needs to have less of a fruit juice taste. Water is added to a 10 ounce sample of the original product in order for the result to be 30% fruit juice and 70% water. Then some of the sample is discarded so that the result will be 8 ounces. How much of the sample is discarded?

- A. 2 ounces
- B.  $3\frac{1}{3}$  ounces
- C.  $4\frac{1}{3}$  ounces
- D. 5 ounces
- E.  $5\frac{1}{3}$  ounces

19. Below are some circles. If we count them using base 10, there are 25 circles. If we count using base 5 what is the count?



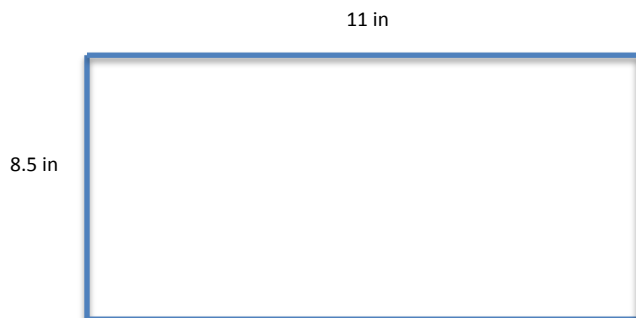
- A. 10
- B. 50
- C. 100
- D. 110
- E. 1000

20. If the pattern below continues, what will be the 1002nd letter?



- A. M
  - B. A
  - C. T
  - D. H
  - E. I
21. Jake caught a fish. To win a contest, his fish had to weigh more than the biggest one so far, which weighed 4 pounds. Jake's fish was hard to weigh. See if you can figure out its total weight. The tail weighed 9 ounces, the head weighed as much as the tail and half the body, and the body weighed as much as the head and tail together. What was the weight of the fish in pounds?
- A. 3.6
  - B. 2.25
  - C. 4.8
  - D. 5.25
  - E. 4.5
22. Turbo the tortoise goes one mile uphill at 2 MPH, two miles on the level ground at 3 MPH, then three miles downhill at 4 MPH. What is her average speed for the whole journey?
- A. 3.00 MPH
  - B. 2.73 MPH
  - C. 2.87 MPH
  - D. 3.13 MPH
  - E. 3.27 MPH
23. Determine the next three numbers that fit the following pattern: 2, 8, 4, 10, 5, 11, 5.5, \_\_\_\_, \_\_\_\_, \_\_\_\_
- A. 16.5, 6, 17.5
  - B. 10.5, 5.25, 15.75
  - C. 12, 6, 13
  - D. 11.5, 5.75, 11.75
  - E. 10, 5, 11
24. The mean of a set of five numbers is known to be 9.4. If four of the numbers in the set are 7, 11, 15, and 19, what is the missing number?
- A. -5
  - B. 0
  - C. 9.4
  - D. 5
  - E. 21

25. If the mean of twenty different positive integers is 20, what would be the greatest possible value of any one of these twenty numbers?
- A. 400  
B. 250  
C. 210  
D. 100  
E. 40
26. A cube is molded out of clay. The volume of the cube is 1 cubic decimeter. The cube is cut in half, and then each half is molded into a new cube. What is the length of one edge of one of the smaller cubes, to the nearest tenth of a decimeter?
- A. 0.8 decimeters  
B. 0.1 decimeters  
C. 0.5 decimeters  
D. 0.4 decimeters  
E. 0.6 decimeters
27. The sheet of paper pictured below is a net for the sides of a right circular cylinder. The cylinder is formed by putting the two sides measuring 11 inches together. What is the volume of the resulting right circular cylinder to the nearest tenth of a cubic inch?



- A. 63.2 cubic inches  
B. 81.8 cubic inches  
C. 93.5 cubic inches  
D. 293.6 cubic inches  
E. 911.6 cubic inches
28. For the system of equations 
$$\begin{cases} ax + 2y = 6 \\ 3x + 4y = 12 \end{cases}$$
 to have no solutions what is true about the value of the coefficient  $a$ ?
- A.  $a$  must equal 1.5  
B.  $a$  must equal 1  
C.  $a$  must equal  $\frac{2}{3}$   
D. There is more than one value of  $a$  that makes the system have no solutions.  
E. There are no values of  $a$  that make the system have no solutions.

29. Which of the following numbers is/are rational?

- A.  $\sqrt{2}$
- B. 2
- C.  $0.\overline{2}$
- D. A, B, and C
- E. B and C

30. Write  $\frac{H^2H^3}{H^{-4}}$  as a single power of  $H$ .

- A.  $H^1$
- B.  $H^2$
- C.  $H^{10}$
- D.  $H^8$
- E.  $H^9$