1. Eight hundredths is what percent of four thousandths?

A. 2000%
B. 500%
C. 200%
D. 50%
E. 20%

2. Compute the unique positive integer that, when squared, is equal to seven more than six times itself.

A. 5
B. 6
C. 7
D. 8
E. 9

3. Andrew has 9 different comic books and he randomly selects 4 of these books. In how many different possible ways can he select the 4 books?

A. 9
B. 72
C. 126
D. 1512
E. 3024

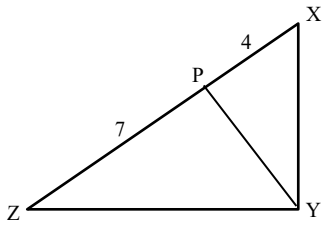
4. Twice my age plus three times my sister's age is 76. Three times my age plus four times my sister's age is 106. How old am I?

A. 14
B. 15
C. 16
D. 17
E. 18

5. Eva has 119 beads. Rachel has 25 beads. Eva gave some beads to Rachel so that Eva now has twice as many beads as Rachel. How many beads did Eva give to Rachel?

A. 7
B. 13
C. 17
D. 23
E. 27

6. In right triangle *XYZ*, *P* is the foot of the altitude from *Y*. If *PX* = 4 and *PZ* = 7, what is the area of the triangle *XYZ*?



A. 77
B. $22\sqrt{7}$
C. $14\sqrt{7}$
D. 14
E. $11\sqrt{7}$

7. Jim and Tim are painting a house. If Jim and Tim do not take any breaks, they will finish painting the house in 30 hours. If, however, Tim stops painting once the house is half-finished, then the house takes 45 hours to finish. Given that Jim and Tim paint at a constant rate, compute how many hours it will take for Tim to paint the entire house if he does it by himself?

A. 90
B. 60
C. 50
D. 45
E. 40

8. Which of the following is equivalent to $\sqrt[3]{x\sqrt{x}}$?

A. $\sqrt{x}$
B. $x^{\frac{1}{3}}$
C. $x^{\frac{2}{3}}$
D. $x^{\frac{3}{2}}$
E. $x^{\frac{1}{6}}$

9. If $9x$ is the reciprocal of $\frac{1}{x^3}$, then which of the following could be the value of x?

A. $\frac{1}{3}$
B. $\frac{1}{9}$
C. $\frac{1}{27}$
D. 3
E. 9

10. In a pattern that starts with 2, each succeeding term is the sum of the digits of the square of the proceeding term. For example, the second term is 4, third term is 1+6=7 and so on. What is the 2018th term in the pattern?

A. 2
B. 4
C. 7
D. 13
E. 16

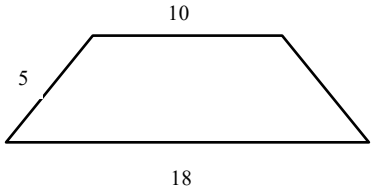
11. Ansley is riding her bike on a straight road. She spots James skating in the same direction 1/3 mile in front of her. After she passes him, she can see him in her rear mirror until he is 1/3 mile behind her. Ansley rides at a constant speed of 15 miles per hour, while James skates at a constant rate of 10 miles per hour. For how many minutes can Ansley see James?

A. 5
B. 6
C. 8
D. 10
E. 12

12. A quadratic equation $px^2 + 4px + q$ has 2 real solutions. What is the average of the solutions?

A. $\frac{q}{p}$
B. $\frac{-2q}{p}$
C. -4
D. -8
E. -2

13. In an isosceles trapezoid, the two parallel sides have side lengths of 10 inches and 18 inches, and the two non-parallel sides have side length of 5 inches. What is the area of the trapezoid in square inches?



A. 90
B. 70
C. 42
D. 36
E. 30

14. Let *X(I)* and *Y(I)* represent the sum and product, respectively, of the digits of the integer *I*. For example, *X*(45) = 9 and *Y*(45) = 20. Suppose *I* is a two-digit number such that *I* = *X(I)* + *Y(I)*. What is the units digit of *I*?

A. 1
B. 3
C. 4
D. 7
E. 9

15. The length of one side of triangle is between 13 and 15. Which of the following could be the perimeter of the triangle?

A. 16
B. 18
C. 23
D. 26
E. 42

16. How many integers between 6,000,000 and 7,000,000 have at least four eights?

A. 1215
B. 1270
C. 1500
D. 6561
E. 10000

17. Suppose that p is the product of three consecutive integers and that p is divisible by 7. Which of the following is not necessarily a divisor of p?

A. 42
B. 28
C. 21
D. 14
E. 6

18. Jacob collected 100 marbles from March 1 through March 5. Each day he collected six more marbles than the previous day. How many marbles did he collect on March 5?

A. 20
B. 24
C. 28
D. 32
E. 36

19. If a right triangle has area of 16 and perimeter of 12, what is the length of its hypotenuse?

A. $\frac{10}{3}$
B. $\frac{20}{3}$
C. $\frac{8}{3}$
D. $\frac{14}{3}$
E. 3

20. If you randomly chose 3 different points from 2018 evenly spaced points on the circumference of a circle, what is the probability that the three points form a right triangle?

A. $\frac{3}{2018}$
B. $\frac{3}{2017}$
C. $\frac{3}{2016}$
D. $\frac{3}{2015}$
E. $\frac{3}{2014}$