

Sample Questions and answers:

1. The market value of a certain machine decreased by 30 percent of its purchase price each year. If the machine was purchased in 1982 for its market value of \$8,000, what was its market value two years later?  
(A) \$8,000  
(B) \$5,600  
(C) \$3,200  
(D) \$2,400  
(E) \$800
2. What percent of 50 is 15?  
(A) 30%  
(B) 35%  
(C) 70%  
(D) 300%  
(E)  $333\frac{1}{3}\%$
3. In a certain diving competition, 5 judges score each dive on a scale from 1 to 10. The point value of the dive is obtained by dropping the highest score and the lowest score and multiplying the sum of the remaining scores by the degree of difficulty. If a dive with a degree of difficulty of 3.2 received scores of 7.5, 8.0, 9.0, 6.0, and 8.5, what was the point value of the dive?  
(A) 68.8  
(B) 73.6  
(C) 75.2  
(D) 76.8  
(E) 81.6
4. If  $2x = 3y = 10$ , then  $12xy =$   
(A) 1,200  
(B) 200  
(C) 120  
(D) 40  
(E) 20
5. If Jack walked 5 miles in 1 hour and 15 minutes, what was his rate of walking in miles per hour?  
(A) 4  
(B) 4.5  
(C) 6  
(D) 6.25  
(E) 15
6. Of a certain high school graduating class, 75 percent of the students continued their formal education, and 80 percent of those who continued their formal education went to four-year colleges. If 300 students in the class went to four-year colleges, how many students were in the graduating class?  
(A) 500  
(B) 375

- (C) 240
- (D) 225
- (E) 180

7. What is the least integer greater than  $-2+0.5$ ?

- (A)  $-2$
- (B)  $-1$
- (C)  $0$
- (D)  $1$
- (E)  $2$

8. Which of the following is equivalent to  $\frac{2x+4}{2x^2+8x+8}$  for all values of  $x$  for which both expressions are defined?

- (A)  $\frac{1}{2x^2+6}$
- (B)  $\frac{1}{9x+2}$
- (C)  $\frac{2}{x+6}$
- (D)  $\frac{1}{x+4}$
- (E)  $\frac{1}{x+2}$

9. A certain business printer can print 40 characters per second, which is 4 times as fast as an average printer. If an average printer can print 5 times as fast as an electric typewriter, how many characters per minute can an electric typewriter print?

- (A) 2
- (B) 32
- (C) 50
- (D) 120
- (E) 600

10. When ticket sales began, Pat was the  $n$ th customer in line for a ticket, and customers purchased their tickets at the rate of  $x$  customers per minute. Of the following, which best approximates the time, in minutes, that Pat had to wait in line from the moment ticket sales began?

- (A)  $(n-1)x$
- (B)  $n+x-1$
- (C)  $\frac{n-1}{x}$
- (D)  $\frac{x}{n-1}$
- (E)  $\frac{n}{x-1}$

11. If 6 gallons of gasoline are added to a tank that is already filled to  $\frac{3}{4}$  of its capacity, the tank is then filled to  $\frac{9}{10}$  of its capacity. How many gallons does the tank hold?

- (A) 20
- (B) 24
- (C) 36
- (D) 40
- (E) 60

12. A bus trip of 450 miles would have taken 1 hour less if the average speed  $S$  for the trip had been greater by 5 miles per hour. What was the average speed  $S$ , in miles per hour, for the trip?

- (A) 10
- (B) 40
- (C) 45
- (D) 50
- (E) 55

13.  $10^3$  is how many times  $(0.01)^3$ ?

- (A)  $10^6$
- (B)  $10^8$
- (C)  $10^9$
- (D)  $10^{12}$
- (E)  $10^{18}$

14. Which of the following groups of numbers could be the lengths of the sides of a right triangle?

I. 1, 4,  $\sqrt{17}$

II. 4, 7,  $\sqrt{11}$

III. 4, 9, 6

- (A) I only
- (B) I and II only
- (C) I and III only
- (D) II and III only
- (E) I, II, and III

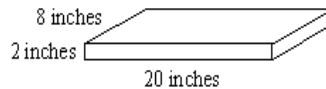
15. When the stock market opened yesterday, the price of a share of stock  $X$  was  $10\frac{1}{2}$ . When the market closed, the price was  $11\frac{1}{4}$ . Of the following, which is closest to the percent increase in the price of stock  $X$ ?

- (A) 0.5%
- (B) 1.0%
- (C) 6.7%
- (D) 7.1%
- (E) 7.5%

16. If  $x$  and  $y$  are integers and  $xy^2$  is a positive odd integer, which of the following must be true?

- I .  $xy$  is positive.
- II .  $xy$  is odd.
- III .  $x + y$  is even.

- (A) I only
- (B) II only
- (C) III only
- (D) I and II
- (E) II and III



17. The figure above shows the dimensions of a rectangular box that is to be completely wrapped with paper. If a single sheet of paper is to be used without patching, then the dimensions of the paper could be

- (A) 17 in by 25 in
- (B) 21 in by 24 in
- (C) 24 in by 12 in
- (D) 24 in by 14 in
- (E) 26 in by 14 in

18. 
$$x - y = 3$$
$$2x = 2y + 6$$

The system of equations above has how many solutions?

- (A) None
- (B) Exactly one
- (C) Exactly two
- (D) Exactly three
- (E) Infinitely many

19. If  $M$  and  $N$  are positive integers that have remainders of 1 and 3, respectively, when divided by 6, which of the following could NOT be a possible value of  $M+N$ ?

- (A) 86
- (B) 52
- (C) 34
- (D) 28
- (E) 10

20. The  $R$  students in a class agree to contribute equally to buy their teacher a birthday present that costs  $y$  dollars. If  $x$  of the students later fail to contribute their share, which of the following represents the additional number of dollars that each of the remaining students must contribute in order to pay for the present?

- (A)  $\frac{y}{R}$

(B)  $\frac{y}{R-x}$

(C)  $\frac{xy}{R-x}$

(D)  $\frac{xy}{R(R-x)}$

(E)  $\frac{y}{R(R-x)}$

Answers:

1. C
2. A
3. D
4. B
5. A
6. A
7. B
8. E
9. D
10. C
11. D
12. C
13. C
14. A
15. D
16. E
17. B
18. E
19. A
20. D

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