

## Practice Set 2

1.  $xy(x + y) =$

- (A)  $x^2 + y^2$
  - (B)  $x^2y + y^2x$
  - (C)  $xy + xy$
  - (D)  $x^3 + y^3$
  - (E)  $x^3y + x^3y$
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2.  $(2 \times 10^4) + (5 \times 10^3) + (6 \times 10^2) + (4 \times 10^1) =$

- (A) 2,564
  - (B) 20,564
  - (C) 25,064
  - (D) 25,604
  - (E) 25,640
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3. If  $2x + 7 = 3x - 5$ , then  $x =$

- (A) 5
  - (B) 7
  - (C) 10
  - (D) 12
  - (E) 14
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4. At a certain photography store it costs Pete \$1.65 for the first print of a photograph and \$0.85 for each additional print. How many prints of a particular photograph can Pete get for \$20?

- (A) 19
  - (B) 20
  - (C) 21
  - (D) 22
  - (E) 23
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5. If  $10x + 4y = 20$ , then  $5x + 2y =$

- (A) 80
  - (B) 40
  - (C) 14
  - (D) 12
  - (E) 10
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6. Two hot dogs and a soda cost \$3.25. If three hot dogs and a soda cost \$4.50, what is the cost of two sodas?
- (A) \$0.75  
(B) \$1.25  
(C) \$1.50  
(D) \$2.50  
(E) \$3.00
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7. If  $4a = 3b$  and  $6b = 8c$ , what is the value of  $a$  when  $c = 6$ ?
- (A) 6  
(B) 8  
(C) 12  
(D) 18  
(E) 24
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8. Jan types at an average rate of 12 pages per hour. At that rate, how long will it take Jan to type 100 pages?
- (A) 8 hours and 3 minutes  
(B) 8 hours and 15 minutes  
(C) 8 hours and 20 minutes  
(D) 8 hours and 30 minutes  
(E) 8 hours and  $33\frac{1}{3}$  minutes
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9. If  $a$  is 5 more than  $b$ , and the product of  $a$  and  $b$  is 36, then  $a =$
- (A) 4  
(B) 6  
(C) 7  
(D) 8  
(E) 9
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10. The average of 20, 70, and  $x$  is 40. If the average of 20, 70,  $x$ , and  $y$  is 50, then  $y =$
- (A) 100  
(B) 80  
(C) 70  
(D) 60  
(E) 30
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11. If an archer shoots an arrow straight up at a certain speed, its height  $h$ , in meters, after  $t$  seconds is given by the formula  $h = 50t - 12t^2$ . How many meters high will the arrow be one second after it is released?
- (A) 12  
(B) 19  
(C) 38  
(D) 48  
(E) 50
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12. John divides his candies between Kurt and Larry such that Larry receives 14 more than Kurt. If John started with 30 candies, how many did Kurt receive?
- (A) 4  
(B) 8  
(C) 14  
(D) 22  
(E) 26
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13. If  $\frac{\sqrt{n}}{3}$  is an even integer, which of the following could be the value of  $n$ ?
- (A) 27  
(B) 48  
(C) 81  
(D) 121  
(E) 144
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14. While training for a race, Alan ran 16 miles per day for 3 weeks, then increased his distance to 18.2 miles for the final week. On average, how many miles per day did Alan run over the 4 week period?
- (A) 18.10  
(B) 17.10  
(C) 17.00  
(D) 16.55  
(E) 16.45
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15. If  $3x + y = 14$ , and  $x$  and  $y$  are positive integers, each of the following could be the value of  $x + y$  EXCEPT
- (A) 12  
(B) 10  
(C) 8  
(D) 6  
(E) 4
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16. If  $x > 1$  and  $\frac{a}{b} = 1 - \frac{1}{x}$ , then  $\frac{a}{b} =$

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

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17. If  $x > 1$  and  $\frac{a}{b} = 1 - \frac{1}{x}$ , then  $\frac{a}{b} =$

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

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18. If  $a^2 - a = 72$ , and  $b$  and  $n$  are integers such that  $b^n = a$ , which of the following cannot be a value for  $b$ ?

- (A)  $-8$
- (B)  $-2$
- (C)  $2$
- (D)  $3$
- (E)  $9$

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19. A number is increased by two-thirds of itself then divided in half. If the resultant number is 15, what was the original number?

- (A) 45
- (B) 30
- (C) 18
- (D) 12
- (E) 10

20. If the numerical values of  $(m + n)^2$  and  $(m - n)^2$  are equal, then which of the following must be true?

- I.  $m + n = 0$
- II.  $m - n = 0$
- III.  $mn = 0$

- (A) I only
  - (B) II only
  - (C) III only
  - (D) I and II only
  - (E) I, II, and III
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21. At a certain sale, the price of items is \$4.00 for the first 10, and \$0.20 for each additional item. What is the cost of  $x$  items if  $x > 10$ ?

- (A)  $0.6x + 6$
  - (B)  $0.4x + 4$
  - (C)  $0.2x + 6$
  - (D)  $0.2x + 4$
  - (E)  $0.2x + 2$
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22. Danielle drives from her home to the store at an average speed of 40 miles per hour. She returns home along the same route at an average speed of 60 miles per hour. What is her average speed, in miles per hour, for her entire trip?

- (A) 45
  - (B) 48
  - (C) 50
  - (D) 52
  - (E) 55
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23. A 1-mile long train passes through a 5-mile long tunnel at 40 mph. How long does it take the entire train to pass through the tunnel in hours?

- (A) 0.100
  - (B) 0.125
  - (C) 0.140
  - (D) 0.150
  - (E) 0.175
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24. A motorist travels 90 miles at a rate of 20 miles per hour. If he returns the same distance at a rate of 40 miles per hour, what is his average speed for the entire trip, in miles per hour?

(A) 20

(B)  $\frac{65}{3}$

(C)  $\frac{80}{3}$

(D) 30

(E)  $\frac{130}{3}$

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25. A car travels at an average speed of 60 mph between stops. If the car stops  $s$  times for  $t$  minutes each time, how long, in hours, does it take the car to travel  $r$  miles in terms of  $r$ ,  $s$ , and  $t$ ?

(A)  $60r + st$

(B)  $60r + \frac{s}{t}$

(C)  $\frac{r + s}{60t}$

(D)  $\frac{r + st}{60}$

(E)  $\frac{60r}{st}$

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