Practice Set 2

1. If x is even, all of the following will be even except

   (A) $x + x$
   (B) $(x - 1) + (x - 1)$
   (C) x^2
   (D) $x(x - 1)$
   (E) $(x - 1)(x - 1)$

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2. If a pen costs 10 cents, how many pens can be purchased for x cents?

   (A) $10x$
   (B) 10
   (C) $\frac{x}{10}$
   (D) $\frac{10}{x}$
   (E) x^2

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3. The average of $2x + 4$ and $4x - 2$ is

   (A) $6x + 6$
   (B) $6x + 2$
   (C) $3x + 3$
   (D) $3x + 1$
   (E) $3x - 1$

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4. For all x and y, $(x+1)(y+1) - x - y =$

   (A) $xy - x - y + 1$
   (B) $xy + 1$
   (C) $-x - y + 1$
   (D) $x^2 + y^2 - 1$
   (E) 1

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5. If $y \neq z$, then $\frac{xy - zx}{z - y} =$

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

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6. If p and q are odd, and r is even, which of the following must be even?

(A) $(r-1)p^2$
(B) $(r+1)q^2$
(C) r^2pq
(D) r^2p-1
(E) pq

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7. For how many integer values of x will $\frac{7}{x}$ be greater than $\frac{1}{4}$ and less than $\frac{1}{3}$?

(A) 6
(B) 7
(C) 12
(D) 28
(E) Infinitely many

8.

N	P
2	7
4	13
6	19
8	25

Which of the following equations describes the relationship of each pair of numbers (N, P) in the table above?

(A) $P = N + 5$
(B) $P = 2N + 3$
(C) $P = 2N + 5$
(D) $P = 3N + 1$
(E) $P = 3N - 1$

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9. For all $x \neq 0$, $\frac{x^2 + x^2 + x^2}{x^2} =$

(A) 3
(B) $3x$
(C) x^2
(D) x^3
(E) x^4

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10. The average (arithmetic mean) of two numbers is $3n - 4$. If one of the numbers is n, then the other number is

(A) $2n - 4$
(B) $3n - 4$
(C) $5n - 8$
(D) $5n + 8$
(E) $6n - 8$

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11. If Jim and Bill have less than 15 dollars between them, and Bill has 4 dollars, which of the following could be the number of dollars that Jim has?

I. 10
II. 11
III. 15

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

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12. Which of the following values of s would yield the smallest value for $4 + \frac{1}{s}$?

(A) $\frac{1}{4}$
(B) $\frac{1}{2}$
(C) 1
(D) 2
(E) 4

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13. Liza took $5n$ photographs on a certain trip. If she gives n photographs to each of her 3 friends, how many photographs will she have left?

(A) $2n$
(B) $3n$
(C) $4n - 3$
(D) $4n$
(E) $4n + 3$

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14. If $a < b < c < 0$, which of the following expressions is the greatest?

(A) $\frac{a}{b}$
(B) $\frac{b}{c}$
(C) $\frac{c}{a}$
(D) $\frac{a}{c}$
(E) It cannot be determined from the information given.

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15. If $a < b$ and $b < c$, which of the following must be true?

(A) $b + c < 2a$
(B) $a + b < c$
(C) $a - b < b - c$
(D) $a + b < 2c$
(E) $a + c < 2b$

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16. Rob has $(x + 4)$ pennies, Steve has $(x + 9)$ pennies, and Tom has $(x + 5)$ pennies. The average of all the boys' pennies is

(A) $3x + 18$
(B) $3x + 6$
(C) $x + 18$
(D) $x + 6$
(E) $x + 4$

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17. If x oranges cost the same as y peaches and peaches cost 39 cents each, how many dollars does each orange cost?

(A) $\frac{39x}{100y}$
(B) $\frac{39y}{100x}$
(C) $\frac{3900}{xy}$
(D) $\frac{39y}{x}$
(E) $\frac{39x}{y}$

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18. If $y \neq 1$ and $x = \dfrac{1}{y+1}$ then, in terms of x, y =

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

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19. If a is 50 percent of b, what percent of b is $50a$?

(A) 0.04 %
(B) 4 %
(C) 25 %
(D) 250 %
(E) 2500 %

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20. $3^x + 3^x + 3^x$ =

(A) 3^{x+1}
(B) 3^{x+2}
(C) 3^{3x}
(D) 9^x
(E) 9^{3x}

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21. If snow falls at the rate of x centimeters per minute, how many hours would it take y centimeters to fall?

(A) $\dfrac{x}{60y}$
(B) $\dfrac{y}{60x}$
(C) $\dfrac{60x}{y}$
(D) $\dfrac{60y}{x}$
(E) $60xy$

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22. If $d = \frac{c-b}{a-b}$, then $b =$

(A) $\frac{c-d}{a-d}$

(B) $\frac{c+d}{a+d}$

(C) $\frac{ca-d}{ca+d}$

(D) $\frac{c-ad}{1-d}$

(E) $\frac{c+ad}{d-1}$

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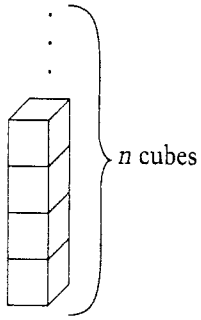
23. Sixty cookies were to be equally distributed to x campers. When 8 campers did not want the cookies, the other campers each received 2 more cookies. Which of the following equations could be used to find the number of campers x?

(A) $x^2 - 8x - 240 = 0$
(B) $x^2 - 8x + 240 = 0$
(C) $x^2 + 8x - 240 = 0$
(D) $x^2 + 8x + 240 = 0$
(E) $x^2 - 4x - 120 = 0$

24.



In the figure above, there is a total of n cubes, each with an edge of 1 inch, stacked directly on top of each other. If $n > 1$, what is the total surface area, in square inches, of the resulting solid, in terms of n?

(A) $2n$
(B) $2n^2 + 2$
(C) $4n + 2$
(D) $4n^2$
(E) $5n$

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25. John buys R pounds of cheese to feed N people at a party. If $N + P$ people come to the party, how many more pounds of cheese must John buy in order to feed everyone at the original rate?

(A) $\frac{NP}{R}$

(B) $\frac{N}{RP}$

(C) $\frac{N+P}{R}$

(D) $\frac{P}{NR}$

(E) $\frac{PR}{N}$