

**PRACTICE SET 2: ELEMENTARY ALGEBRA**

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1. A Celsius temperature  $C$  can be approximated by halving the difference of 32 and the Fahrenheit temperature  $F$ . Which of the following expresses this approximation method?

(Note: The symbol  $\approx$  means "is approximately equal to.")

A.  $C \approx 2(F - 32)$

B.  $C \approx 2F - 32$

C.  $C \approx \frac{1}{2}(F - 32)$

D.  $C \approx \frac{1}{2}F - 32$

E.  $C \approx (F - 32)^{\frac{1}{2}}$

2. If  $x = -5$ , what is the value of  $\frac{x^2 - 9}{x + 3}$ ?

F.  $-8$

G.  $-6$

H.  $5$

J.  $6\frac{2}{3}$

K.  $7$

3. For all  $x$  and  $y$ ,  $(3x + y)(x^2 - y) = ?$

A.  $3x^2 - y^2$

B.  $3x^3 - y^2$

C.  $3x^3 + xy - y^2$

D.  $3x^3 - 3xy - x^2y^2$

E.  $3x^3 + x^2y - 3xy - y^2$

4. In the formula  $A = P(1 + rt)$ ,  $A$  is the principal plus simple interest,  $P$  is the principal,  $r$  is the interest rate expressed as a decimal number, and  $t$  is time in years. Which of the following solves this formula for  $t$ ?

F.  $t = \frac{A+P}{Pr}$

G.  $t = \frac{A-P}{P+r}$

H.  $t = \frac{A-P}{P-r}$

J.  $t = \frac{A}{r}$

K.  $t = \frac{A-P}{Pr}$

5. For all  $x$ ,  $8 - 7(x - 4) = ?$

A.  $-7x + 36$

B.  $-7x + 20$

C.  $-7x - 28$

D.  $6x - 20$

E.  $6x - 28$

6. When  $x = \frac{1}{3}$ , what is the value of  $\frac{9x-2}{x}$ ?

F.  $-30$

G.  $-3$

H.  $-\frac{1}{3}$

J.  $1$

K.  $3$

7. What value of  $x$  will satisfy the equation  $0.2(2x + 1,470) = x$ ?

A.  $2,940$

B.  $2,130$

C.  $1,470$

D.  $560$

E.  $490$

8.  $\frac{4z}{7} + \frac{4r}{3}$  is equivalent to:

F.  $\frac{16rz}{21}$

G.  $\frac{28r+12z}{10}$

H.  $\frac{12z+4r}{3}$

J.  $\frac{12z+28r}{7}$

K.  $\frac{12z+28r}{21}$

9. Sagan, Alex, and Lindsay were eating a round birthday cake. If Sagan ate 3 slices, Alex ate 5 slices, Lindsay ate 1 slice, and 1 more than one-third of the slices remain, into how many slices was the original cake cut?

- A. 12
- B. 13
- C. 14
- D. 15
- E. 16

10. If  $\frac{5}{6}x - 4 > -11$ , what is the set of all possible values of  $x$ ?

F.  $x > \frac{6}{5}$

G.  $x < -\frac{66}{5}$

H.  $x < -\frac{7}{6}$

J.  $x > \frac{24}{5}$

K.  $x > -\frac{42}{5}$

11. The length  $a$  of the ship *Amazon Queen* is 30 feet more than four-fifths the length  $w$  of the *Arctic Wolf*. Which of the following expresses the relationship between  $a$  and  $w$ ?
- A.  $a = \frac{4}{5}w - 30$   
B.  $w = \frac{4}{5}a + 30$   
C.  $w = \frac{4}{5}w - 30$   
D.  $a = \frac{4}{5}w + 30$   
E.  $a + 30 = \frac{4}{5}w + 30$
12. For all  $a$  and  $b$ ,  $(2a + 4b)(2a - 4b) = ?$
- F.  $4(a^2 + 4ab - 4b^2)$   
G.  $2a^2 + 4ab + b^2$   
H.  $2(a^2 + b^2)$   
J.  $4(a^2 - 4b^2)$   
K.  $2(a^2 + 4ab - b^2)$
13. For  $-16 \leq x - 8 < 24$ , what are the possible values of  $x$ ?
- A.  $-8 \leq x < 16$   
B.  $-24 \leq x < 16$   
C.  $-8 \leq x < 32$   
D.  $-16 < x \leq 24$   
E.  $-8 \geq x > 32$
14. Which of the following is the factorization of the binomial  $x^2 - 4^2$ ?
- F.  $x(x + 2x + 2)$   
G.  $(x - 4)^2$   
H.  $(x + 4)(x + 2)$   
J.  $(x - 4)(x + 4)$   
K.  $(x + 4)^2$
15. A bus drove for 6 hours at a speed of  $x$  miles per hour (mph) and for 8 more hours at 60 mph. If the average speed for the entire trip was 58 mph, which of the following equations could be used to find  $x$ ?
- A.  $x + 60 = 58(2)$   
B.  $x + 60(8) = 58(14)$   
C.  $6x - 60(8) = 58(14)$   
D.  $6x + 60(8) = 58(2)$   
E.  $6x + 60(8) = 58(14)$