

1. Simplify:  $\frac{(4 - 2(-3)) - (-5)^2}{2^2 - (-1)^2}$
- A)  $-5$                       B)  $-\frac{31}{3}$                       C)  $-9$                       D)  $7$                       E)  $\frac{23}{5}$
2. Simplify:  $\left[\frac{5}{8} \div \left(-\frac{2}{3}\right)\right] 32 + (95 - (-17))$
- A)  $109$                       B)  $76$                       C)  $82$                       D)  $97$                       E)  $48$
3.  $||-12 - 4(-2)| - 3^2| + 1$
- A)  $-8$                       B)  $12$                       C)  $6$                       D) undefined                      E)  $37$
4. Compute the value of  $b^2 - 4ac$  if  $a = -2$ ,  $b = -3$ , and  $c = 5$ .
- A)  $49$                       B)  $31$                       C)  $-23$                       D)  $-31$                       E)  $-49$
5. If  $x$  represents a number, "the sum of five times a number and 4" can be expressed as:
- A)  $5(x + 4)$                       B)  $5x + 4$                       C)  $5 + x + 4$                       D)  $4x + 5$                       E)  $4(x + 5)$
6. Simplify the expression  $2(x - 3) - 5(x - 1) - (x - 1)$
- A)  $-4x - 10$                       B)  $-4x - 2$                       C)  $-4x - 8$                       D)  $-4x - 5$                       E)  $-4x$
7. Expand  $(2x - 3)(x + 5)$
- A)  $2x^2 - 15$                       B)  $2x^2 + 7x - 15$                       C)  $2x^2 - 7x - 15$                       D)  $9x - 15$                       E)  $-x - 15$
8. A 40 foot pipe has been cut into three parts. If the longest part is one foot shorter than 3 times the shortest part, and the middle-sized part is one foot shorter than twice the shortest part, how long is the middle-sized part?
- A)  $7\text{ ft}$                       B)  $13\text{ ft}$                       C)  $15\text{ ft}$                       D)  $20\text{ ft}$                       E)  $23\text{ ft}$
9. Graph the line  $y = \frac{1}{2}x - 2$ . Use your graph to determine the point where the line crosses the  $x$ -axis. This point is called the  $x$ -intercept.
- A)  $(0, 4)$                       B)  $(-2, 0)$                       C)  $(0, -2)$                       D)  $(4, 0)$                       E)  $(4, -2)$
10. Graph the line  $y = \frac{4}{3}x - 4$ . Use your graph to determine the point where the line crosses the  $y$ -axis. This point is called the  $y$ -intercept.
- A)  $(0, 3)$                       B)  $(-4, 0)$                       C)  $(0, -4)$                       D)  $(3, 0)$                       E)  $(3, -4)$

11. Simplify  $(3x)^2(x^4)$
- A)  $3x^6$                       B)  $9x^6$                       C)  $3x^8$                       D)  $9x^8$                       E)  $9x^{16}$
12. Simplify  $\frac{5x^5y^4z}{30x^3yz^2}$
- A)  $\frac{6x^2y^3}{z}$                       B)  $\frac{x^2y^3z}{6}$                       C)  $\frac{x^2y^3}{25z}$                       D)  $6x^2y^3z$                       E)  $\frac{x^2y^3}{6z}$
13. Multiply each of the following expressions. Which one results in:  $t^2 - 4t - 32$ ?
- A)  $(t - 4)(t - 8)$       B)  $(t - 16)(t + 2)$       C)  $(t + 4)(t - 8)$       D)  $t(t - 4)$                       E)  $(t - 4)(t + 8)$
14. Expand  $(2x - 5)^2$
- A)  $4x^2 - 25$                       B)  $2x^2 - 20x + 25$       C)  $4x^2 - 10x - 25$       D)  $4x^2 - 20x + 25$       E)  $4x^2 + 25$
15. Solve the inequality for  $x$ :  $5 - 3x \leq 14$
- A)  $x \geq 3$                       B)  $x \leq 3$                       C)  $x \geq -3$                       D)  $x \leq -3$                       E)  $x = 3$
16. Solve the inequality for  $x$ :  $9 - 2x > 24 - 7x$
- A)  $x > 3$                       B)  $x > -3$                       C)  $x < 3$                       D)  $x < -3$                       E)  $x = 3$
17. Simplify:  $\frac{3}{4} \cdot \frac{4}{5} \cdot \frac{5}{6} \cdot \frac{6}{7} \cdot \frac{7}{8} \cdot \frac{8}{9}$
- A) 1                                  B)  $\frac{1}{2}$                                   C)  $\frac{1}{3}$                                   D)  $\frac{4}{9}$                                   E)  $\frac{2}{3}$
18. Simplify:  $\frac{2}{3} - \frac{1}{2} \left( -\frac{2}{5} \right)$
- A)  $\frac{7}{15}$                                   B)  $\frac{13}{15}$                                   C)  $-\frac{7}{30}$                                   D)  $\frac{17}{30}$                                   E)  $\frac{16}{15}$
19. Solve the formula  $L = a + (n - 1)d$  for  $d$ .
- A)  $d = L - a - (n - 1)$                       C)  $d = \frac{L - a}{n - 1}$                       E)  $d = \frac{a - L}{n - 1}$
- B)  $d = \frac{L}{a + n - 1}$                       D)  $d = \frac{L}{a} - (n - 1)$
20. The perimeter of a rectangle is 60 cm. If the length is 3 cm less than twice the width, find the width and length of the rectangle. Then compute the area of the rectangle.
- A)  $630 \text{ cm}^2$                       B)  $819 \text{ cm}^2$                       C)  $420 \text{ cm}^2$                       D)  $209 \text{ cm}^2$                       E)  $300 \text{ cm}^2$