

Algebra Practice Placement Test

1. If $x = -2$ and $y = 4$, what is the value of the expression $2x^3 - 5xy$?
2. Multiply. $(2x - 5)(x + 7)$
3. A student earned scores of 84, 73, and 79 on three of four exams. What must the student score on the fourth exam to have an average (arithmetic mean) of exactly 82?
4. Write the equation of the line that contains the points $(3, 2)$ and $(-4, 5)$?
5. Simplify. $\frac{x^2 - 7x - 18}{x^2 - 4}$
6. A rope 42 feet long is cut into three pieces. The second piece is three feet longer than the first, and the last piece is twice as long as the second. If x represents the length of the first piece, then what equation determines the length of the first piece?
7. What is the product of $(x^2 + 6)(x - 3)$?
8. If n is an integer, then write an expression that represents an even integer?
9. If $x = -4$, what is the value of the expression $3x^2 + 4x - 9$?
10. Completely factor. $2x^2 - 7x - 30$
11. Multiply. $(2a + 3b)(c - 4d)$
12. If $a = 3$ and $b = -5$, what is the value of the expression $2(a - b)(a + 2b)$?
13. What is the equation of this graph?

14. What is the solution to the equation $3(x - 7) - 4(x + 6) = 21$
15. Bryson gets paid a weekly salary of D dollars a week plus a commission of 6% on his total sales S . Write an expression best describing Bryson's weekly pay?
16. What is the product of $(B^3 - 3B^2 + 4B - 2)(B + 3)$?
17. What is the distance from point A to point B?
18. Simplify and write the expression without negative exponents. $\frac{a^{-4}b^5}{a^6b^{-2}}$
19. Simplify. $(a^4b^5cd^2)^3$
20. Solve. $2(3x + 6) - 3(x - 3) = 4(2x + 1) + 7$

**Algebra Practice Placement Test
(Answers)**

1. $2(-2)^3 - 5(-2)(4)$
 $= 2(-8) - 5(-2)(4)$
 $= -16 + 10(4)$
 $= -16 + 40$
 $= 24$

2. $(2x - 5)(x + 7)$
 $= 2x^2 + 14x - 5x - 35$
 $= 2x^2 + 9x - 35$

3. A student earned scores of 84, 73, and 79 on three of four exams. What must the student

score on the fourth exam to have an average (arithmetic mean) of exactly 82?

$$\frac{85 + 73 + 79 + x}{4} = 82$$
$$4\left(\frac{85 + 73 + 79 + x}{4}\right) = (82)4$$
$$85 + 73 + 79 + x = 328$$
$$237 + x = 328$$
$$x = 91$$

Therefore, the student must score 91 on the fourth exam.

4. Write the equation of the line that contains the points (3,2) and (-4,5)?

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 2}{-4 - 3} = -\frac{3}{7}$$
$$y = mx + b$$
$$(2) = -\frac{3}{7}(3) + b$$
$$2 = -\frac{9}{7} + b$$
$$2 + \frac{9}{7} = b$$
$$\frac{23}{7} = b$$

Therefore, the equation of the line is $y = -\frac{3}{7}x + \frac{23}{7}$

5. $\frac{x^2 - 7x - 18}{x^2 - 4} = \frac{(x - 9)(x + 2)}{(x - 2)(x + 2)} = \frac{x - 9}{x - 2}$

6. A rope 42 feet long is cut into three pieces. The second piece is three feet longer than the

first, and the last piece is twice as long as the second. If x represents the length of the first

piece, then what equation determines the length of the first piece?

$$(x) + (x + 3) + 2(x + 3) = 42$$

7. $(x^2 + 6)(x - 3) = x^3 - 3x^2 + 6x - 18$

8. If n is an integer, then write an expression that represents an even integer?

$$2n$$

9. $3(-4)^2 + 4(-4) - 9$
 $= 3(16) + 4(-4) - 9$
 $= 48 - 16 - 9$
 $= 23$

10. $2x^2 - 7x - 30$
 $= (2x + 5)(x - 6)$

11. $(2a + 3b)(c - 4d)$
 $= 2ac - 8ad + 3bc - 12bd$

12. $2(a - b)(a + 2b)$
 $= 2[(3) - (-5)][(3) + 2(-5)]$
 $= 2(3 + 5)(3 - 10)$
 $= 2(8)(-7)$
 $= -112$

13. What is the equation of this graph?

y-intercept = $(0, 4)$

Two points on the line are $(1, 1)$ and $(2, -2)$

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-2 - 1}{2 - 1} = -3$$

Therefore, the equation is $y = -3x + 4$

14. $3(x - 7) - 4(x + 6) = 21$
 $3x - 21 - 4x - 24 = 21$
 $-x - 45 = 21$
 $-x = 66$
 $x = -66$

15. Bryson gets paid a weekly salary of D dollars a week plus a commission of 6% on his total

sales S . Write an expression best describing Bryson's weekly pay?

$$D + 0.06S$$

16. $(B^3 - 3B^2 + 4B - 2)(B + 3)$
 $= B^4 + 3B^3 - 3B^3 - 9B^2 + 4B^2 + 12B - 2B - 6$
 $= B^4 - 5B^2 + 10B - 6$

17. What is the distance from point A to point B?

Point A (-2, 3) Point B(4, -3)

Distance Formula

$$\begin{aligned}d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\&= \sqrt{(4 - (-2))^2 + (-3 - 3)^2} \\&= \sqrt{(6)^2 + (-6)^2} \\&= \sqrt{36 + 36} = \sqrt{72} = 6\sqrt{2}\end{aligned}$$

$$\begin{aligned}18. \quad &\frac{a^{-4}b^5}{a^6b^{-2}} \\&= \frac{b^{5-(-2)}}{a^{6-(-4)}} \\&= \frac{a^7}{b^{10}}\end{aligned}$$

$$\begin{aligned}19. \quad &(a^4b^5cd^2)^3 \\&= a^{4 \cdot 3}b^{5 \cdot 3}c^{1 \cdot 3}d^{2 \cdot 3} \\&= a^{12}b^{15}c^3d^6\end{aligned}$$

$$\begin{aligned}20. \quad &2(3x + 6) - 3(x - 3) = 4(2x + 1) + 7 \\&6x + 12 - 3x + 9 = 8x + 4 + 7 \\&3x + 21 = 8x + 11 \\&21 = 5x + 11 \\&10 = 5x \\&2 = x\end{aligned}$$