

**Bari Science Lab**  
**Algebra Diagnostic #1**

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**1. Simplify.**

$$4\sqrt{3} + 2\sqrt{300}$$

- A.  $204\sqrt{3}$
  - B.  $24\sqrt{3}$
  - C.  $6\sqrt{3}$
  - D.  $12 + 6\sqrt{10}$
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**2. Simplify completely.**

$$\sqrt{7}(\sqrt{42} + 5\sqrt{7})$$

- A.  $49\sqrt{6}$
  - B.  $7\sqrt{6} + 5\sqrt{7}$
  - C.  $7\sqrt{6} + 35$
  - D.  $6\sqrt{7} + 35$
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**3. Simplify completely.**

$$\frac{\sqrt{2}\sqrt{98}}{\sqrt{7}}$$

- A.  $7\sqrt{2}$
  - B.  $2\sqrt{14}$
  - C.  $4\sqrt{7}$
  - D.  $2\sqrt{7}$
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**4. Simplify.**

$$(3x^7y^{-3})(-12x^8y^{16})$$

- A.  $\frac{-36}{xy^{19}}$
  - B.  $-9x^{15}y^{13}$
  - C.  $-36x^{15}y^{13}$
  - D.  $\frac{-36x^{56}}{y^{48}}$
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**5. Simplify.**

$$(2x^2y^6z^4)^2$$

- A.  $4x^4y^8z^6$
- B.  $2x^2y^6z^4$
- C.  $4x^4y^{12}z^8$
- D.  $2x^4y^{12}z^8$

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**6. Simplify Completely.**

$$(17x^2 - 10x + 19) - (-7x^2 - 3x + 3)$$

- A.  $24x^2 + 13x + 16$
- B.  $24x^2 - 7x + 22$
- C.  $10x^2 - 7x + 16$
- D.  $24x^2 - 7x + 16$

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**7. Multiply.**

$$(3x - 6)(x^2 - 3x + 3)$$

- A.  $3x^3 - 15x^2 + 9x - 18$
- B.  $3x^3 - 15x^2 + 27x - 18$
- C.  $3x^3 - 3x^2 + 9x - 18$
- D.  $3x^3 - 3x^2 + 27x - 18$

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**8. Simplify completely.**

$$\frac{-6x^{18} + 9x^9 - 15x^5}{-3x^5}$$

- A.  $2x^{13} + 3x^4 - 5$
- B.  $-6x^{18} + 9x^9$
- C.  $2x^{13} - 3x^4$
- D.  $2x^{13} - 3x^4 + 5$

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**9. Factor completely.**

$$45x^2y - 20y^3$$

- A.  $5y(3x - 2y)^2$
- B.  $5(9x^2y - 4y^3)$
- C.  $5y(3x - 2y)(3x + 2y)$
- D.  $5y(9x^2 - 4y^2)$

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**10. Which of the following is a factor of the polynomial?**

$$2x^2 + x - 10$$

- A.  $x + 2$
- B.  $2x + 5$
- C.  $2x - 5$
- D.  $x + 5$

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**11. Which of the following is a factor of the polynomial?**

$$15ax + 18ay + 40bx + 48by$$

- A.  $3a + 8b$
- B.  $3x + 8y$
- C.  $3a - 8b$
- D.  $5x - 6y$

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**12. If  $k$  represents a number, which equation is a correct translation of the sentence?**

41 subtracted from 7 times a number is 65.

- A.  $41 - 7k = 65$
- B.  $7(41 - k) = 65$
- C.  $7k - 41 = 65$
- D.  $7(k - 41) = 65$

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13. Solve for  $x$ .

$$\frac{x+4}{9} = \frac{x+8}{15}$$

- A.  $x = -3$
- B.  $x = 5$
- C.  $x = 4$
- D.  $x = 2$

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14. Solve for  $x$ .

$$8 - 2x = 2(-5 - 4x)$$

- A.  $x = -5$
- B.  $x = 1$
- C.  $x = -3$
- D.  $x = -1$

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15. What is the value of the  $y$ -coordinate of the solution to the system of equations.

$$\begin{aligned} -x - y &= -6 \\ -2x + y &= -3 \end{aligned}$$

- A.  $y = 3$
- B.  $y = -1$
- C.  $y = 1$
- D.  $y = 5$

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16. Solve for  $y$ .

$$z = 5x + 8y$$

- A.  $y = \frac{z - 5x}{8}$
- B.  $y = \frac{z + 5x}{8}$
- C.  $y = 8(z - 5x)$
- D.  $y = \frac{z}{8} - 5x$

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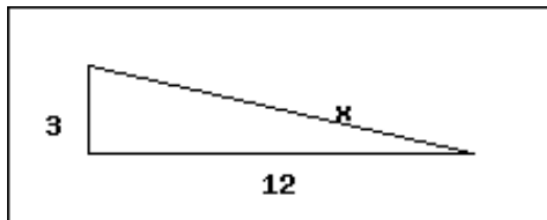
17. Find all solutions to the equation.

$$x^2 - 2x - 15 = 0$$

- A.  $x = 4$  or  $x = -5$
- B. Only  $x = -3$
- C.  $x = 5$  or  $x = -3$
- D. Only  $x = 4$

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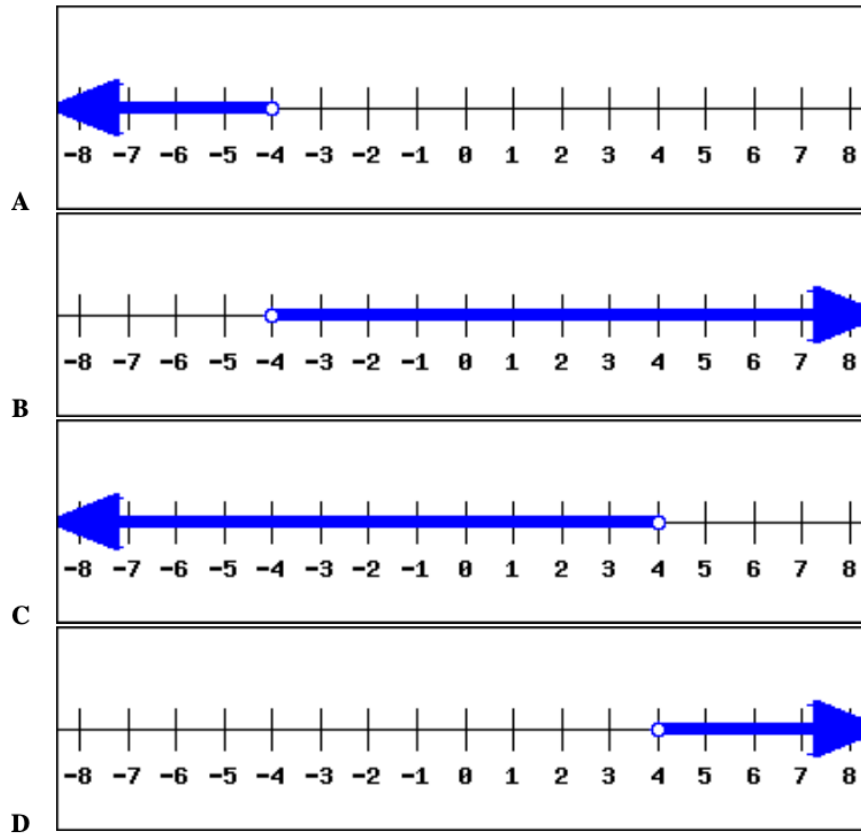
18. What is the value of  $x$  in the right triangle?



- A.  $17\sqrt{3}$
- B. 15
- C.  $3\sqrt{17}$
- D.  $\sqrt{15}$

19. Find the graph of the solution to the inequality.

$$-x + 7 > 5x - 17$$

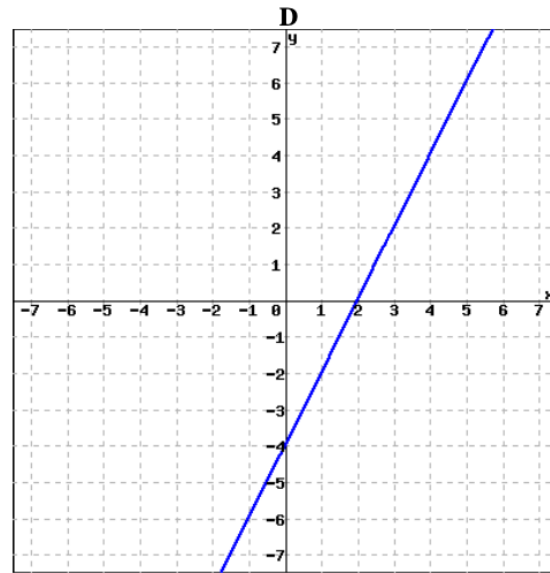
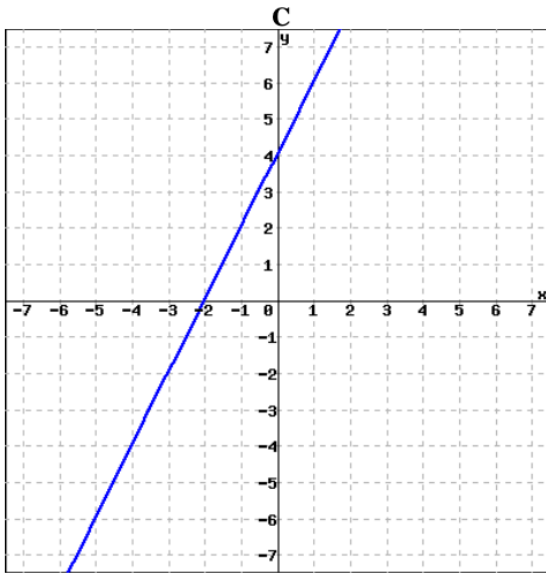
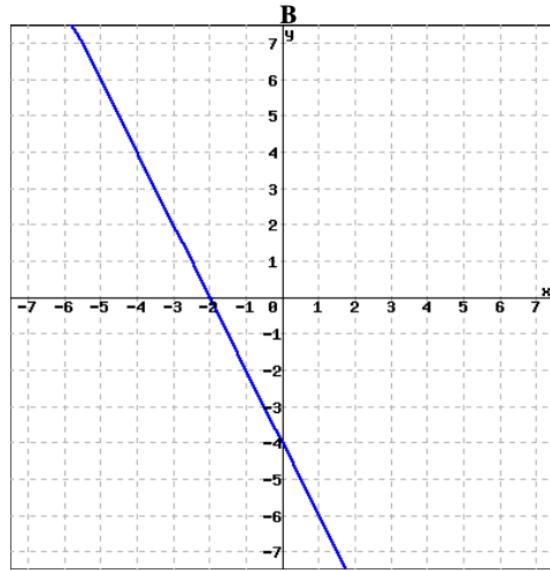
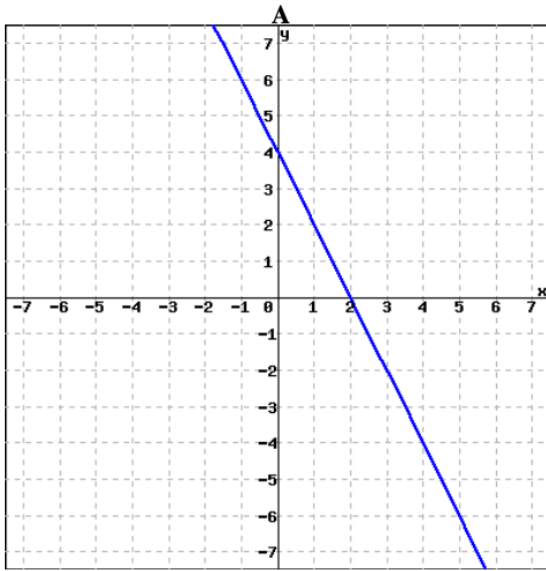


20. Given  $a = 2$  and  $b = -2$ , evaluate the expression given below.

$$a^2b + ba + b^2$$

- A. 16
- B. -16
- C. 8
- D. -8

21. Which of the following is the graph of the equation  $-4x + 2y = 8$ ?



22. Find the equation of the line passing through the points  $(-6, 10)$  and  $(5, -12)$ . Write the equation in slope-intercept form.

- A.  $y = 2x + 22$
- B.  $y = -2x + 10$
- C.  $y = -2x - 2$
- D.  $y = 2x - 22$

23. Find the equation of the vertical line passing through the point  $(-9, 10)$ .

- A.  $x = -9$
- B.  $y = -\frac{10}{9}x + 10$
- C.  $y = x + 10$
- D.  $y = 10$

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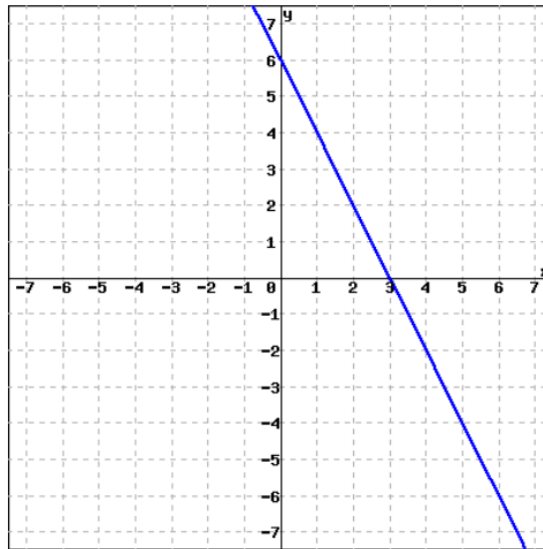
24. Find the slope and y-intercept for the graph of the equation.

$$-9x - 2y = -8$$

- A. Slope =  $-\frac{2}{9}$  and y-intercept =  $(0, -8)$
- B. Slope =  $\frac{2}{9}$  and y-intercept =  $(0, -8)$
- C. Slope =  $-\frac{9}{2}$  and y-intercept =  $(0, 4)$
- D. Slope =  $\frac{9}{2}$  and y-intercept =  $(0, 4)$

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25. What is the slope of the line graphed below?



- A.  $-\frac{1}{2}$
- B.  $-2$
- C.  $\frac{1}{2}$
- D.  $2$