MTH 05 Sample Final Exam, Version 1

---

1. Simplify.

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

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

---

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.** $6\sqrt{7}+35$

---

3. Simplify completely.

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

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

---

4. Simplify.

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

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

---

5. Simplify.

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

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

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.** $24x^2 - 7x + 16$

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.** $3x^3 - 3x^2 + 27x - 18$

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.** $2x^{13} - 3x^4 + 5$

9. Factor completely.

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

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

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. $x + 5$

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. $5x - 6y$

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.** $7(k - 41) = 65$

13. Solve for x.

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

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

14. Solve for x.

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

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

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.** $y = 5$

16. Solve for y.

$$z = 5x + 8y$$

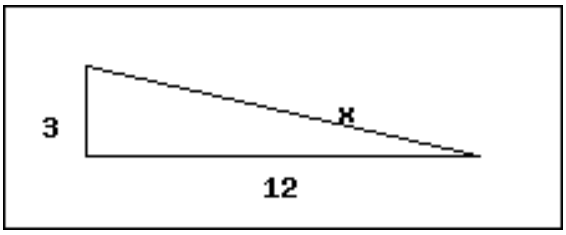
- **A.** $y = \dfrac{z - 5x}{8}$
- **B.** $y = \dfrac{z + 5x}{8}$
- **C.** $y = 8(z - 5x)$
- **D.** $y = \dfrac{z}{8} - 5x$

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* $x = 4$

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

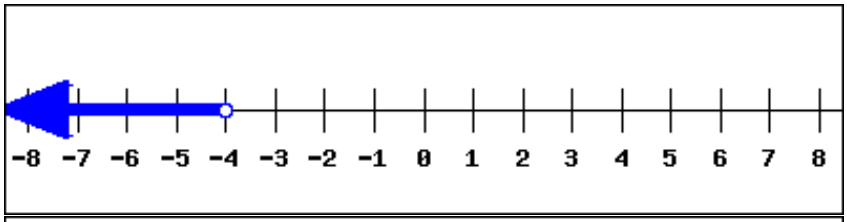


- **A.** $17\sqrt{3}$
- **B.** 15
- **C.** $3\sqrt{17}$
- **D.** $\sqrt{15}$

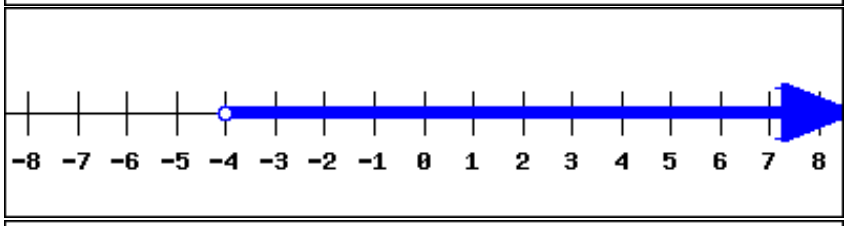
19. Find the graph of the solution to the inequality.

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

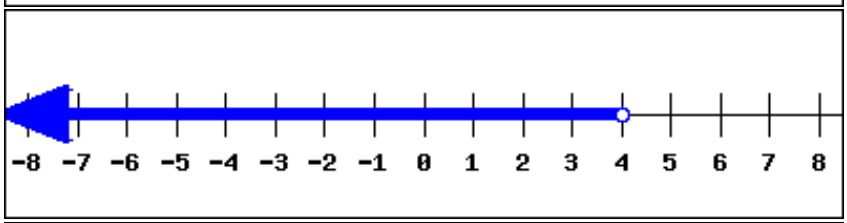
A



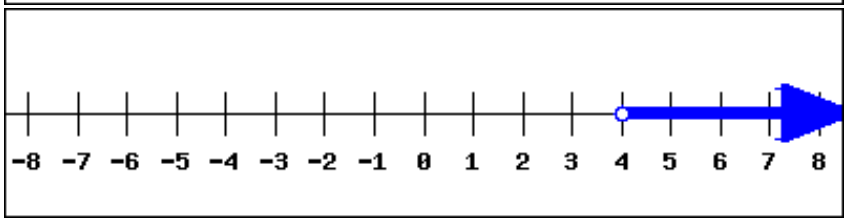
B



C



D



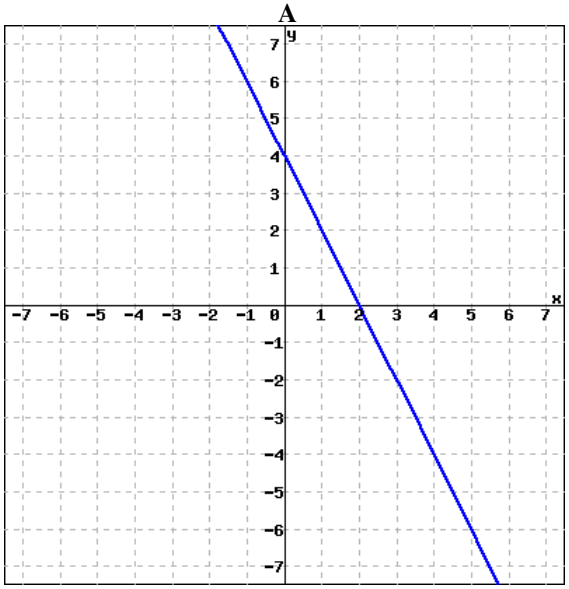
20. Given $a=2$ and $b=-2$, evaluate the expression given below.

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

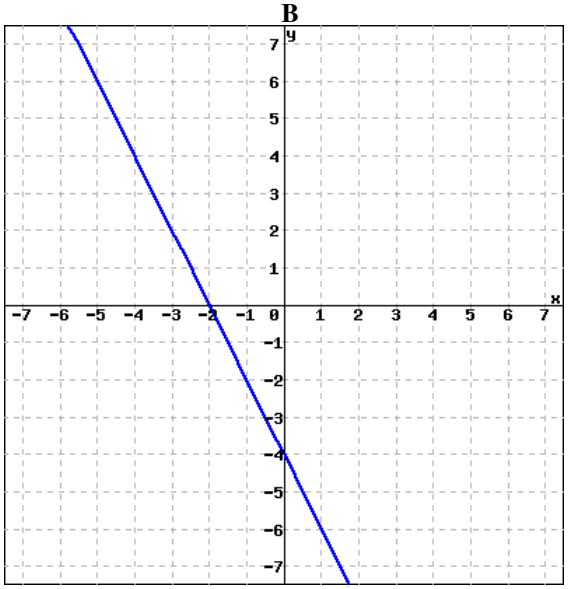
- **A.** 16
- **B.** -16
- **C.** 8
- **D.** -8

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

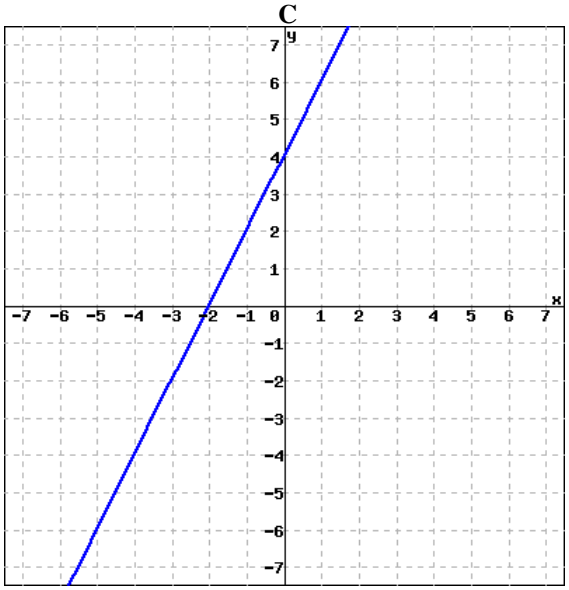
A



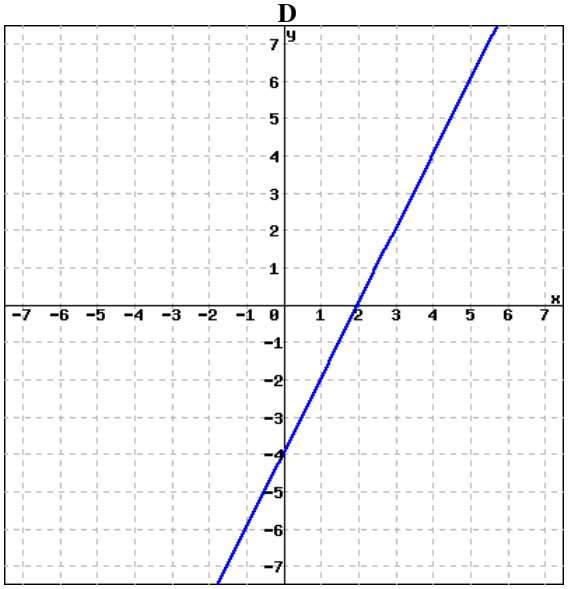
B



C



D



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 $(-9,10)$.

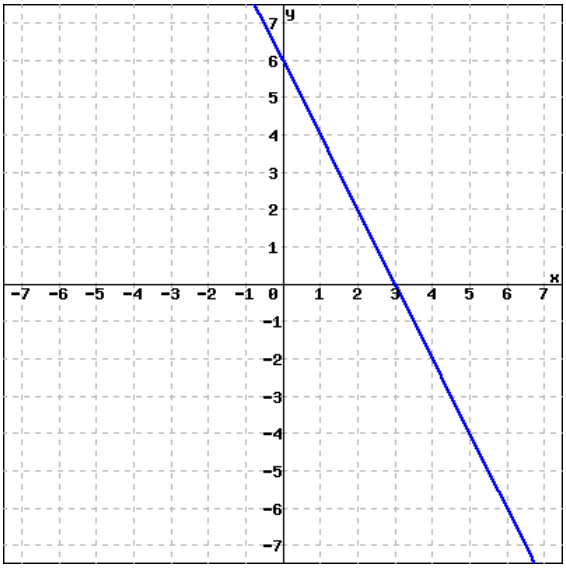
- **A.** $x=-9$
- **B.** $y=-\frac{10}{9}x+10$
- **C.** $y=x+10$
- **D.** $y=10$

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** $= (0, 4)$

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



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

Answers.

1.B
2.C
3.D
4.C
5.C
6.D
7.B
8.D
9.C
10.B
11.A
12.C
13.D
14.C
15.A
16.A
17.C
18.C
19.C
20.D
21.C
22.C
23.A
24.C
25.B