

1. Solve the system of linear equations

$$\begin{aligned}\frac{x}{3} + 6y &= 4 \\ y &= -5 - x\end{aligned}$$

- A) $\left(-\frac{42}{5}, \frac{17}{5}\right)$ B) $(-1, 4)$ C) $(-6, 1)$ D) $(12, 0)$ E) $(6, 1)$

2. Solve the following system of equations:

$$\begin{aligned}2x + 3y &= 11 \\ x - 4y &= 0\end{aligned}$$

- A) $x = 4$ and $y = 1$ C) $x = 10$ and $y = -3$ E) $x = -4$ and $y = -1$
B) $x = 1$ and $y = 3$ D) $x = -1$ and $y = 4$
3. Find the x -coordinate of the point where the lines $x + 3y = -8$ and $4x - 3y = 23$ intersect.
A) $x = 3$ B) $x = 5$ C) $x = -3$ D) $x = -5$ E) $x = -2$
4. A school purchases tickets to a show. A child ticket costs \$8 and an adult ticket costs \$14. The school has paid a total of \$610 for 65 tickets. How many of the 65 tickets were for adults?
A) can not be determined B) 27 C) 15 D) 50 E) 5

5. Simplify: $\frac{5x^5y^4z}{30x^3yz^2}$

- A) $\frac{6x^2y^3}{z}$ B) $\frac{x^2y^3}{6z}$ C) $\frac{x^2y^3z}{6}$ D) $6x^2y^3z$ E) $\frac{x^2y^3}{25z}$

6. Simplify: $(x^4)^2(x^{-2})^3$

- A) x^2 B) x^7 C) x^8 D) x^{10} E) x^{14}

7. Simplify $\left(\frac{-2ab^{-3}}{b^{-2}}\right)^{-4}$

- A) $\frac{b^4}{16a^4}$ B) $\frac{b^{20}}{16a^4}$ C) $\frac{b^{20}}{8a^3}$ D) $\frac{1}{8a^4b^5}$ E) $\frac{8b^{20}}{a^4}$

8. Express the number 0.000 000 148 in scientific notation.

- A) 1.48×10^8 B) 1.48×10^{-8} C) 1.48×10^7 D) 0.148×10^{-6} E) 1.48×10^{-7}

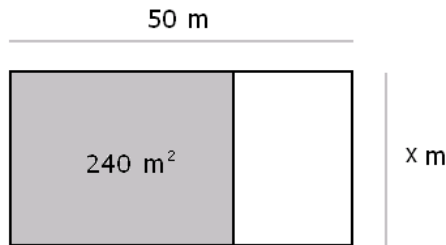
9. Factor $p^2 - 4p - 32$

- A) $(p - 4)(p - 8)$ C) $(p + 4)(p - 8)$ E) $(p + 4)(p + 8)$
B) $(p - 4)(p + 8)$ D) $p(p - 4) - 32$

10. Which of the following is one of the factors of $3t^2 - 5t - 2$?

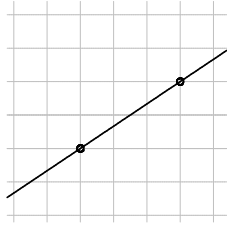
- A) $3t + 5$ B) $3t - 1$ C) $t - 2$ D) $3t - 2$ E) $t + 2$

11. Factor $9x^2 - 25$
- A) $(3x - 5)(3x - 5)$ C) $(9x - 5)(9x + 5)$ E) $(3x - 5)^2$
 B) $(3x + 5)(3x + 5)$ D) $(3x - 5)(3x + 5)$
12. Completely factor $x^2 + x - 2$ and $x^2 - 4$. What is the factor they have in common?
- A) x^2 B) $x - 1$ C) $x - 2$ D) $x + 2$ E) $x + 1$
13. The area of the shaded region of the rectangle shown below is 240 square meters. Express the area of the unshaded region in terms of x .

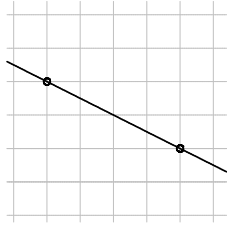


- A) $240x - 50$ B) $190x$ C) $(240 - 50x)x$ D) $(50 + x)240$ E) $50x - 240$
14. Solve the following equation: $5x + 2x^2 = 3$
- A) $x = -3$ or $x = \frac{1}{2}$ C) $x = -3$ or $x = 2$ E) $x = -1$
 B) $x = -3$ D) $x = -1$ or $x = -\frac{3}{2}$
15. One side of a rectangle is 2 inches shorter than three times another side. How long is the longer side in the rectangle if its area is 96 square inches?
- A) 25 inches B) 73 inches C) 6 inches D) 16 inches E) 12 inches
16. Simplify the expression $\frac{3ax - 6ay - bx + 2by}{3a - b}$
- A) $2x - 4y$ B) $x - 2y$ C) $ax - 6y - x + by$ D) $-6ay + 2by$ E) $x + 2y$
17. Divide and simplify $\frac{x}{x^2 - 2x} \div \frac{3x + 6}{4x - 8}$
- A) $\frac{16}{3x + 6}$ B) $\frac{3x}{4(x - 2)}$ C) $\frac{4}{3(x + 2)}$ D) $\frac{3x^2}{x + 2}$ E) $-\frac{9}{4x - 8}$
18. Which expression describes the area in square meters of a rectangle that has width $4x^2y^2$ meters and length $3x^3y^3$ meters?
- A) $12x^6y^6$ B) $12x^5y^5$ C) $7x^6y^6$ D) $7x^5y^5$ E) $12xy^6$

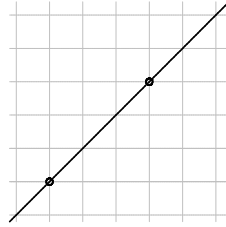
19. Which of the following lines shown below has a slope $\frac{1}{2}$?



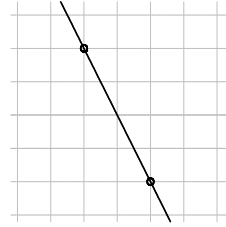
A)



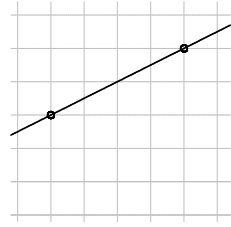
B)



C)



D)



E)

20. Solve the equation $x - \frac{2x - 1}{3} = \frac{x + 5}{2} - \frac{1}{6}$

A) -16

B) -2

C) $-\frac{14}{5}$

D) -3

E) -12

21. Compute the slope of the line if its equation is $2x + 3y = -12$.

A) -0.6

B) $\frac{2}{3}$ C) $-\frac{2}{3}$ D) $\frac{3}{2}$ E) $-\frac{3}{2}$

22. Solve the equation $x^2 - 18 = -7x$

A) -9 and -2

B) 2 and 9

C) 3 and 6

D) -9 and 2

E) -2 and 9

23. Solve the equation $6x^2 - 11x = 10$

A) $-\frac{10}{3}$ and $\frac{1}{2}$ B) $-\frac{5}{6}$ and 2C) $-\frac{2}{3}$ and $\frac{5}{2}$ D) $\frac{2}{3}$ and $\frac{5}{2}$ E) $-\frac{1}{2}$ and $\frac{10}{3}$

24. Solve the formula $A = \frac{1}{2}(b_1 + b_2)h$ for b_1 .

A) $b_1 = \frac{A - \frac{1}{2}b_2}{h}$ B) $b_1 = \frac{2A - b_2}{h}$ C) $b_1 = \frac{2A}{h} - b_2$ D) $b_1 = \frac{2(A - b_2)}{h}$ E) $b_1 = \frac{A - b_2}{2h}$

25. The formula for the volume of a rectangular box $V = lwh$; where l is the length, w is the width, and h is the height. If $V = 64$, $l = 8$, and $w = 4$, then h is equal to:

A) 6

B) 10

C) 32

D) 4

E) 2

26. Find the value of k so that the line connecting the points $(2, 3)$ and $(5, k)$ has a slope of $\frac{1}{3}$.

A) 12

B) 4

C) 2

D) -3

E) -2

27. Solve the equation $(x - 5)(x + 2) = x - 10$

A) 4

B) 2

C) 2 and -2

D) 0 and 4

E) -2