



MATH PROFICIENCY PRACTICE TEST

1. Simplify: $(3a - 5) - (5a - 3)$

- A. $2a - 8$
- B. $-2a - 2$
- C. $-2a - 8$
- D. $2a + 8$

2. $(\frac{2k}{5})^{-3}$

- A. $\frac{2}{5k^3}$
- B. $\frac{15}{6k^3}$
- C. $\frac{8k^3}{-125}$
- D. $\frac{125}{8k^3}$

3. Evaluate: $3 + 15 \div 5 - 10$

- A. $-\frac{18}{15}$
- B. -6.4
- C. $-\frac{6}{5}$
- D. -4

4. $(3a^3b)(15ab^5)$

- A. $45a^4b^6$
- B. $35a^4b^6$
- C. $45a^3b^5$
- D. $18a^4b^6$

5. If $x - \frac{3}{8}x = 5$, then $x =$

- A. -1
- B. 1
- C. -10
- D. 8

6. $(3x + 2y)^2$

A. $9x^2 + 4y^2$

B. $9x^2 + 10xy + 2y^2$

C. $9x^2 + 6xy + 4y^2$

D. $9x^2 + 12xy + 4y^2$

7. $\sqrt{5}\sqrt{15} =$

A. $5\sqrt{3}$

B. $25\sqrt{3}$

C. $3\sqrt{5}$

D. $\frac{75}{2}$

8. $(x - 5)(3x + 4) = 0$ One solution is:

A. -5

B. $-\frac{4}{3}$

C. $-\frac{3}{4}$

D. -4

9. If $x + y = 2$

$x - y = 6$ then $y =$

A. 4

B. 2

C. -2

D. -4

10. What percent of 12 is 18?

A. 150%

B. $33\frac{1}{3}\%$

C. 1.5%

D. $66\frac{2}{3}\%$

11. Simplify: $\sqrt{48} - \sqrt{12}$

- A. $2\sqrt{3}$
- B. $12\sqrt{3}$
- C. 6
- D. $\sqrt{48} - \sqrt{12}$

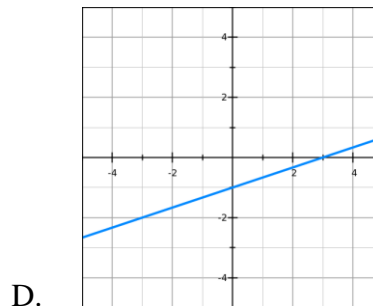
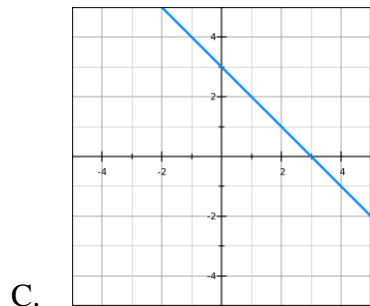
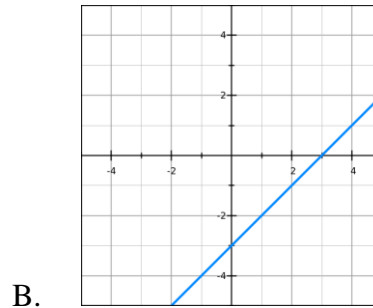
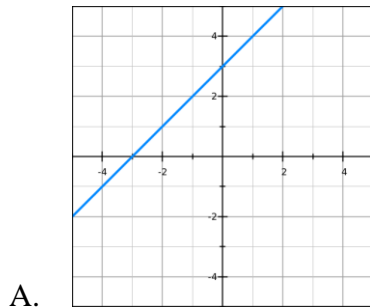
12. Factor completely $32x^4 - 2a^4$

- A. $2(16x^4 - a^4)$
- B. $2(2x - a)(2x + a)(4x^2 + a^2)$
- C. $(16x^2 - a^2)(16x^2 + a^2)$
- D. $2(4x + a)^4$

13. Factor completely $x^2 + x - 6$

- A. $(x + 2)(x - 3)$
- B. $(x + 6)(x - 1)$
- C. $(x - 6)(x + 1)$
- D. $(x + 3)(x - 2)$

14. Which of the graphs represents $y = x + 3$?



15. $2x - 3 \geq 4x + 5$ is equivalent to

- A. $x \leq -4$
- B. $x \geq -4$
- C. $x \leq 1$
- D. $x \geq 1$

16-17 For the following questions use the equation $2x - 3y = 6$ to answer.

16. The slope is:

- A. $-\frac{2}{3}$
- B. $\frac{3}{2}$
- C. -3
- D. $\frac{2}{3}$

17. The y-intercept is:

- A. 2
- B. -2
- C. 6
- D. -3

18. The equation of a line passing through (0,5) is:

- A. $2x - 3y = 6$
- B. $2x - 3y = 15$
- C. $2x - 3y = 5$
- D. $2x - 3y = -15$

19. If $x = 3$ and $y = -2$, then $\frac{7x-3y}{2x+y}$ is:

- A. 23
- B. $\frac{27}{4}$
- C. $\frac{27}{8}$
- D. $\frac{15}{4}$

20. Simplify $\frac{3t^2-6t}{3t}$ completely

- A. $t - 6$
- B. $3t^2 - 2$
- C. $t - 2$
- D. $t + 2$

21. Simplify $(y^2 - 4y + 3) - (4y^2 + 5y - 2)$

- A. $-3y^2 - 9y + 5$
- B. $-3y^2 - 9y + 1$
- C. $-3y^2 - y + 5$
- D. $-3y^2 - y - 5$

22. One solution to $x^2 - x = 12$ is

- A. -12
- B. -4
- C. -3
- D. 3

23. If $ax - b = 0$ and $a \neq 0$, then $x =$

- A. $\frac{b}{a}$
- B. $-\frac{b}{a}$
- C. $b - a$
- D. $\frac{a}{b}$

24. If a rectangle has a width, w meters, and a perimeter of 72 meters, which of the following is an expression for the length, in meters, of the rectangle?

- A. $36 - w$
- B. $\frac{36}{w}$
- C. $72 - w$
- D. $\frac{72}{w}$

25. Simplify: $\frac{w^2+6w+5}{w+5}$

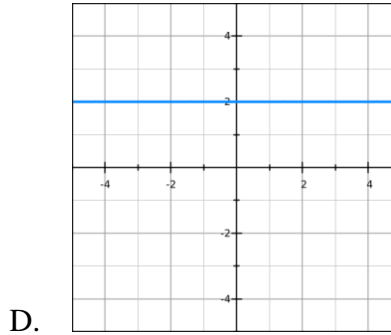
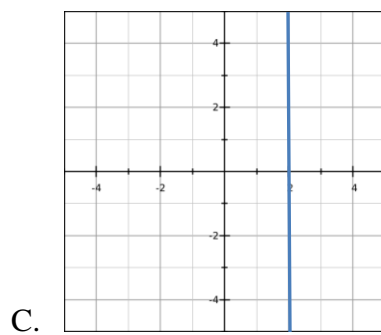
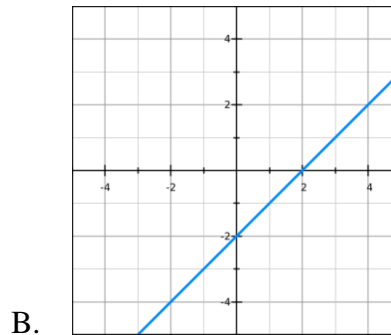
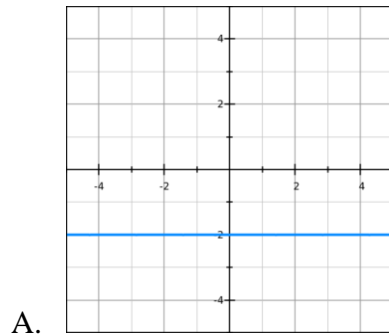
A. $w + 1$

B. $w + 6$

C. $w^2 + 6$

D. $w + 6 + \frac{5}{w+5}$

26. Which of the following could be a portion of the graph $y = -2$?



27. If $\frac{3}{x-1} = 2$ then $x =$

A. $\frac{1}{2}$

B. $\frac{2}{5}$

C. 2

D. $\frac{5}{2}$

28. If the width of a rectangle is 3 inches less than its length, and the perimeter is 94 inches, what is the length, in inches, of the rectangle?

- A. $23\frac{1}{2}$
- B. 25
- C. $48\frac{1}{2}$
- D. 22

29. What are the possible value of x such that $x^2 = 2x$?

- A. 0 and 2
- B. 2 only
- C. $\sqrt{2}$ only
- D. $-\sqrt{2}$ and $\sqrt{2}$

30. If $2x^2 + 12x + 18 = 2(x + k)^2$, the value of k is:

- A. 9
- B. -3
- C. 3
- D. -9

31. $\frac{(-3)^1(-3)^3}{(-3)^{-1}} =$

- A. -81
- B. 243
- C. 81
- D. -243

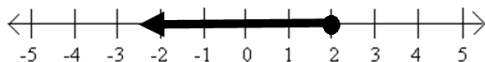
32. Simplify $(-\frac{18}{25})(-\frac{5}{27})$

- A. $-\frac{2}{5}$
- B. $\frac{3}{5}$
- C. $\frac{2}{15}$
- D. $\frac{2}{9}$

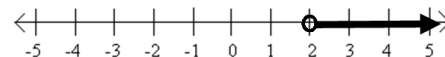
33. Factor completely: $5x^3 - 10x^2 + 15x$

- A. $5(x^3 - 2x^2 + 15x)$
- B. $5x(x^2 - 2x + 3)$
- C. $5x(x^3 - 2x + 3)$
- D. $5x^2(x - 2x + 3)$

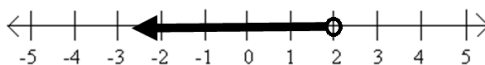
34. Which graph represents $-3x \geq -6$?



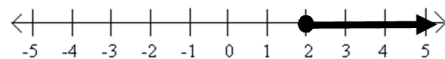
A.



B.



C.



D.

35. If $(7x + 2y)^2 = 49x^2 + kxy + 4y^2$ then the value of k is:

- A. 2
- B. 14
- C. 28
- D. $28xy$

36. -6^2 means:

- A. $(-6)(-6)$
- B. $-1(6)(6)$
- C. $(-2)(-2)(-2)(-2)(-2)(-2)$
- D. $-1(2)(2)(2)(2)(2)(2)$

37. Factor $5ab + 15a^2b^3$

- A. $5ab(3ab^2)$
- B. $5ab(3ab)$
- C. $5ab(1 + 3ab^2)$
- D. $5a^2(b + 3ab^3)$

38. Write an algebraic equation for: “two less than Maria’s age is 12”

- A. $2 - a = 12$
- B. $2 + a = 12$
- C. $a - 2 = 12$
- D. $a - 12 = 2$

39. $(\frac{3a^2b}{4})^2(\frac{2}{ab^3})^4 =$

- A. $\frac{6}{b^{10}}$
- B. $\frac{9}{b^{10}}$
- C. $\frac{9}{b^5}$
- D. $\frac{6}{b^5}$

40. Factor completely $5x^2 + 20x + 20$

- A. $5(x^2 + 4x + 4)$
- B. $5(x - 2)^2$
- C. $5(x + 2)^2$
- D. $(5x + 10)(x + 2)$

41. Factor completely $2x^2y^2 + 4xy + 2$

- A. $(2xy + 1)^2$
- B. $(2x + 1)(y + 2)$
- C. $2(xy + 1)^2$
- D. $2(xy + 2)^2$

42. In the equation $y = \frac{1}{2}x + 2$, the one false statement is:

- A. The slope is $\frac{1}{2}$
- B. The y-intercept is 2
- C. The perpendicular slope is $-\frac{1}{2}$
- D. The perpendicular slope is -2

43. $\frac{\sqrt{3}+2}{\sqrt{3}-2}$ simplifies to:

A. $\frac{\sqrt{3}+2}{\sqrt{3}-2}$

B. $\frac{7+4\sqrt{3}}{7}$

C. $\frac{7+4\sqrt{3}}{-1}$

D. $\frac{7+2\sqrt{3}}{-1}$

44. $\sqrt{50}-2\sqrt{18}$ simplifies to:

A. $2\sqrt{3}$

B. $-\sqrt{2}$

C. $3\sqrt{2}$

D. $2\sqrt{2}$

45. Factor $2 + 7x + 3x^2$

A. $(3x + 1)(x + 2)$

B. $(3x + 2)(x + 1)$

C. $(x + 7)(3x + 2)$

D. $(x + 2)(3x + 2)$

46. If $100x^2 + 80x + 16 = k(5x + 2)^2$, the value of k is:

A. 20

B. 4

C. 2

D. -4

47. $\frac{(-2x)^2}{(-2y)^{-3}} =$

A. $\frac{x^2}{y^3}$

B. $\frac{x^2}{-2y^3}$

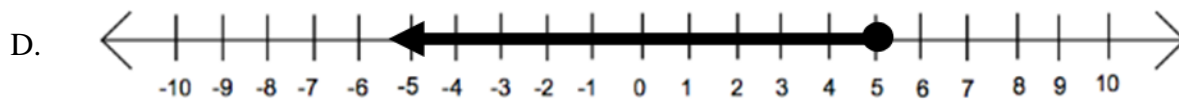
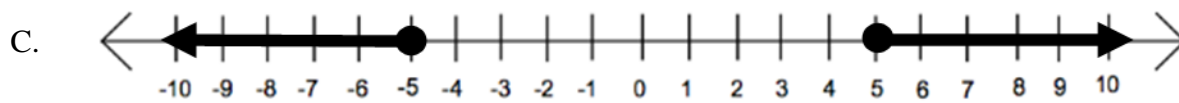
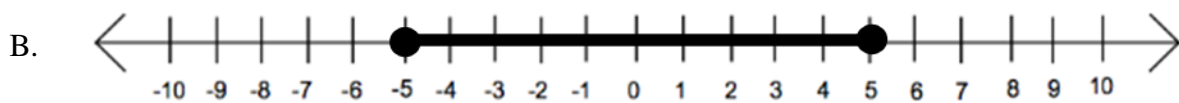
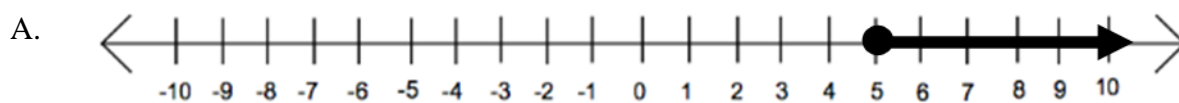
C. $-\frac{x^2y}{6}$

D. $-32x^2y^3$

48. Write an algebraic equation for “5 more than 12 times a number is 113”

- A. $113n + 5 = 12$
- B. $5n + 12 = 113$
- C. $12n + 5 = 113$
- D. $113 + 5 = 12n$

49. The graph of $|x| \leq 5$ is:



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50. The graph of $y \geq -2x + 1$ and $y \leq -x + 2$ is:

