

Name

PRACTICE TEST / CHAPTERS 1,2,3

Elementary Algebra
Professor Freedman Test "P"

SHOW ALL WORK

Simplify the following expressions using the properties of signed numbers and the order of operations.

$$1a. \quad 3 - 2 + 5 - 4 \quad \underline{2} \quad 1b. \quad -13 + 6 \quad \underline{-7}$$

$$2a. \quad 4(-5) \quad \underline{-20} \quad 2b. \quad -4(-1)(-5)(2) \quad \underline{-40}$$

$$3a. \quad -1^2 \quad \underline{-1} \quad 3b. \quad (-1)^2 \quad \underline{1}$$

$$4a. \quad \frac{4}{0} \quad \underline{\text{undefined}} \quad 4b. \quad \frac{0}{9} \quad \underline{0}$$

$$5. \quad (-4)(-5) - (-2)(3) \quad \underline{26}$$

$$20 - (-6)$$

$$20 + 6$$

$$6. \quad 3 - (7 - 5)^3 \cdot 3 \quad \underline{-21}$$

$$3 - (2)^3 \cdot 3$$

$$3 - 8 \cdot 3$$

$$3 - 24$$

$$7. \quad \frac{(-4)^2 - (-3)(2)}{-(-3)^2 + 8} \quad \underline{-22}$$

$$\frac{+16 - (-6)}{-(-9) + 8}$$

$$\frac{-16 + 6 = -10}{-9 + 8 = -1} = \frac{-10}{-1} = 10$$

$$8. \quad \text{Combine like terms: } 7y^2 - 6y - 3 - 2y^2 - 7$$

$$5y^2 - 6y - 10$$

$$5y^2 - 6y - 10$$

$$9. \quad \text{Evaluate } a(3b - c) \text{ when } a = 2, b = -4, \text{ and } c = -3$$

$$2(3(-4) - (-3)) = 2(-12 + 3) = 2(-9) = -18$$

$$10. \quad \text{Evaluate } \frac{3a - 3b}{2b + 3c} \text{ when } a = -4, b = -3, \text{ and } c = 5$$

$$\frac{3(-4) - 3(-3)}{2(-3) + 3(5)} = \frac{-12 + 9}{-6 + 15} = \frac{-3}{9} = -\frac{1}{3}$$

Solve for x in #11 - #18

$$11. \quad 8x - 3 = 4x + 17$$

$$\frac{-4x \quad -4x}{4x - 3 = 17}$$

$$+3 \quad +3$$

$$\frac{4x}{4} = \frac{20}{4} \quad x = 5$$

$$12. 3 - 2(x - 1) = 3(x - 5)$$

$$\begin{array}{r} 3 - 2x + 2 = 3x - 15 \\ -2x + 5 = 3x - 15 \\ + 2x \quad + 2x \\ \hline 5 = 5x - 15 \\ \quad + 15 \\ \hline 20 = 5x \end{array}$$

$$\frac{20}{5} = \frac{5x}{5}$$

$$4 = x$$

$$13. 5x + 12 = 2x$$

$$\begin{array}{r} 5x + 12 = 2x \\ -5x \quad -5x \\ \hline 12 = -3x \\ \quad \div 3 \quad \div 3 \\ \hline -4 = x \end{array}$$

$$x = -4$$

$$14. 5 - (4x + 3) = 4$$

$$\begin{array}{r} 5 - 4x - 3 = 4 \\ -4x + 2 = 4 \\ \quad -2 \quad -2 \\ \hline -4x = 2 \end{array}$$

$$\frac{-4x}{-4} = \frac{2}{-4} = -\frac{1}{2}$$

$$15. 7x - 5 + 2x = 8x + 9$$

$$\begin{array}{r} 9x - 5 = 8x + 9 \\ -8x \quad -8x \\ \hline x - 5 = 9 \\ \quad + 5 \quad + 5 \\ \hline x = 14 \end{array}$$

$$16. 7(2x - 1) - 5x = x + 25$$

$$\begin{array}{r} 14x - 7 - 5x = x + 25 \\ 9x - 7 = x + 25 \\ -x \quad -x \\ \hline 8x - 7 = 25 \\ \quad + 7 \quad + 7 \\ \hline 8x = 32 \end{array}$$

$$8x = 32$$

$$x = 4$$

$$17. \frac{-4x}{-4} = \frac{28}{-4}$$

$$-4 = -4$$

$$x = -7$$

$$18. \frac{4x}{3} = \frac{12}{1} \cdot \frac{4}{3}$$

$$x = 16$$

19. Solve, graph, and put in interval notation the solution set for $5 - 3x > -4$

$\leftarrow \frac{5}{3} \rightarrow$ $(-\infty, 3)$ interval notation $\frac{5-5}{-3} > \frac{-9}{-3}$
 $x < 3$
 set builder $\{x | x < 3\}$

20. Solve, graph, and put in interval notation the solution set for $2x + 9 \leq 4x - 2$

$\leftarrow \frac{11}{2} \rightarrow$ $[\frac{11}{2}, \infty)$
 $\{x | x \geq \frac{11}{2}\}$

$-2x \quad -2x$
 $9 \leq 2x - 2$
 $2 \quad +2$
 $\frac{11}{2} \leq 2x$
 $\frac{11}{2} \leq x \text{ or } x \geq \frac{11}{2}$

21. Solve for R: $I = prt$

$\frac{I}{pt} = \frac{prt}{pt}$ $R = \frac{I}{pt}$

22. Solve for m: $y = mx + b$

$\frac{y-b}{x} = \frac{mx+b-b}{x}$ $\frac{y-b}{x} = m$

23. Solve for a: $ax + cy = e$

$\frac{ax}{x} = \frac{e-cy}{x}$ $a = \frac{e-cy}{x}$

24. The length of a rectangle is 8 feet less than twice its width. If the perimeter is 62 feet, find the width?

$2x - 8$ width x
 x length $2x - 8$
 $2x - 8 + 2x - 8 + x + x = 62$
 $6x - 16 = 62$
 $+16 \quad +16$
 $6x = 78$
 $x = 13 \text{ ft}$

25. Mrs. Smith is 5 years less than 4 times as old as her daughter. If the sum of their ages is 55 years, how old are Mrs. Smith and her daughter?

$4(12) - 5 = 43$
 43 Mrs. Smith $4x - 5$
 12 yrs daughter x
 $4x - 5 + x = 55$
 $5x - 5 = 55$
 $5x = 60$
 $x = 12$

26. Brian earns \$150 more per month than Leah. If their monthly salaries total \$8550, what amount does each earn?

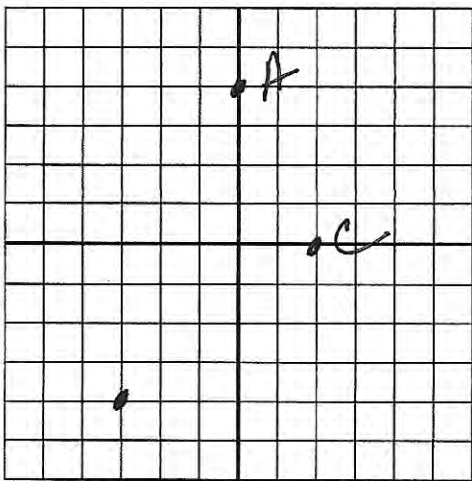
$\frac{\text{Brian } 200}{+150}$
 $\frac{4350}{4350}$
 4350 Brian $x + 150$
 4200 Leah x
 $x + 150 + x = 8550$
 $2x + 150 = 8550$
 $-150 \quad -150$
 $2x = 8400$
 $x = 4200$

27. The sum of three consecutive integers is 69. What is the largest integer?

$x + x + 1 + x + 2 = 69$
 $3x + 3 = 69$
 $-3 \quad -3$
 $3x = 66$
 $x = 22$
 $22, 23, 24$

1st# x
 2nd# $x + 1$
 3rd# $x + 2$

28. Give the coordinates of each of the points in the graph below.



A (0, 4)
 B (-3, -4)
 C (2, 0)

29. Circle the ordered pairs that are solutions for the equation: $3x - y = 12$

(0, 12), (0, -12), (4, 0), (4, -3), (5, -3)

$3(0) - 12 = 12$ NO
 $3(0) - (-12) = 12$ YES
 $3(4) - 0 = 12$ YES
 $3(4) - (-3) = 12$ NO
 $3(5) - (-3) = 12$ NO

30. Complete the ordered pairs so that each is a solution for the equation $2x + 5y = 20$

$(0, 4), (10, 0), (5, 2), (9, \frac{2}{5})$
 $2(0) + 5y = 20$
 $0 + 5y = 20$
 $y = 4$
 $2x + 5(0) = 20$
 $2x = 20$
 $x = 10$
 $2(5) + 5y = 20$
 $10 + 5y = 20$
 $5y = 10$
 $y = 2$
 $2x + 5(\frac{2}{5}) = 20$
 $2x + 2 = 20$
 $2x = 18$
 $x = 9$

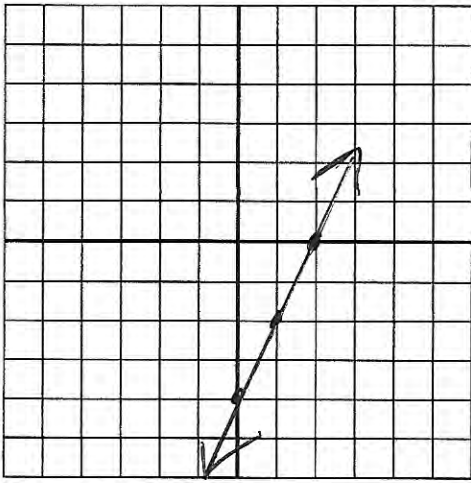
31. What is the coordinate of the x intercept for the line $2x - 6y = 12$

then $y = 0$ so
 $2x - 6(0) = 12$
 $2x = 12$
 $x = 6$
 $(6, 0)$ is x intercept

32. What is the coordinate of the y intercept for the line $3x + 9y = -27$

then $x = 0$ so
 $3(0) + 9y = -27$
 $9y = -27$
 $y = -3$
 $(0, -3)$ is y intercept

33. Graph the following equation using the intercepts and one other point: $2x - y = 4$



$$\begin{array}{r|l} x & y \\ \hline 0 & 4 \\ 2 & 0 \end{array}$$

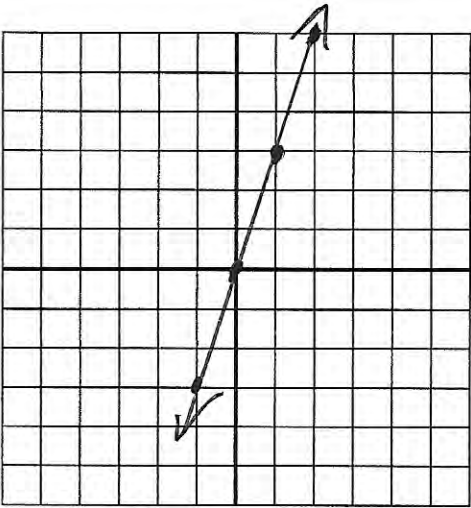
x intercept
y intercept

① $2(0) - y = 4$
 $-y = 4$
 $y = -4$

② $2x - 0 = 4$
 $2x = 4$
 $x = 2$

③ $2(1) - y = 4$
 $2 - y = 4$
 $-2y = 2$
 $y = -1$

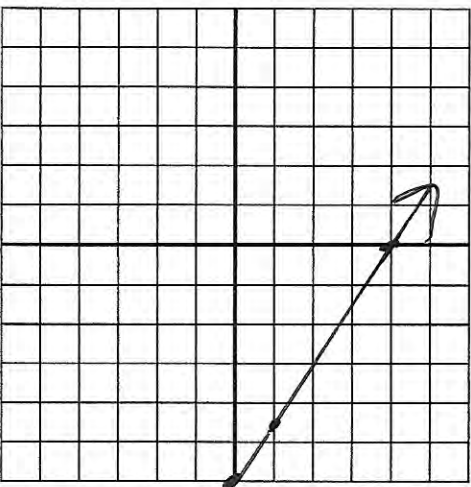
34. Graph the following equation: $y = 3x$



$$\begin{array}{r|l} x & y \\ \hline 0 & 0 \\ 1 & 3 \\ 2 & 6 \end{array}$$

x and y intercept

35. Graph the following equation using the intercepts and one other point: $3x - 2y = 12$



$$\begin{array}{r|l} x & y \\ \hline 4 & 0 \\ 0 & -6 \end{array}$$

x intercept
y intercept

① $3(0) - 2y = 12$
 $-2y = 12$
 $y = -6$

② $3x - 2(0) = 12$
 $3x = 12$
 $x = 4$

③ $3(1) - 2y = 12$
 $3 - 2y = 12$
 $-2y = 9$
 $y = -4\frac{1}{2}$

36. Find the slope of the line passing through the 2 points $(4, -6)$ and $(-2, -1)$

$$\text{slope (m)} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - (-6)}{-2 - 4} = \frac{-1 + 6}{-6} = \frac{5}{-6}$$