

Chapter 1 Study Guide

1-1 and 1-2

Use order of operations to simplify the expression. Show what you are doing to simplify step-by-step.

1) $18 - 12 \div 3 + 1(25)$

$$18 - 4 + 1(25)$$

$$18 - 4 + 25$$

$$14 + 25$$

$$(39)$$

2) $(23 + 4) - 5 \div 5 + 2(4)$

$$27 - 5 \div 5 + 2(4)$$

$$27 - 1 + 8$$

$$26 + 8$$

$$(34)$$

3) $\frac{9 + (4 \cdot 3)}{3 + 4}$

$$\frac{9 + 12}{7} = \frac{21}{7} = 21 \div 7 = (3)$$

Evaluate the expression when $a = 4$ and $b = 12$. Show all work.

4) $7a + b - (15 - a)$

$$7(4) + (12) - (15 - 4)$$

$$28 + 12 - 11$$

$$40 - 11$$

$$(29)$$

Evaluate the expression when $c = 6$ and $d = 7$. Show all work.

$$5) 3c \div (d - 4)$$

$$3c \div (d - 4)$$

$$\underline{3(6)} \div \underline{(7-4)}$$

$$18 \div 3$$

(6)

1-3 and 1-4

Find the solution or solutions for the given replacement set. (Plug each value from the replacement set into the equation and see if it satisfies the number sentence). Show all work.

$$6) 58 - 3a = 10$$

{16, 17, 18}

$$a = 16$$

$$a \neq 17$$

$$a \neq 18$$

$$58 - 3(16)$$

$$58 - 3(17)$$

$$58 - 3(18)$$

$$58 - 48 = 10 \checkmark$$

$$58 - 51 = 7$$

$$58 - 54 = 4$$

$$7) 2x - 1.5 = 38.5$$

{17, 18, 19}

$$x \neq 17$$

$$x \neq 18$$

$$x \neq 19$$

$$2(17) - 1.5$$

$$2(18) - 1.5$$

$$2(19) - 1.5$$

$$34 - 1.5 = 32.5$$

$$36 - 1.5 = 34.5$$

$$38 - 1.5 = 36.5$$

no solution
in
replacement
set

$$8) 3 < y < 8$$

{set of whole numbers}

$$y = 4, 5, 6, 7$$

{0, 1, 2, ...}

$$9) y - 4 \leq 3$$

{1, 2, 3, 4, 5, 6, 7, 8}

$$y = 1, 2, 3, 4, 5, 6, 7$$

Fill in the blank with every inequality symbol ($<$, $>$, \leq , \geq , or \neq) that satisfies the number sentence. (Each problem will have multiple answers).

10) 71 $\begin{matrix} > \\ = \\ \neq \end{matrix}$ 70.99999

11) $5.13 + 5.84$ $\begin{matrix} < \\ < \\ = \\ \neq \end{matrix}$ $15.93 - 4.78$
 $\underbrace{\hspace{2cm}}_{10.97}$ $\underbrace{\hspace{2cm}}_{11.15}$

12) 92.001 $\begin{matrix} < \\ = \\ > \end{matrix}$ 92.001

13) 5.01 $\begin{matrix} < \\ \leq \\ \neq \end{matrix}$ 5.02 $\begin{matrix} < \\ \leq \\ \neq \end{matrix}$ 5.03

Graph the inequalities on a number line.

14) $x \leq 5$



15) $2 < x \leq 8$



1-5

Use inverse operations to solve each equation and inequality.

SHOW ALL YOUR WORK. CHECK YOUR SOLUTION.

GRAPH INEQUALITIES ON A NUMBER LINE.

What are you doing on both sides of the equation/inequality to isolate the variable?

16) $x - 7.64 = 18.895$
 $\begin{matrix} +7.64 & +7.64 \\ \hline x = 26.535 \end{matrix}$

$\sqrt{x - 7.64 = 18.895}$
 $26.535 - 7.64 =$
 $\begin{array}{r} 1514 \\ 126.8135 \\ - 7.640 \\ \hline 18.895 \end{array}$

isolate algebraic term

17) $(x \div 2) - 4 = 2$
 $\begin{matrix} +4 & +4 \\ \hline (x \div 2) = 6 \end{matrix}$
 $x \div 2 \cdot 2 = 6 \cdot 2$
 $x = 12$

$\sqrt{(x \div 2) - 4 = 2}$
 $(12 \div 2) - 4$
 $6 - 4$
 $2 \checkmark$

18) $4x + 4 = 40$

$$\begin{array}{r} 4x + 4 = 40 \\ -4 \quad -4 \\ \hline 4x = 36 \\ \frac{4}{4} \quad \frac{4}{4} \\ \hline x = 9 \end{array}$$

$\checkmark 4x + 4 = 40$

$$\begin{array}{l} 4(9) + 4 \\ 36 + 4 = 40 \end{array}$$

19) $m \div 5 + 1 = 12$

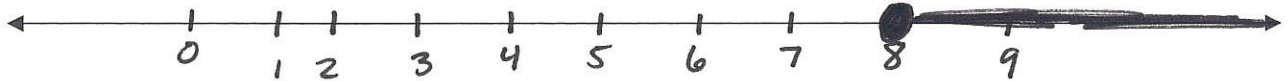
$$\begin{array}{r} m \div 5 + 1 = 12 \\ -1 \quad -1 \\ \hline m \div 5 = 11 \\ m \div 5 \cdot 5 = 11 \cdot 5 \\ m = 55 \end{array}$$

$\checkmark m \div 5 + 1 = 12$

$$\begin{array}{l} 55 \div 5 + 1 \\ 11 + 1 = 12 \end{array}$$

20) $4 + r \geq 12$

$$\begin{array}{r} 4 + r \geq 12 \\ -4 \quad -4 \\ \hline r \geq 8 \end{array}$$



21) $5x - 13 < 12$

$$\begin{array}{r} 5x - 13 < 12 \\ +13 \quad +13 \\ \hline 5x < 25 \\ \frac{5}{5} \quad \frac{5}{5} \\ \hline x < 5 \end{array}$$



1-6 and 1-7

Write an expression, equation, or inequality for each word phrase or sentence.

minus 22

22) Twenty-two less than a number x .

$$\boxed{x - 22}$$

23) Ten more than the product of two and a number y .

(+) (x)

$$\boxed{10 + 2y}$$

- 24) The ^(x)product of a number m and seven ⁽⁼⁾is ⁽⁺⁾two more than p .

$$7m = 2 + p$$

- 25) Nine ⁽⁻⁾less than x ^(÷)divided by four is ^(<)less than twelve.

$$\frac{x-9}{4} < 12 \quad \text{or} \quad (x-9) \div 4 < 12$$

1-8

Solve the following word problems.

- 26) A package of 4 toothbrushes costs \$2.50. How much would 16 toothbrushes cost?

known: 4 toothbrushes cost \$2.50

Find: cost of 16 toothbrushes

Solve: multiply the cost of 4 toothbrushes by 4. $(4)(2.50) = 10$

16 toothbrushes cost \$10.00

- 27) A pool is leaking at a rate of 2 gallons every 30 minutes. How many gallons will have leaked after 2.5 hours?

known: A pool loses 2 gallons of water every 30 min.

Find: How many gallons will the pool lose after 2hr & 30 min?

Solve: 2 hr & 30 min equals five half hours. Multiply the number of gallons lost in 30 min by 5.

$$(2)(5) = 10$$

The pool loses 10 gallons of water in 2.5 hours