

### Chapter 3 Worksheet ANSWER KEY

1.  $y - 3 = -17$

Add 3 to both sides:

$$y = -14$$

2.  $-3 = x + 14$

Subtract 14 from both sides:

$$-17 = x$$

3.  $-9x = -45$

Divide both sides by -9:

$$x = \frac{-45}{-9} = 5$$

4.  $-6r = 3$

Divide both sides by -6:

$$r = \frac{3}{-6} = \frac{-1}{2}$$

5.  $-\frac{y}{7} = 2$

Multiply both sides by -7:

$$y = -14$$

6.  $\frac{2}{3}x = 8$

Multiply both sides by  $\frac{3}{2}$

$$x = 12$$

7.  $5x - 3 = 12$

Add 3 to both sides:

$$5x = 15$$

Divide both sides by 5:

$$x = 3$$

8.  $7 = -2y + 5$

Subtract 5 from both sides:

$$2 = -2y$$

Divide both sides by -2:

$$-1 = y$$

9.  $14 = 5y - 21$

Add 21 to both sides:

$$35 = 5y$$

Divide both sides by 5:

$$x = 7$$

10.  $6y = 2y - 12$

Subtract 2y from both sides:

$$4y = -12$$

Divide both sides by 4:

$$y = -3$$

11.  $2x = -4x + 18$

Add 4x to both sides:

$$6x = 18$$

Divide both sides by 6:

$$x = 3$$

12.  $8x + 4 = 2x - 5$

Subtract 2x from both sides:

$$6x + 4 = -5$$

Subtract 4 from both sides:

$$6x = -9$$

Divide both sides by 6:

$$x = \frac{-9}{6} = \frac{-3}{2}$$

$$13. \quad -3y - 1 = 5 - 2y$$

Can either add  $3y$  to both sides or add  $2y$  to both sides (the work will be different but in the end, the answer will be the same) – I choose add  $2y$  to both sides:

$$-y - 1 = 5$$

Add 1 to both sides:

$$-y = 6$$

Divide both sides by  $-1$ :

$$y = -6$$

$$14. \quad 10x - 6 - 2x + 4 = 5 - 6x - 1$$

$$\underbrace{10x - 6 - 2x + 4}_{\substack{\text{Combine like terms on} \\ \text{left side}}} = \underbrace{5 - 6x - 1}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$8x - 2 = 4 - 6x$$

Get  $x$  terms to one side, either subtract  $8x$  from both sides or add  $6x$  to both sides. I will subtract  $8x$  from both sides:

$$-2 = 4 - 14x$$

Subtract 4 from both sides:

$$-6 = -14x$$

Divide both sides by  $-14$ :

$$\frac{-6}{-14} = x \quad \text{or}$$
$$\frac{3}{7} = x$$

$$15. \quad 2x - 8x + 35 = 5 - 3x$$

$$\underbrace{2x - 8x + 35}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = 5 - 3x$$

$$-6x + 35 = 5 - 3x$$

Get  $x$  terms to one side, either add  $6x$  to both sides or add  $3x$  to both sides. I will add  $3x$  to both sides:

$$-3x + 35 = 5$$

Subtract 35 from both sides:

$$-3x = -30$$

Divide both sides by  $-3$ :

$$x = \frac{-30}{-3} \quad \text{or}$$
$$x = 10$$

$$16. \quad 4x - 7 - x = 5 + 4x - 12$$

$$\underbrace{4x - 7 - x}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = \underbrace{5 + 4x - 12}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$3x - 7 = -7 + 4x$$

Get x terms to one side, either subtract 3x from both sides or subtract 4x from both sides. I will subtract 3x from both sides:

$$-7 = -7 + x$$

Add 7 to both sides:

$$0 = x$$

Yes, we are done and x can equal zero!

$$17. \quad 7y + 26 - 5y = 5y - 2 + y$$

$$\underbrace{7y + 26 - 5y}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = \underbrace{5y - 2 + y}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$2y + 26 = 6y - 2$$

Get y terms to one side, either subtract 2y from both sides or subtract 6y from both sides. I will subtract 6y from both sides:

$$-4y + 26 = -2$$

Subtract 26 from both sides:

$$-4y = -28$$

Divide both sides by -4:

$$y = \frac{-28}{-4} \text{ or } 7$$

$$18. \quad 7(3m - 2) + 5 = 6(2m - 1) + 24$$

Distribute the 7 on the left side and distribute the 6 on the right side:

$$21m - 14 + 5 = 12m - 6 + 24$$

$$\underbrace{21m - 14 + 5}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = \underbrace{12m - 6 + 24}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$21m - 9 = 12m + 18$$

Get m terms to one side, either subtract 21m from both sides or subtract 12m from both sides. I will subtract 12m from both sides:

$$11m - 9 = 18$$

Add 9 to both sides:

$$11m = -27$$

Divide both sides by 11:

$$m = \frac{-27}{11}$$

$$19. \quad -2(x - 4) - (3x - 2) = -2 - (6x - 2)$$

Distribute the -2 and -1 on the left side and distribute the -1 on the right side:

$$-2x + 8 - 3x + 2 = -2 - 6x + 2$$

$$\underbrace{-2x + 8 - 3x + 2}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = \underbrace{-2 - 6x + 2}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$-5x + 10 = -6x + 18$$

Get x terms to one side, either add 5x from both sides or add 6x from both sides.

I will add 5x to both sides:

$$10 = -x + 18$$

Subtract 18 from both sides:

$$-8 = -x$$

Divide both sides by -1:

$$\frac{-8}{-1} = x \quad \text{or} \quad x = 8$$

$$20. \quad 2(5y + 4) + 19 = 4y - 3(2y + 11)$$

Distribute the 2 on the left side and distribute the -3 on the right side:

$$10y + 8 + 19 = 4y - 6y - 33$$

$$\underbrace{10y + 8 + 19}_{\substack{\text{Combine like terms} \\ \text{on left side}}} = \underbrace{4y - 6y - 33}_{\substack{\text{Combine like terms} \\ \text{on right side}}}$$

$$10y + 27 = -2y - 33$$

Get y terms to one side, either subtract 10y from both sides or add 2y to both sides. I will add 2y to both sides:

$$12y + 27 = -33$$

Subtract 27 from both sides:

$$12y = -60$$

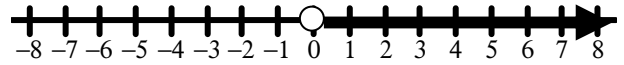
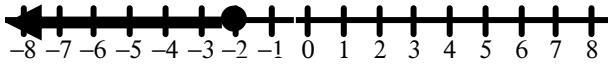
Divide both sides by 12:

$$x = \frac{-60}{12} = -5$$

Graph.

19.  $-2 \geq x$   
means "all values less than or equal to -2"

20.  $x > 0$   
means "all values greater than 0"



Solve and graph.

21.  $10 + 4x > 8x + 2$

Solution:

$$10 + 4x > 8x + 2$$

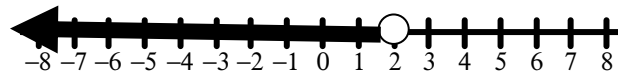
$$\underline{-8x} \quad \underline{-8x}$$

$$10 - 4x > 2$$

$$\underline{-10} \quad \underline{-10}$$

$$\frac{-4x}{-4} > \frac{-8}{-4}$$
$$x < 2$$

Reverse the inequality sign since we divided both sides by a negative number



$$22. \quad 6 \leq -2x - 8$$

Solution:

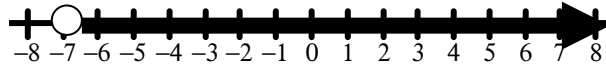
$$6 \leq -2x - 8$$

$$\underline{+8} \qquad \underline{+8}$$

$$\frac{14}{-2} > \frac{-2x}{-2}$$

$$-7 < x$$

Reverse the inequality sign since we divided both sides by a negative number



$$23. \quad 6 + 3x > 9$$

Solution:

$$6 + 3x > 9$$

$$\underline{-6} \qquad \underline{-6}$$

$$\frac{3x}{3} > \frac{3}{3}$$

$$x > 1$$

Do not reverse the inequality sign since we divided both sides by a positive number.

