

Name: Key
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 Period:

Math 7 Chapter's 7+8 Study Guide

Solve each of the following equations. Show each step clearly (railroad tracks!). Check your solutions.

1. $\frac{2}{5}x = -30$

$$\frac{5}{2} \cdot \frac{2}{5}x = \frac{-30 \cdot 5}{1 \cdot 2}$$

$$\boxed{x = -75}$$

$$\frac{2}{5} \cdot \frac{-75}{1} \stackrel{?}{=} -30$$

$$\frac{-150}{5}$$

$$-30 = -30 \checkmark$$

2. $\frac{x}{4} + 6 = -5$

$$\frac{-44}{4} + 6 = -5$$

$$-11 + 6$$

$$\boxed{x = -44}$$

$$-5 = -5 \checkmark$$

3. $5x + 7x + 14 = 38$

$$12x + 14 = 38$$

$$12x = 24$$

$$\boxed{x = 2}$$

$$12(2) + 14 \stackrel{?}{=} 38$$

$$24 + 14$$

$$38 = 38 \checkmark$$

4. $2(6x + 12) = 48$

$$2 \cdot 6x + 2 \cdot 12$$

$$12x + 24 = 48$$

$$12x = 24$$

$$\boxed{x = 2}$$

$$2(6 \cdot 2 + 12) \stackrel{?}{=} 48$$

$$2(12 + 12)$$

$$2(24)$$

$$48 = 48 \checkmark$$

5. $-3(x + 4) + 2 = -11$

$$-3x + -12 + 2$$

$$-3x + -10 = -11$$

$$-3x = -1$$

$$\boxed{x = \frac{1}{3}}$$

$$-3(-1 + 4) - 2 \stackrel{?}{=} -11$$

$$-3(3) - 2$$

$$-9 - 2$$

$$-11 = -11 \checkmark$$

6. $(3x + 4) = 4x + 2$

$$-3x + 4 = 4x + 2$$

$$-7x = -2$$

$$\boxed{x = \frac{2}{7}}$$

$$3 \cdot \frac{2}{7} + 4 \stackrel{?}{=} 4 \cdot \frac{2}{7} + 2$$

$$-\frac{6}{7} + 4 = -\frac{6}{7} + 2$$

$$-\frac{6}{7} + \frac{28}{7} = -\frac{6}{7} + \frac{14}{7}$$

$$-\frac{6}{7} + \frac{22}{7} = -\frac{6}{7} + \frac{14}{7}$$

$$-\frac{6}{7} + \frac{16}{7} = -\frac{6}{7} + \frac{14}{7}$$

$$-\frac{6}{7} + \frac{10}{7} = -\frac{6}{7} + \frac{14}{7}$$

$$-\frac{6}{7} + \frac{4}{7} = -\frac{6}{7} + \frac{14}{7}$$

$$-\frac{2}{7} = -\frac{2}{7} \checkmark$$

Solve the following inequalities. Show every step neatly and clearly. Graph the solution set on a number line.

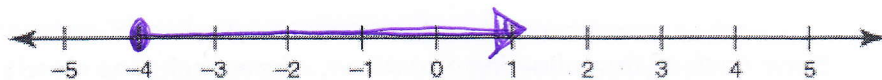
7. $3x + 7 \geq -5$

L.C.O.
 $-5 + 7$
 -12

$\frac{3x}{3} \geq \frac{-12}{3}$

$x \geq -4$

CLOSED DOT



8. $-4x - 2 > 10$

$+2$ $+2$

$-4x > 12$

$\frac{-4x}{-4} > \frac{12}{-4}$

$x < -3$

flip!
open DOT



9. There are 76 students in the Breezewood Middle School chorus. The number of girls in the chorus is 13 more than twice the number of boys.

a. Draw a picture that models the situation. Label the unknown parts with variables and the known parts with their values.

Boys: b

Girls: $b + b + 13$

b. Write an expression for the number of boys and an expression for the number of girls using the variable b to represent the number of boys.

Boys: b

Girls: $2b + 13$

$\left. \begin{array}{l} \text{Boys} \\ \text{Girls} \end{array} \right\} 76$
TOTAL STUDENTS

c. Write an equation to represent this situation.

$b + 2b + 13 = 76$

$3b + 13 = 76$

d. Determine the number of boys and the number of girls that belong to the chorus.

$3b + 13 = 76$

-13

$3b = 63$

$\frac{3b}{3} = \frac{63}{3}$

$b = 21$

21 Boys ARE IN CHORUS.
55 GIRLS ARE IN CHORUS.

10. Jenny has \$25 and she earns \$10 for each lawn that she mows. Jenny wants to buy a concert ticket that costs \$65

a. Define a variable for this situation.

$m = \# \text{ of lawns Jenny mows (needs to mow to afford the ticket)}$

b. Write an equation to model the situation.

$$10m + 25 = 65$$

c. Use your equation to determine the minimum number of Lawns Jenny needs to mow in order to buy the concert ticket.

$$\begin{array}{r|l} 10m + 25 & = 65 \\ -25 & -25 \\ \hline 10m & = 40 \\ \hline m & = 4 \end{array}$$

Jenny needs to mow 4 lawns to buy the ticket.

11. David goes into a candy store with \$5.00. He buys 9 peppermints for \$0.15 each, and some sour candies. Each sour candy costs \$0.25.

a. Define a variable for this situation.

$s = \# \text{ of sour candies he can buy}$

b. Write an equation to model the situation.

$$\begin{aligned} 0.25s + 9 \cdot 0.15 &= 5 \\ \text{or} \quad 0.25s + 1.35 &= 5 \end{aligned}$$

c. Use your equation to determine the maximum number of sour candies David can buy.

$$\begin{array}{r|l} 0.25s + 1.35 & = 5.00 \\ -1.35 & -1.35 \\ \hline 0.25s & = 3.65 \\ \hline s & = 14.6 \end{array}$$

David can buy 14 sour candies.

12. In a freefall skydive, a skydiver begins at an altitude of 13,000 feet. During the one-minute freefall, the skydiver drops towards Earth at a rate of 176 feet per second.

a. Identify the two quantities that are changing, identify the independent and dependent quantities, define variables for those quantities, and write an equation to represent a skydiver's falling distance.

Independent variable: *time (t) in seconds*

Dependent variable: *altitude (a) in feet*

Equation: *$13000 - 176t = a$*

b. In this problem, what is the unit rate of change?

$$\frac{-176 \text{ ft}}{1 \text{ sec}}$$

<i>t</i>	<i>a</i>
0	13000
1	12,824
10	11,240
	0

c. Draw the graph to represent the problem situation.

$$13000 - 176t = 0$$

$$-176t = -13000$$

$$t = 73.86...$$

