

Section 1.1

Vocabulary

equation

solution

linear equation
in one variable

Expression

equivalent
equations

inverse operations

Core Concept: Properties of Equality

Addition Property of equality	Subraction Property of equality	Muliplication Property of equality	Division Property of equality
If $a=b$, then	If $a=b$, then	If $a=b$, then	If $a=b$, then

 Cut out each property and example. Then glue it to the correct property of equality.

$a \times c = b \times c$	$a + c = b + c$	$a - c = b - c$	$a \div c = b \div c$
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$\begin{array}{r} x + 5 = 3 \\ -5 \quad -5 \\ \hline x = 2 \end{array}$	$\begin{array}{r} 5x = 3 \\ \frac{5x}{5} = \frac{3}{5} \\ \hline x = \frac{3}{5} \end{array}$	$\begin{array}{r} \frac{x}{5} = 3 \\ 5 \times \frac{x}{5} = 3 \times 5 \\ \hline x = 15 \end{array}$	$\begin{array}{r} x - 5 = 3 \\ +5 \quad +5 \\ \hline x = 8 \end{array}$
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Examples: Solve each equation. Check your solution.

1. $x + 7 = -12$

2. $-15 + w = 6$

3. $z - (-5) = 8$

4. $-2 = y - 9$

5. $3 = \frac{q}{11}$

6. $4b = -52$

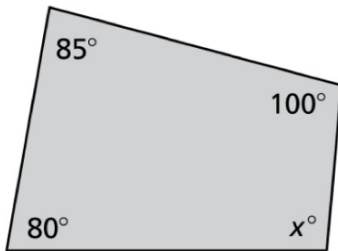
7. $7q = |-35|$

8. $-\frac{3}{2}r = -15$

Application Problems: Write and solve the application problems.

1. A coupon subtracts \$17.95 from the price p of a pair of headphones. You pay \$71.80 for the headphones after using the coupon. Write and solve an equation to find the original price of the headphones.

2. The sum of the interior angles of a quadrilateral is 360° . Find the value of x .



Section 1.2

Solving Multi-step Equations--Six Steps to Solving Equations

1.

2.

3.

4.

5.

6.

Grouping symbol/fraction bar

Simplify each side of the equation by combining like terms and/or collect the variable on one side of the equation and the constant term on the other.

Use inverse operations to add/subtract constants

Use inverse operations to multiply/divide coefficients

Reduce any fractions

Check your solution

Group activity: Cut out and make piles of each step. Students work in groups to determine which order the steps go in. Then, come together as a whole group and go over answers. Before printing, omit directions.

Examples: Solve each equation. Check your solution.

1. $5z - 13 = -3$

2. $15 = 2 + 4 - d$

3. $5z - 2z - 4 = -7$

4. $\frac{q + (-5)}{3} = 8$

5. $9z - 5 - 4z = -5$

6. $\frac{f}{4} - 5 = -9$

7. $3(z + 7) = 21$

8. $33 = 12r - 3(9 - r)$

Application: Write and solve the application problems.

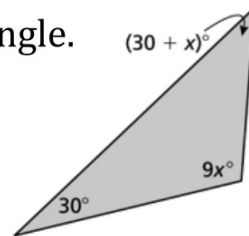
1. Air temperature drops about 3°F for each 1000 ft increase in altitude. If the air temperature at sea level is 77°F , at what altitude would you expect the temperature to be 53°F ?

2. Marcia buys a coat with a sales tax of 5%.
What is the original cost of the coat?



Application: Write and solve the application problems.

3. Find the value of x . Then find the measure of each angle.



Section 1.3

Vocabulary

Equations do not always have one solution. An equation that is true for all values of the variable is an _____ and has _____. An equation that is not true for any value of the variable has _____.

To solve an equation with variables on both sides, simplify _____, if necessary. Then use _____ to collect the _____ terms on one side, collect the _____ on the other side. Continue to follow steps to solving equations.

Use eraser tool to reveal missing words to the text. Delete before printing!

Examples: Solve each equation. Write infinitely many solutions, or no solution, if needed. Check your solution.

1. $6a - 4 = 3a + 5$

2. $12 - 3x = -6x$

3. $5q + 6 = 3q - 2 + 2q$

Examples: Solve each equation. Write infinitely many solutions, or no solution, if needed. Check your solution.

$$4. 16f + 24 = 8(2f + 3)$$

$$5. \frac{2}{3}(6j + 9) = 3j + 7$$

$$6. 3x - 8(2x + 3) = -6(2x + 5)$$

Section 1.4

Vocabulary

Absolute Value Equation	<p>Absolute value--the distance from 0 on a number line. The absolute value of a number is always positive.</p> <p>Absolute value equation--An equation that contains an absolute value expression. (may have two solutions)</p> $ a \geq 0$
Extraneous Solution	A solution that does not satisfy the equation.

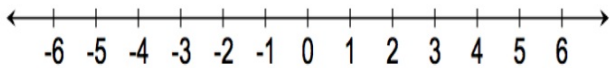
To solve $|ax + b| = c$ when $c \geq 0$, solve the related linear equations

$$ax + b = c \quad \text{or} \quad ax + b = -c.$$

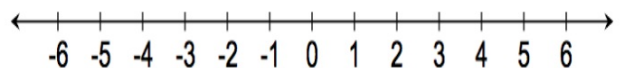
When $c < 0$, the absolute value equation $|ax + b| = c$ has no solution because absolute value always indicates a number is not negative.

Here are some basic examples.

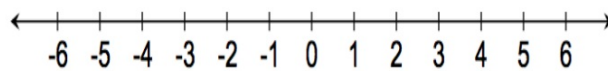
1. $|x| = 5$



2. $|x| = -5$



3. $|x| = 0$



Examples: Solve each equation. Graph the solution(s), if possible.
Check your answers for extraneous solution(s).

1. $|3d| = 3$

2. $|3x + 12| = 0$

3. $-4|7 - 6k| = 14$

Examples: Solve each equation. Check your answers for extraneous solutions.

4. $\left| \frac{1}{2}y + 6 \right| = 8$

5. $3|2x + 5| + 10 = 37$

Section 1.5

Vocabulary

Literal Equation--

Formula--

Use the eraser tool to reveal the definitions to the vocabulary terms. Delete before printing.

Examples: Solve the literal equation for y.

$$1. y - 2x = 15$$

$$2. 3x - y = -4$$

$$3. 3x + 1 = 7 - 4y$$

$$4. y + 4x = 10x - 6$$

Examples: Solve the literal equation for x .

$$1. y = -10x + 4x$$

$$2. q = 3x + 9xz$$

$$3. 3y + 8 = 12 + 3x - y$$

$$4. r = 4 + 7x - sx$$

Examples: Solve the formula for the indicated variable.

1. $A = \frac{1}{2}bh$, solve for h .

2. $A = \frac{a+b+c}{3}$, solve for b .

3. $A = 2(L + W)$, solve for W .

The relationship among the sale price S , the list price L , and the discount rate r .

a. Solve the formula for r . $S = L - rL$

b. Find the discount rate as a decimal and a percent. When the sale price is \$40 and the list price is \$50.

