Algebra I
2-1: Solving One-Step Equations

Name ______________________
Date ____________ Class Period ______

Learning Target: Today you will be able to SOLVE ONE-STEP EQUATIONS IN ONE VARIABLE

Question/Main Ideas:	Notes:
Definition: Equivalent Equations	Equations that have the same solution(s).
Property: Addition and Subtraction Properties of Equality	Addition Property of Equality – For any real number a, b, and c. If... $a=b$ then $a+c=b+c$ Subtraction Property of Equality – For any real number a, b, and c If... $a=b$ then $a-c=b-c$
Definition: Isolate	Get the variable "alone" with a coefficient of one.
Definition: Inverse Operation	Undoes another operation. Addition ↔ Subtraction; Multiplication ↔ Division
Example 1: Solving One-Step Equations using Adding and Subtracting	Solve each equation. Justify each step. a. $x + 13 = 27$ $-13 \quad -13$ $x = 14$ Sub. Prop. of Equal. b. $-7 = x - 3$ $+3 \quad +3$ $-4 = x$ Add. Prop. of Equal.
Now It's Your Turn	Solve each equation. Justify each step. a. $y + 2 = -6$ $-2 \quad -2$ $y = -8$ Sub. Prop. of Equal. b. $\frac{1}{2} = x - \frac{3}{2}$ $+\frac{3}{2} \quad +\frac{3}{2}$ $\frac{4}{2} = x$ $x = 2$ Add Prop. of Equal.
Property: Multiplication and Division Properties of Equality	Multiplication Property of Equality – For any real number a, b, and c. If... $a=b$ then $a \cdot c = b \cdot c$ Division Property of Equality – For any real number a, b, and c. If... $a=b$ then $\frac{a}{c} = \frac{b}{c}$

Example 2: Solving One-Step Equations using Multiplying and Dividing

Solve each equation. Justify each step.

a. $\frac{4x}{4} = \frac{6.4}{4}$ Div. Prop. of Equal.

$x = 1.6$

b. $\cdot 4 \ \frac{x}{4} = -20 \cdot 4$ Mult. Prop. of Equal.

$x = -80$

Now It's Your Turn

Solve each equation. Justify each step.

a. $\frac{10}{15} = \frac{15x}{15}$ Div. Prop. of Equal.

$\frac{2}{3} = x$

b. $\cdot 3 \ 19 = \frac{x}{3} \cdot 3$ Mult. Prop. of Equal

$57 = x$

Review: Dividing Fractions

Simplify the following.

$$\frac{3}{4} \div \frac{3}{2} = \frac{3}{4} \cdot \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$$

Example 3: Solving Equations Using Reciprocals

Solve each equation. Justify each step.

$\frac{5}{4} \cdot \frac{\cancel{4}}{\cancel{5}}x = 28 \cdot \frac{5}{4}$ Mult. Prop. of Equal → Dividing is the same as mult. by the reciprocal

$x = 35$

Now It's Your Turn

Solve each equation. Justify each step.

$\frac{4}{3} \cdot \ 12 = \frac{3}{4}x \cdot \frac{4}{3}$ Mult. prop. of Equal.

$16 = x$

Summary: ______________________________

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Algebra I
2-2 Day 1: Solving Two-Step Equations

Name ______________________________
Date _____________ Class Period _______

Learning Target: Today you will be able to SOLVE TWO-STEP EQUATIONS IN ONE VARIABLE

Question/Main Ideas:	Notes:
Steps to Solving Two-Step Equations	Goal: Isolate the variable Add or subtract the constant term to eliminate it. Use inverse operations. Multiply or divide to eliminate the coefficient. Use inverse operations.
Example 1: Solving a Two-Step Equation	Solve each equation. a. $2x + 3 = 15$ $-3 \quad -3$ $\frac{2x}{2} = \frac{12}{2}$ $x = 6$ b. $\frac{1}{2}x + 5 = 18$ $-5 \quad -5$ $2 \cdot \frac{1}{2}x = 13 \cdot 2$ $x = 26$
Now It's Your Turn	Solve each equation. a. $5 = \frac{x}{2} - 3$ $+3 \quad +3$ $2 \cdot 8 = \frac{x}{2} \cdot 2$ $16 = x$ b. $-5 + 4x = 11$ $+5 \quad +5$ $\frac{4x}{4} = \frac{16}{4}$ $x = 4$

Summary: ____

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Algebra I
2-2 Day 2: Fraction Busters

Name ______________________________
Date _____________ Class Period _______

Learning Target: Today you will be able to SOLVE TWO-STEP EQUATIONS USING FRACTION BUSTERS

Question/Main Ideas:	**Notes:**
Fraction Busters	Multiply the entire equation by the common denominator $\frac{2}{3}\cdot 6=\frac{12}{3}=4$
Concept: The Benefits of Fraction Busters	Solve each equation. a. $\frac{2}{5}x+\frac{3}{5}=\frac{1}{3}$ $\frac{5}{15}$ $-\frac{3}{5}$ $-\frac{3}{5}$ $-\frac{9}{15}$ $\frac{5}{2}\cdot\frac{2}{5}x=-\frac{4}{15}\cdot\frac{5}{2}$ $x=-\frac{20}{30}=-\frac{2}{3}$ b. $\left(\frac{2}{5}x+\frac{3}{5}=\frac{1}{3}\right)15$ $6x+9=5$ $-9\ -9$ $\frac{6x}{6}=\frac{4}{6}$ $x=\frac{2}{3}$
Example 1: Using Fraction Busters	Solve each equation. a. $\left(\frac{x-7}{3}=-12\right)3$ $x-7=-36$ $+7\ \ +7$ $x=-29$ b. $\left(\frac{x}{4}+3=5\right)4$ $x+12=20$ $-12\ -12$ $x=8$
Now It's Your Turn	Solve each equation. a. $\left(6=\frac{x-2}{4}\right)4$ $24=x-2$ $+2\ \ +2$ $26=x$ b. $\left(\frac{2}{3}x-2=\frac{5}{7}\right)21$ $14x-42=15$ $+42\ +42$ $\frac{14x}{14}=\frac{57}{14}$ $x=4.1$

Summary: ____

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Algebra I
2-3 Day 1: Solving Multi-Step Equations

Name ______________________
Date ____________ Class Period ______

Learning Target: Today you will be able to SOLVE MULTI-STEP EQUATIONS USING EITHER DISTRIBUTIVE PROPERTY OR COMBINING LIKE TERMS

Question/Main Ideas:	Notes:
Key to Solving Multi-Step Equations	Simplify First: • Distributive Property • Combine Like terms
Example 1: Combining Like Terms	Solve the following equation. $5 = \underline{5m} - 23 + \underline{2m}$ $5 = 7m - 23$ $+23 \qquad +23$ $\frac{28}{7} = \frac{7m}{7}$ $4 = m$
Now It's Your Turn	Solve each equation. a. $\underline{11x} - 8 - \underline{6x} = 22$ $5x - 8 = 22$ $+8 \quad +8$ $\frac{5x}{5} = \frac{30}{5}$ $x = 6$ b. $\underline{-2x} + 5 + \underline{5x} = 14$ $3x + 5 = 14$ $-5 \quad -5$ $\frac{3x}{3} = \frac{9}{3}$ $x = 3$
Example 2: Solving an Equations Using the Distributive Property	Solve the following equation. $-8(2x - 1) = 36$ $-16x + 8 = 36$ $-8 \quad -8$ $\frac{-16x}{-16} = \frac{28}{-16}$ $x = -1.75$

Now It's Your Turn

a. Solve $18 = 3(2x - 6)$.

$18 = 6x - 18$

$+18 \qquad +18$

$36 = 6x$

$\frac{36}{6} = \frac{6x}{6}$

$6 = x$

b. Can you solve this equation by using the Division Property of Equality instead of the Distributive Property? Explain.

$\frac{18}{3} = \frac{3(2x-6)}{3}$

$6 = 2x - 6$ ← solve this

Example 3: Solving an Equation that Contains Fractions

Solve $\frac{3x}{4} - \frac{x}{3} = 10$ using two different methods as described below.

a. **Method 1:** Using Like Terms

$\frac{3}{3}\cdot\frac{3x}{4} - \frac{x}{3}\cdot\frac{4}{4} = 10$

$\frac{9x}{12} - \frac{4x}{12} = 10$

$\frac{12}{5}\cdot\frac{5x}{12} = 10\cdot\frac{12}{5}$

$x = 24$

b. **Method 2:** Fraction Busters

$12\left(\frac{3x}{4} - \frac{x}{3} = 10\right)$

$9x - 4x = 120$

$\frac{5x}{5} = \frac{120}{5}$

$x = 24$

Now It's Your Turn

Solve each equation. Use a method of your choice.

a. $\left(\frac{5}{6}x + \frac{3}{4}x = 1\right)12$

$10x + 9x = 12$

$19x = 12$

$x = \frac{12}{19}$

b. $\left(\frac{x}{5} - 3 + \frac{6x}{7} = 10\right)35$

$7x - 105 + 30x = 350$

$37x - 105 = 350$

$+105 \quad +105$

$\frac{37x}{37} = \frac{245}{37}$

$x \approx 6.6$

Example 4: Solving Equations that Contain Decimals

a. Solve $(3.5 - 0.02x = 1.24.)100$

$350 - 2x = 124$

$-350 \qquad -350$

$-2x = -226$

$x = 113$

b. Your Turn $(0.5x - 2.325 = 3.95)1000$

$500x - 2325 = 3950$

$+2325 \quad +2325$

$\frac{500x}{500} = \frac{6275}{500}$

$x = 12.55$

Summary: ______________________________

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Algebra I
2-3 Day 2: Solving Multi-Step Equations

Name ______________________________
Date _____________ Class Period _______

Learning Target: Today you will be able to SOLVE MULTI-STEP EQUATIONS USING DISTRIBUTIVE PROPERTY AND COMBINING LIKE TERMS

Question/Main Ideas: | **Notes:**

Steps to Solving Multi-Step Equations

Distributive Property

Combine Like terms

Isolate the variable

Example 1: Solving Multi-Step Equations

Solve each equation.

a. $49 = 2(7x + 6) + 9$

$49 = 14x + 12 + 9$

$49 = 14x + 21$

$-21 \qquad -21$

$28 = 14x$

$\frac{28}{14} = \frac{14x}{14}$

$2 = x$

b. $8(3x + 8) - 2x = 130$

$24x + 64 - 2x = 130$

$22x + 64 = 130$

$-64 \quad -64$

$22x = 66$

$\frac{22x}{22} = \frac{66}{22}$

$x = 3$

Now It's Your Turn

Solve each equation.

a. $12x - 2(x - 5) = 80$

$12x - 2x + 10 = 80$

$10x + 10 = 80$

$-10 \quad -10$

$10x = 70$

$\frac{10x}{10} = \frac{70}{10}$

$x = 7$

b. $47 = 3(-2x + 4) + 11$

$47 = -6x + 12 + 11$

$47 = -6x + 23$

$-23 \qquad -23$

$24 = -6x$

$\frac{24}{-6} = \frac{-6x}{-6}$

$-4 = x$

Summary: ____

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Algebra I
2-4 Day 1: Solving Equations: Variables on Both Sides

Name ______________________________
Date ______________ Class Period _______

Learning Target: Today you will be able to SOLVE EQUATIONS WITH VARIABLES ON BOTH SIDES

Question/Main Ideas: | **Notes:**

Key Ideas

Add or subtract the variable terms to move the variables to one side of the equation.
Use inverse operations.

$3x + 5 = -8x + 11$
$-3x \qquad -3x$
$5 = -11x + 11$

$3x + 5 = -8x + 11$
$+8x \qquad +8x$
$11x + 5 = 11$

Example 1: Solving Equations with Variables on Both Sides

Solve each equation.

a. $5x + 2 = 2x + 14$
$-2x \qquad -2x$
$3x + 2 = 14$
$-2 \quad -2$
$\frac{3x}{3} = \frac{12}{3}$
$x = 4$

b. $-6x - 7 = -4x + 3$
$+6x \qquad +6x$
$-7 = 2x + 3$
$-3 \qquad -3$
$\frac{-10}{2} = \frac{2x}{2}$
$-5 = x$

Now It's Your Turn

Solve each equation.

a. $7x + 2 = 4x - 10$
$-4x \qquad -4x$
$3x + 2 = -10$
$-2 \quad -2$
$\frac{3x}{3} = \frac{-12}{3}$
$x = -4$

b. $3x - 10 = -2x + 15$
$+2x \qquad +2x$
$5x - 10 = 15$
$+10 \quad +10$
$\frac{5x}{5} = \frac{25}{5}$
$x = 5$

Example 2: Using an Equations with Variables on Both Sides

It takes a graphic designer 1.5 hours to make one page of a web site. Using new software, the designer could complete each page in 1.25 hours, but it takes 8 hours to learn the software. How many web pages would the designer have to make in order to save time using the new software?

$$1.5x = 1.25x + 8$$
$$-1.25x \quad -1.25x$$
$$\frac{0.25x}{.25} = \frac{8}{.25}$$
$$x = 32$$

The designer would need to make more than 32 pages

Now It's Your Turn

An office manager spent $650 on a new energy-saving copier that will reduce the monthly electric bill for the office from $112 to $88. In how many months will the copier pay for itself?

$$112x = 88x + 650$$
$$-88x \quad -88x$$
$$24x = 650$$
$$x = 27.08$$

28 months

Combining Like Terms vs. Variables on Both Sides

Solve $\underline{3x} - 7 + \underline{2x} = 10$

$$5x - 7 = 10$$
$$+7 \quad +7$$
$$\frac{5x}{5} = \frac{17}{5}$$
$$x = 3.4$$

Solve $3x - 7 = 2x + 10$

$$-2x \quad -2x$$
$$x - 7 = 10$$
$$+7 \quad +7$$
$$x = 17$$

Combining Like Terms Key Idea:

Same side of equation – do same operation

Variables on Both Sides Key Idea:

Opposite side of equation – use opposite operation.

Summary: ____

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Algebra I
2-4 Day 2: Solving Equations: Variables on Both Sides

Name ______________________________
Date ______________ Class Period _______

Learning Target: Today you will be able to SOLVE EQUATIONS WITH VARIABLES ON BOTH SIDES

Question/Main Ideas: | **Notes:**

Main Idea:

Simplify each side of the equation first like two separate problems.

Example 1: Solving Equations with Variables on Both Sides

Solve each equation.

a. $2(5x - 1) = 3(x + 11)$

$$10x - 2 = 3x + 33$$
$$-3x \qquad -3x$$
$$7x - 2 = 33$$
$$+2 \qquad +2$$
$$7x = 35$$
$$x = 5$$

b. $7x - 5(x - 4) = 7(2x + 1)$

$$7x - 5x + 20 = 14x + 7$$
$$2x + 20 = 14x + 7$$
$$-2x \qquad -2x$$
$$20 = 12x + 7$$
$$-7 \qquad -7$$
$$\frac{13}{12} = \frac{12x}{12}$$
$$1.08 = x$$

Now It's Your Turn

Solve each equation.

a. $4(2x + 1) = 2(x - 13)$

$$8x + 4 = 2x - 26$$
$$-2x \qquad -2x$$
$$6x + 4 = -26$$
$$-4 \qquad -4$$
$$\frac{6x}{6} = \frac{-30}{6}$$
$$x = -5$$

b. $7(4 - x) = 3(x - 4) + 5x$

$$28 - 7x = 3x - 12 + 5x$$
$$28 - 7x = 8x - 12$$
$$+7x \qquad +7x$$
$$28 = 15x - 12$$
$$+12 \qquad +12$$
$$\frac{40}{15} = \frac{15x}{15}$$
$$2.7 = x$$

Example 2: Equations with Special Solutions

Solve each equation.

a. $10x + 12 = 2(5x + 6)$

$10x+12 = 10x+12$

$-10x \qquad -10x$

$12 = 12$

Always true

$\boxed{\text{All real numbers}}$

b. $9m - 4 = \underline{-3m} + 5 + \underline{12m}$

$9m-4 = 9m+5$

$-9m \qquad -9m$

$-4 = 5$

Never true

$\boxed{\text{No solution}}$

Now It's Your Turn

Solve each Equation.

a. $3(4b - 2) = -6 + 12b$

$12b-6 = -6+12b$

$-12b \qquad -12b$

$-6 = -6$

All real numbers

b. $2x + 7 = -1(3 - 2x)$

$2x+7 = -3+2x$

$-2x \qquad -2x$

$7 = -3$

No solution

Equations with No Solutions

when the coefficients of x match (variables disappear) and the resulting statement is false

Equations with Infinitely Many Solutions

when the coefficients of x match (variables disappear) and the resulting statement is true.

Concept Summary: Solving Equations

take note

Concept Summary **Solving Equations**

Step 1 Use the Distributive Property to remove any grouping symbols. Use properties of equality to clear decimals and fractions.

Step 2 Combine like terms on each side of the equation.

Step 3 Use the properties of equality to get the variable terms on one side of the equation and the constants on the other.

Step 4 Use the properties of equality to solve for the variable.

Step 5 Check your solution in the original equation.

Summary: ____________________

Algebra I
2-5: Literal Equations

Name ______________________________
Date ______________ Class Period _______

Learning Target: Today you will be able to REWRITE LITERAL EQUATIONS

Question/Main Ideas:	Notes:
Definition: Literal Equations	An equation that involves two or more variables.
Example 1: Rewriting a Literal Equation	Solve the given equation for y. a. 10x + 5y = 80 $-10x \quad -10x$ $\frac{5y}{5} = \frac{80}{5} - \frac{10x}{5}$ $y = 16 - 2x$ OR $y = -2x + 16$ b. -2x + 5y = 12 $+2x \quad +2x$ $\frac{5y}{5} = \frac{12}{5} + \frac{2x}{5}$ $y = \frac{12}{5} + \frac{2}{5}x$ OR $y = \frac{2}{5}x + \frac{12}{5}$
Now It's Your Turn	Solve the given equation for y. a. 4 = 2y - 5x $+5x \quad +5x$ $\frac{4}{2} + \frac{5x}{2} = \frac{2y}{2}$ $2 + \frac{5}{2}x = y$ OR $y = \frac{5}{2}x + 2$ b. x - 2y = -10 $-x \quad -x$ $\frac{-2y}{-2} = \frac{-10}{-2} \frac{-x}{-2}$ $y = 5 + \frac{1}{2}x$ OR $y = \frac{1}{2}x + 5$
Example 2: Rewriting a Literal Equation with Only Variables	Solve ax - by = c for x. $+by \quad +by$ $\frac{ax}{a} = \frac{c}{a} + \frac{by}{a}$ $x = \frac{c}{a} + \frac{by}{a}$ OR $x = \frac{c+by}{a}$

Now It's Your Turn

Solve -x = r + py for y.

$-r \quad -r$

$\frac{-x-r}{p} = \frac{py}{p}$

$y = \frac{-x-r}{p}$

Definition: Formula

A special type of equation that shows the relationship between different variables.

Common Formulas

Formula Name	Formula	Definitions of Variables
Perimeter of a rectangle	$P = 2\ell + 2w$	P = perimeter, ℓ = length, w = width
Circumference of a circle	$C = 2\pi r$	C = circumference, r = radius
Area of a rectangle	$A = \ell w$	A = area, ℓ = length, w = width
Area of a triangle	$A = \frac{1}{2}bh$	A = area, b = base, h = height
Area of a circle	$A = \pi r^2$	A = area, r = radius
Distance traveled	$d = rt$	d = distance, r = rate, t = time
Temperature	$C = \frac{5}{9}(F - 32)$	C = degrees Celsius, F = degrees Fahrenheit

Example 3: Rewriting a Geometric Formula

Solve each equation for the given variable.

a. $\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$ for r

$\frac{C}{2\pi} = r$

b. $2\left(A = \frac{1}{2}bh\right)$ for h

$\frac{2A}{b} = \frac{bh}{b}$

$\frac{2A}{b} = h$

Now It's Your Turn

Solve each equation for the given variable.

a. $\frac{D}{r} = \frac{rt}{r}$ for t

$\frac{D}{r} = t$

b. $\frac{9}{5}\left(C = \frac{5}{9}(F-32)\right)$ for F

$\frac{9}{5}C = F - 32$

$+32 \quad +32$

$\frac{9}{5}C + 32 = F$

Summary: ______________________________

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Algebra I
2-7: Solving Proportions

Name ______________________________
Date _____________ Class Period _______

Learning Target: Today you will be able to SOLVE AND APPLY PROPORTIONS

Question/Main Ideas:	Notes:
Definition: Proportion	An equation that states two ratios are equal. $\frac{a}{b} = \frac{c}{d}$ $b \neq 0, d \neq 0$ said "a is to b as c is to d"
Example 1: Solving a Proportion Using the Multiplication Property	Solve each equation. a. $\left(\frac{7}{8} = \frac{m}{12}\right)$ 96 $\frac{84}{8} = \frac{8m}{8}$ $10.5 = m$ b. Your Turn: $\left(\frac{x}{7} = \frac{4}{5}\right)$ 35 $\frac{5x}{5} = \frac{28}{5}$ $x = 5.6$
Property: Cross Products Property of a Proportion	The cross products of a proportion are equal. If $\frac{a}{b} \times \frac{c}{d}$, then $ad = bc$ $\frac{3}{4} = \frac{9}{12}$ $3 \cdot 12 = 4 \cdot 9$ $36 = 36$
Example 2: Solving a Proportion Using the Cross Products Property	Solve each equation. a. $\frac{4}{3} = \frac{8}{x}$ $\frac{4x}{4} = \frac{24}{4}$ $x = 6$ b. Your Turn: $\frac{x}{3} = \frac{3}{5}$ $\frac{5x}{5} = \frac{9}{5}$ $x = 1.8$

Example 3: Solving a Multi-Step Proportion

Solve each equation.

a. $\frac{x-8}{5} = \frac{x+3}{4}$

$$5(x+3) = 4(x-8)$$

$$5x + 15 = 4x - 32$$

$$-4x \qquad -4x$$

$$x + 15 = -32$$

$$-15 \quad -15$$

$$x = -47$$

b. Your Turn: $\frac{x}{5} = \frac{2x+4}{6}$

$$6x = 5(2x+4)$$

$$6x = 10x + 20$$

$$-10x \quad -10x$$

$$\frac{-4x}{-4} = \frac{20}{-4}$$

$$x = -5$$

Example 4: Using a Proportion to Solve a Problem

A portable media player has 2 gigabytes of storage and can hold about 500 songs. A similar but larger media player has 80 gigabytes of storage. About how many songs can the larger media player hold?

$$\frac{\text{gb Large}}{\text{songs Large}} = \frac{\text{gb small}}{\text{songs small}}$$

$$\frac{80}{x} = \frac{2}{500}$$

$$\frac{2x}{2} = \frac{40000}{2}$$

$x = 20{,}000$ songs

Now It's Your Turn

An 8-oz can of orange juice contains about 97 mg of vitamin C. About how many milligrams of vitamin C are there in a 12-oz can of orange juice?

$$\frac{\text{Large oz}}{\text{Large mg}} = \frac{\text{Small oz}}{\text{Small mg}}$$

$$\frac{12}{x} = \frac{8}{97}$$

$$\frac{8x}{8} = \frac{1164}{8}$$

$x = 145.5$mg

Summary: ____

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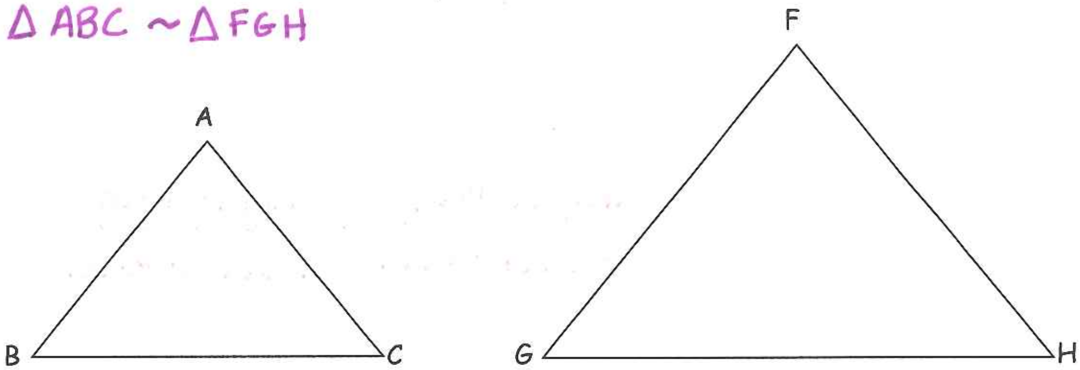
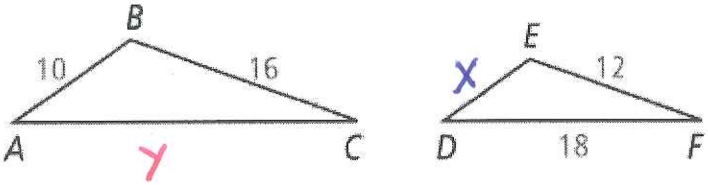
Algebra I
2-8: Proportions and Similar Figures

Name ______________________________
Date _____________ Class Period _______

Learning Target: Today you will be able to SOLVE AND APPLY PROPORTIONS

Question/Main Ideas:	Notes:
Definition: Similar Figures	Two figures that have the same shape, but not the same size. Angles are the same; sides are proportional. ~ is the symbol for similar. ≅ is the symbol for congruent
Diagram: Similar Figures	$\triangle ABC \sim \triangle FGH$  $\angle A \cong \angle F$ $\angle B \cong \angle G$ $\angle C \cong \angle H$ $\frac{AB}{FG} = \frac{AC}{FH} = \frac{BC}{GH}$
Example 1: Finding the Length of a Side	Find the length of DE.  $\frac{AB}{DE} = \frac{BC}{EF}$ $\frac{10}{x} = \frac{16}{12}$ $\frac{16x}{16} = \frac{120}{16}$ $X = 7.5$
Now It's Your Turn	Use the same diagram above to find the length of AC. $\frac{BC}{EF} = \frac{AC}{DF}$ $\frac{16}{12} = \frac{y}{18}$ $12y = 288$ $y = 24$

Example 2: Applying Similarity

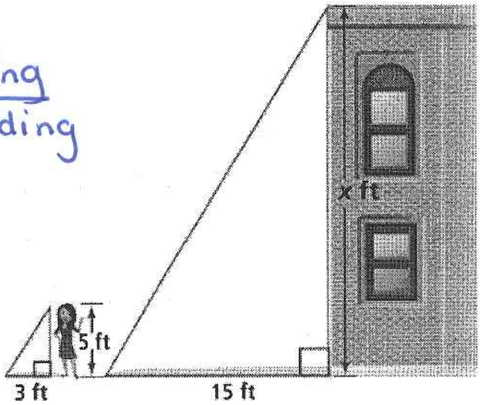
The sun's rays strike the building and the girl at the same angle, forming two similar triangles shown. How tall is the building?

$$\frac{\text{Height Girl}}{\text{Shadow Girl}} = \frac{\text{Height Building}}{\text{Shadow Building}}$$

$$\frac{5}{3} = \frac{x}{15}$$

$$3x = 75$$

$$x = 25 \text{ ft}$$



Now It's Your Turn

A man who is 6 ft tall is standing next to a flagpole. The shadow of the man is 3.5 ft and the shadow of the flagpole is 17.5 ft. What is the height of the flagpole?

$$\frac{\text{Height Man}}{\text{Shadow Man}} = \frac{\text{Height Pole}}{\text{Shadow Pole}}$$

$$\frac{6}{3.5} = \frac{x}{17.5} \quad x = 30 \text{ ft}$$

$$3.5x = 105$$

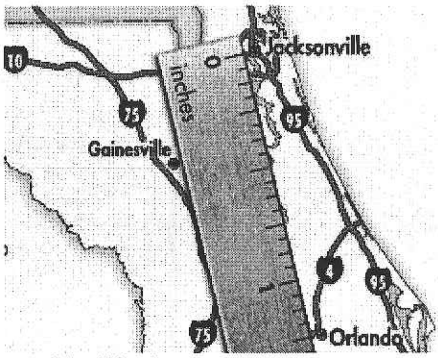
Example 3: Interpreting Scale Drawings

What is the actual distance from Jacksonville to Orlando? Use the ruler to measure the distance from Jacksonville to Orlando on the map.

$$\frac{\text{Scale in}}{\text{Scale mi}} = \frac{\text{Actual in}}{\text{Actual mi}}$$

$$\frac{1}{110} = \frac{1.25}{x}$$

$$x = 137.5 \text{ mi}$$



1 in: 110 mi

Now It's Your Turn

The distance from Jacksonville to Gainesville on the map is about 0.6 in. What is the actual distance from Jacksonville to Gainesville?

$$\frac{1}{110} = \frac{0.6}{x} \qquad x = 66 \text{ mi}$$

Summary: ______________________________

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