Good Definitions:

- Clearly understood
- Precise
- Makes a true Biconditional.

(Good definitions are reverseible)

Is this a good definition of Parallel Lines?

Two lines are parallel iff they don't intersect

Write the two conditionals that form this bicondional

1. If two lines are parallel, then they don't intersect.
2. If two lines don't intersect, then they are paralle. False, lines could skew

Are they both true?

Is this a good definition of a square?

A figure is a square iff it has four right angles.

Write the two conditionals that make up this biconditional

If a figure is a square, then it has four right angles.

If a figure has four right angles, then it is a square. False, it could be a Rect.

This is not a good definition of a square because one of the conditionals is false!

No, one of the conditionals is false

Write a good definition of a square as a biconditional.

A figure is a square if and only if... it has 4 $\cong$ sides & 4 RT $\angle$'s

Is this biconditional true?

It's July if and only if it's Summer time.

Write the two conditionals that make up this biconditional

If it's July, then it's Summer time

If it's Summer time, then it's July False, it could be Aug

Congruent figures have the same shape.

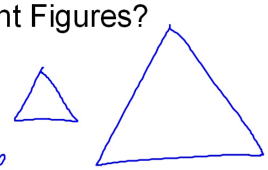
1. Write this statement as a biconditional

Figures are congruent if and only if they have the same shape

2. Is this a good definition of Congruent Figures?

Is the biconditional true?

No because the could have different size $\rightarrow$ similar



Sec 2-2

If an angle is obtuse, then its measure is greater than 90º

1. Write the converse.

IF a measure is greater than 90°, then its an obtuse ∠

2. Use the conditional and its converse to write a biconditional.

The angle is obtuse $\underbrace{\text{if + only if}}_{\text{iff}}$ its measure is greater than 90°

3. Is the biconditional true?

false it could be a straight ∠

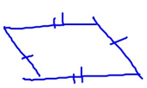
Is this biconditional true?

A figure is a rectangle iff its opposite sides are congruent.

Rect ⟶ opp sides ≅ ✓

opp sides ≅ ⟶ Rect

false, figure could be ∥-gram



You can now complete Hwk #7.

Solve each equation:

1. $\frac{4}{x} = \frac{15}{21}$

$15x = 84$

$\frac{15x}{15} = \frac{84}{15}$

$x = 5.6$

2. $9 - 3(x + 4) = -21$

$9 + (-3x) + (-12) = -21$

$-3 = -21$
$+3 \quad +3$

$\frac{-3x}{-3} = \frac{-18}{-3}$

$x = 6$

3. $\frac{x+6}{3} + 1 = -21$

$-1 \quad -1$

$x + 6 = -60$

$-6 \quad -6$

$x = -66$

$x + 4 = 10$

2. $9 - 3(x + 4) = -21$

$-9 \quad -9$

$\frac{-3(x+4)}{-3} = \frac{-30}{-3}$

4. $5Q = 2Q - 24$

$-2Q \quad -2Q$

$\frac{3Q}{3} = \frac{-24}{3}$

$Q = -8$

5. $3 - \frac{4}{7}m = -9$

$-3 \quad -3$

$-\frac{4}{7}m = -12$

$m = +21$

$-\frac{7}{4} \cdot -\frac{4}{7}m = -12 \cdot$

$m = \frac{-12}{1} \cdot -\frac{7}{4}$

In geometry you accept postulates and properties as true. You use deductive reasoning to prove other statements. Some of the properties that you accept as true are the properties of equality from algebra. They are listed below in terms of any numbers a, b, and c.

Summary	Properties of Equality
Addition Property	If $a = b$, then $a + c = b + c$.
Subtraction Property	If $a = b$, then $a - c = b - c$.
Multiplication Property	If $a = b$, then $a \cdot c = b \cdot c$.
Division Property	If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.
Reflexive Property	$a = a$
Symmetric Property	If $a = b$, then $b = a$.
Transitive Property	If $a = b$ and $b = c$, then $a = c$.
Substitution Property	If $a = b$, then b can replace a in any expression.

You also assume that other properties from algebra are true.

Property	The Distributive Property
$a(b + c) = ab + ac$	

Solve this equation. Justify the steps. $5x + 3 = -12$

Steps	Reasons
$5x+3=-12$	Given
$5x+3-3=-12-3$	Subt Prop =
$5x=-15$	Simplify
$\frac{5x}{5}=\frac{-15}{5}$	÷ prop =
$x=-3$	Simplify

Solve this equation. Justify the steps. $6 + 2(3x + 1) = 38$

Steps	Reasons
$6+2(3x+1)=38$	Given
$6+2(3x+1)-6=38-6$	Subtr prop =
$2(3x+1)=32$	Simplify
$6x+2=32$	DISTRIB Prop