

Geometry: Bell Work

Solve the problem in the left column, showing all steps. For each step, explain what you did in the right column. An example is given.

	steps	justification
example	$2x + 2(3x + 4) = 24$	
$-5(x+4) = 70$	$2x + 6x + 8 = 24$	or distribution
$-5 \cdot x + -5 \cdot 4 = 70$	$8x + 8 = 24$	
$-5x - 20 = 70$	$\begin{array}{r} 8x + 8 = 24 \\ -8 \quad -8 \\ \hline 8x = 16 \end{array}$	subtraction
$-5x - 20 + 20 = 70 + 20$	$\begin{array}{r} 8x = 16 \\ \hline x = 2 \end{array}$	division
$-5x = 90$		
$-5x \div (-5) = 90 \div (-5)$	$x = 2$	
$x = -18$		

Pull out Assignment 2.1.

5. 3, 3, 6, 9, 15, ...

6. 2, 6, 14, 30, 62, ...



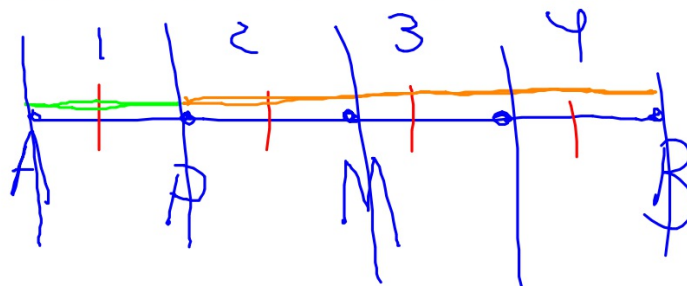
Make a conjecture about each value or geometric relationship.

7. the product of two even numbers

8. the relationship between a and b if $a + b = 0$

9. the relationship between the set of points in a plane equidistant from point A

10. the relationship between \overline{AP} and \overline{PB} if M is the midpoint of \overline{AB} and P is the midpoint of \overline{AM}



$$AP = \frac{1}{4}$$

$$PB = \frac{3}{4}$$

2-3 Conditional Statements

We have:

Used inductive reasoning to make conjectures and find counterexamples.

Today we will:

Analyze statements in if-then form, and write the inverse, converse, and contrapositive of if-then statements.

Notes

A **conditional statement** is a statement that can be written in *if-then form*.

All birds fly
If it's a bird, then it flies.

conditional statement

If it is a rectangle, then it has four sides.

T/F ?

T

converse

If it has four sides, then it is a rectangle.

F

inverse

If it is not a rectangle, then it does not have four sides

F

contrapositive

If it does not have 4 sides, then it is not a rectangle.

T

Words	Symbols
An if-then statement is in the form <i>if p, then q</i> .	$p \rightarrow q$ read <i>if p then q</i> , or <i>p implies q</i>
The hypothesis is the "if" part of the statement	p
The conclusion is the "then" part of the statement	q

Negation is to
make it "not"

\sim or \neg

conditional statement

$$P \rightarrow Q$$

converse

$$Q \rightarrow P$$

inverse

$$\sim P \rightarrow \sim Q$$

contrapositive

$$\sim Q \rightarrow \sim P$$

Statements that have the same truth value (both true or both false) are said to be **logically equivalent**.

- A conditional and its contrapositive are logically equivalent.
- The converse and inverse of a conditional are logically equivalent.

2-3 Conditional Statements

Today we:

Analyzed statements in if-then form, and wrote the inverse, converse, and contrapositive of if-then statements.

Assignment:

2.3 pg 109 # 1-17