NAME Key

Date ________ Period ________

SYLLABUS

GEOMETRY H

Unit 1: Introduction to Geometry

Day	Topic	Assignment
1	1.3 – Points, Lines and Planes	pgs 19 – 21{1 – 23 odd, 38 – 43 all, & 46 – 60 all}
2	1.4 – Segments, Rays, Parallel Lines and Planes	pgs 25 – 27 { 1 – 33 odd, 40}
3	1.5 – Measuring Segments	pgs 33 – 34 {3 – 21 every 3rd & 34 – 37 all, 45 – 52 all}
4	1.6 – Measuring Angles 1.7 – Basic Constructions	pgs 40 – 42 {15 – 33 odd, 43, 45, 47, 48} pgs 47 – 48 {9 – 12 all, 21}
5	1.8 – The Coordinate Plane 1.9 – Perimeter, Circumference and Area	pg 56 {5 – 40 every 5th problem} pgs 65 – 66 {4 – 36 every 4th problem}
6	Quiz	Read section 2.1 and complete pg 83 {1 – 13 odd}
7	2.1 – Conditional Statements 2.2 – Biconditionals and Definitions	pgs 84, 85 {15 – 45 every 5th problem} pgs 90 {1 – 17 odd}
8	2.3 – Deductive Reasoning 2.4 – Reasoning in Algebra	pgs 96 – 97 {1 – 13 odd} pgs 105 – 107 {1 – 23 odd, 27, 30, 31}
9	2.5 – Proving Angles Congruent	pg 112 – 115 {7, 13, 14, 21, 23 – 26, 30 – 32}
10	Review	Finish Review Sheet & Study
11	Test	POW Worksheet

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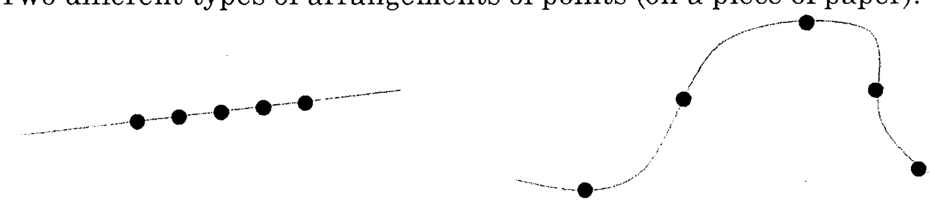
U1 D1: Points, Lines, and Planes

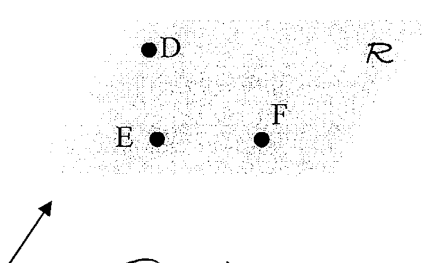
1. The most basic figure in geometry: ● It is know as a Point.
   a. It is represented by a dot, but it really has no size or shape.
   b. Points are named with CAPITOL letters! Example: ● R
   c. **Every** geometric figure is made up of points!
   d. Two different types of arrangements of points (on a piece of paper).



   e. A group of points that "line up" are called collinear points.

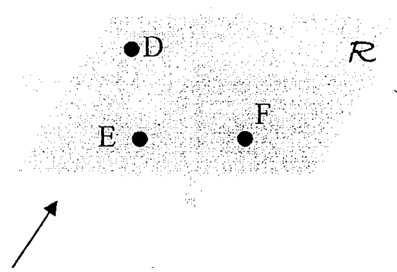
2. The second basic figure in geometry is a Line.
   a. Explanation: A series of points that extends forever in 2 opposite directions.

   b. We use arrows at the end of the line to save time (and space!)
   c. Naming lines (two options)
      i. **Option 1**: List any two points with a line (with arrows) over it: $\overleftrightarrow{AB}$
      ii. **Option 2**: With an italicized (scripted) lowercase letter: *k*
3. The third basic figure in geometry is called a Plane.
   a. Explanation: a flat surface with no thickness that extends forever in all directions.



Plane R

Plane DEF



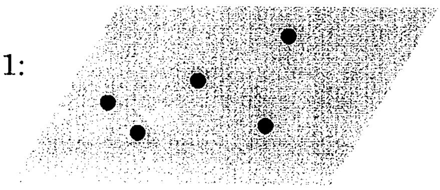
How we Draw a plane. How planes work (extend forever).

   b. Naming – **Option 1**: The word "Plane" followed by any 3 points in the plane.
   Option 2: The word "Plane" followed by a Capitol italic letter.

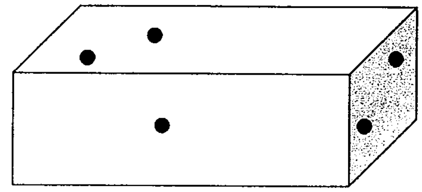
4. The 3 basic shapes of geometry (point , line , and plane) are the "undefined terms of geometry" because they are so basic, we can't define them.

5. At your seat: Describe the two different sets of points, name them if possible.

Set #1:



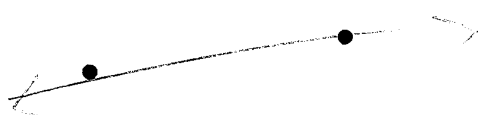
Set #2:



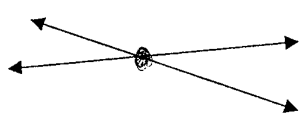
6. Set #1: coplanar points because all points lie in the same plane.
7. Set #2: noncoplanar points, not all points lie in the same plane.

8. **Question:** What is your name? How do you know?
   a. A postulate is an accepted statement or fact.
   b. A synonym for the word postulate is the word axiom.

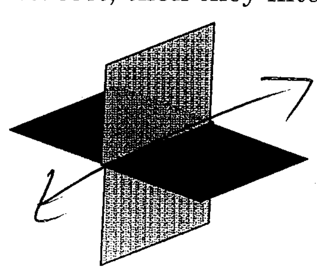
9. **Fact:** Through any two points there is exactly 1 line.



10. **Fact:** If two lines intersect, then they intersect in exactly one point.



11. **Fact:** If two planes intersect, then they intersect in exactly one line.



not segment

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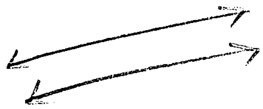
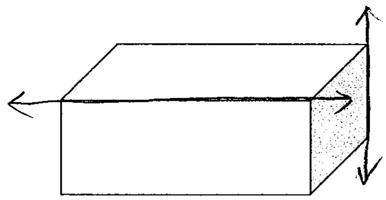
U1 D2: Segments, Rays, Parallel Lines & Planes

1. Lines that do not intersect are called "parallel" lines
   a. Only when the lines are coplanar !



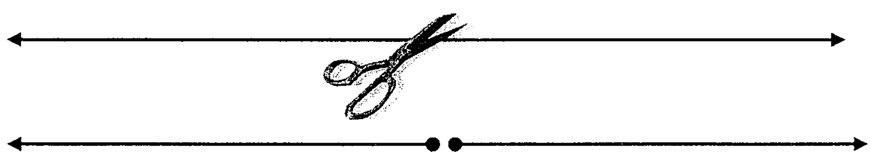
parallel lines (same plane)

2. When lines are non coplanar and they don't' intersect, they are called skew.

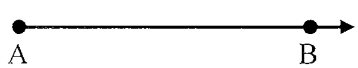


skew lines (different planes)

3. Look at our line…



4. Each of these "new" figures are called ray.



Written $\overrightarrow{AB}$, spoken " ray AB "

Called the Endpoint, when written it MUST come First

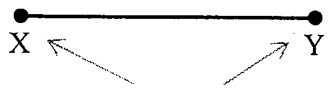
* What do two rays that face opposite directions and have the same endpoint create?

A Line

Definition (Opposite Rays): two ____________ rays with the same endpoint.

Always, sometimes, never… Two **opposite rays** sometimes form a line.

5. What do we get if we "cut" the line twice? This is called a Segment.



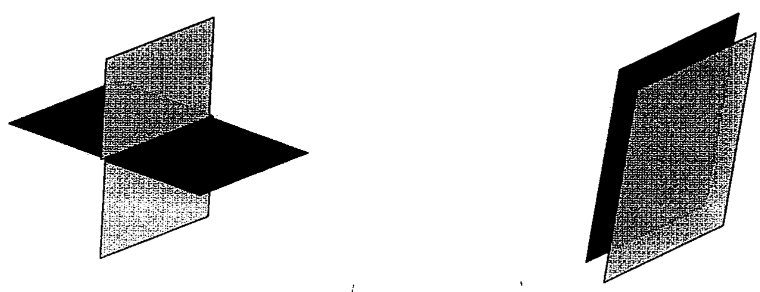
Written $\overline{XY}$, spoken " segment XY ."

Called endpoints. Now order does not matter. Why? They both end

6. Quick Vocabulary Review. Fill in the Missing Information.

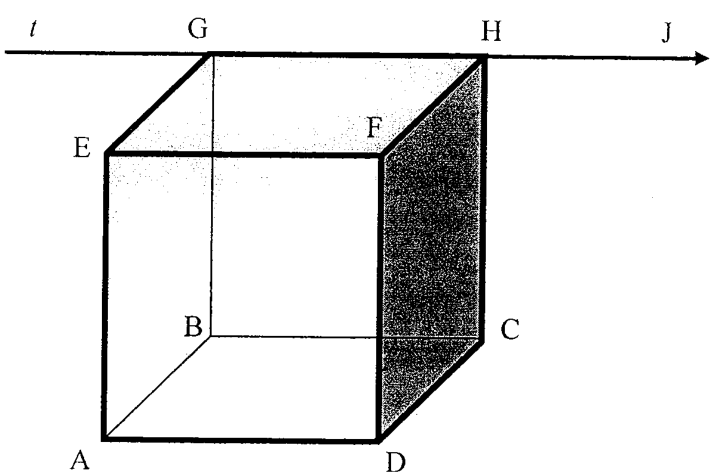
   b. **Line**: Extends forever in 2 direction(s).
   c. **Ray**: Extends forever in 1 direction(s).
   d. **Segment**: Extends forever in 0 direction(s).

7. What's the difference between the two pairs of planes shown below?



8. Two planes that do not intersect are said to be Parallel planes.

9. Look at the figure below and describe the connection between line *t* and plane ABC.



More Questions

a. Name a pair of parallel planes.

b. Name a pair of skew lines.

c. Name a pair of parallel lines.

NAME ____________________ d. Name a ra NOTES

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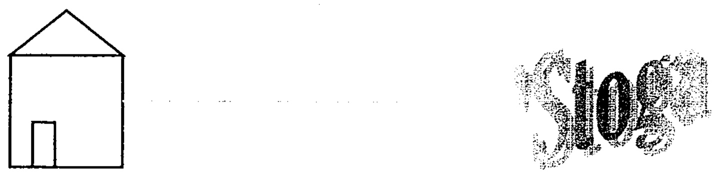
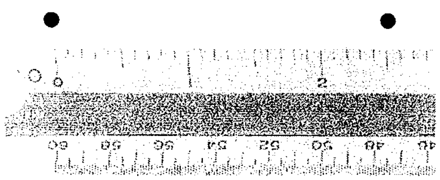
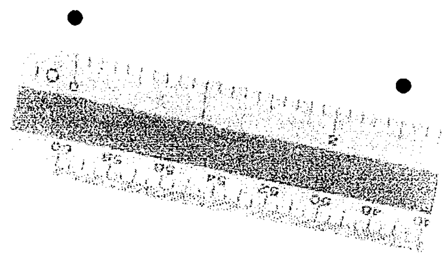
U1 D3: Measuring Segments

1. What's the distance between your house and the Big C?



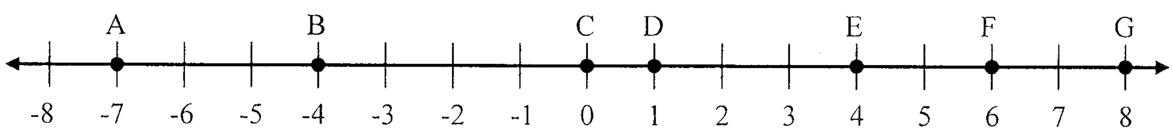
2. Is your house and Conestoga in a "straight line?"
   e. Answer: We can always establish a (straight) line.
   f. The ruler Postulate:
      i. Any two points can be put onto a number line and measured.





3. A number line is like an endless ruler...

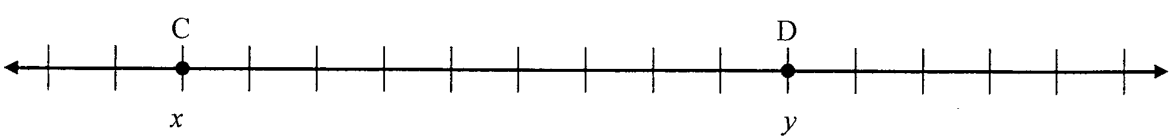
4. Find the length of each segment listed below:



AB = 3 BE = 8 CF = 6 DG = 7

BG = 12 BA = 3 DF = 5

5. How do you find the distance between two points on a number when the units are variables?



*** Distance formula on a number line: $d = |x - y|$

1st point 2nd point

6. Two segments that have the same length are said to be Congruent.

   g. The symbol $\cong$ means "congruent."

Definition: Congruent figures have the same Size & shape.

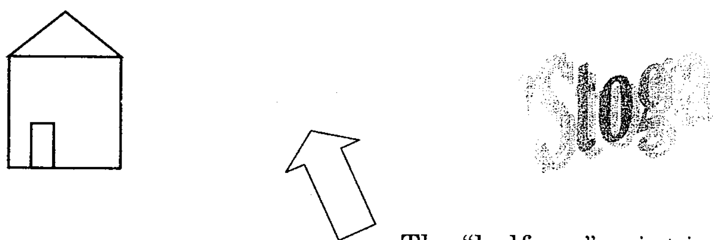
Why do we only need to check one of these for segments? ⇒ They all have the same shape.

3 ft. 3 ft. 3 ft. 5 ft.

Congruent segments noncongruent segments

* "Tick Marks" are used to indicate Congruent segments.

7. Is there a place between your house and Conestoga where you are equally far from both?

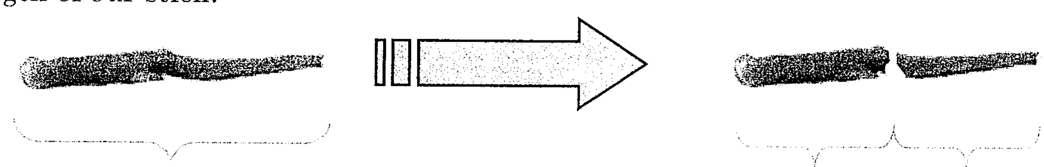


The "halfway" point is called the midpont.

10 ft.

5 5

8. Length of our stick:



Note: The stick can be broken any way you want, but the two pieces must add up to _____.

Does this seem obvious? What do we call something that we accept as obvious?

This illustrates the Segment Additon Postulate.

Solve for x. 20 ✓

$(2x + 4)$ ft.

6 ft. 14 ft.

$6+14=2x+4$

$20=2x+4$

$2x=16$

$x=8$

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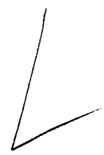
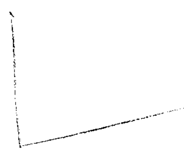
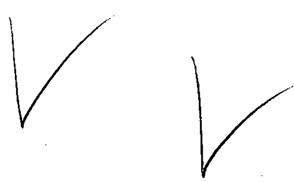
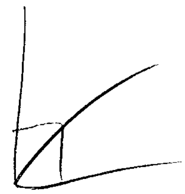
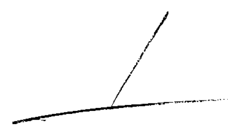
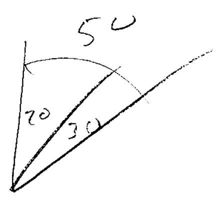
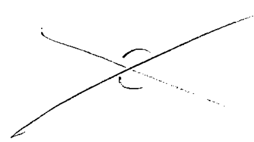
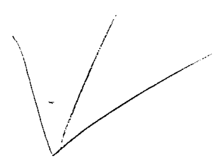
CLASSWORK

GEOMETRY H

U1 D4: Angles Vocabulary

Fill in the boxes below… use all resources available (friends, books, etc.)

Angle Type	Draw an Example	Describe or Define
Acute Angle		less than 90°
Obtuse Angle		more than 90°
Right Angle		= 90°
Straight Angle		= 180°
Congruent Angles		Same degree measure

Complimentary Angles		2 ∠'s add to 90°
Supplementary Angles		2 ∠'s add to 180°
Angle Addition Postulate		Two adjacent ∠'s may be added
Vertical Angles		∠'s "across" from each other
Adjacent Angles		∠'s next to each other
Angle Bisector		A segment or ray that cuts any ∠ in half

NAME ____________________ **CLASSWORK**

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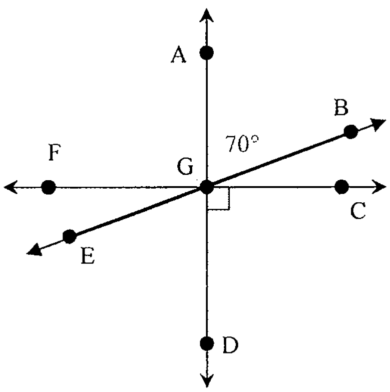
U1 D4 Continued: Problem Set for Vocabulary

Directions: Use the figure below to answer questions 1-5.



1. Name an angle complimentary to $\angle AGB$. $\angle BGC$

2. Name an angle supplementary to $\angle AGB$. $\angle BGD$

3. What type of angle is $\angle AGD$? Straight

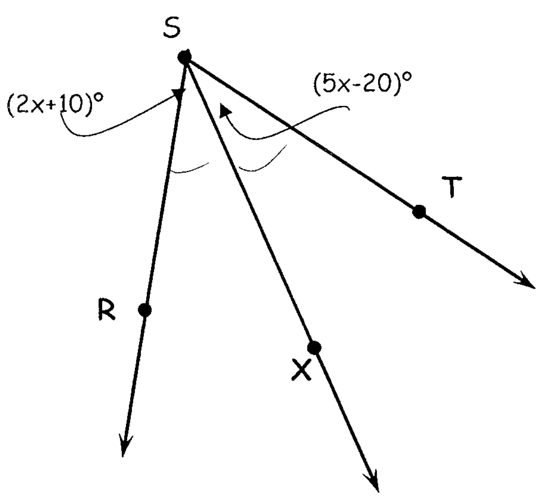
4. What angle is vertical to $\angle BGC$? What is its measure?

$\angle FGE = 20°$

5. Name an angle that is congruent to $\angle AGB$.

$\angle EGD$

6. In the figure below $\overrightarrow{SX}$ bisects $\angle RST$. Find the measure of $\angle RST$.



$5x - 20 = 2x + 10$

$3x = 30$

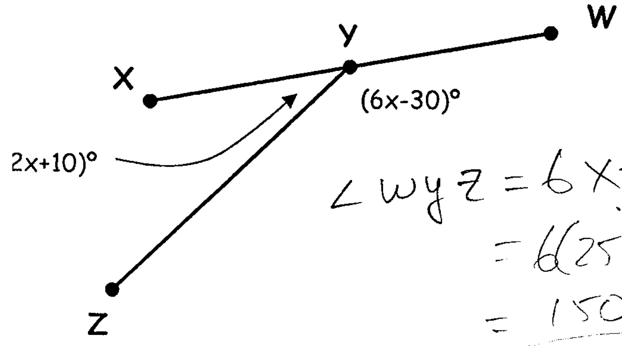
$x = 10$

$\angle RST = 2x + 10 + 5x - 20$

$= 20 + 10 + 50 - 20$

$= 60°$

7. Use the figure below to find $m\angle WYZ$.



$2x+10+6x-30=180$

$8x-20=180$

$8x=200$

$x=25$

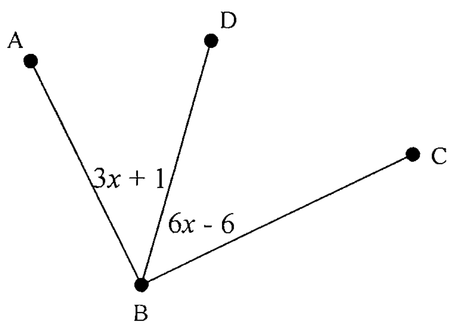
$\angle WYZ=6x-30$

$=6(25)-30$

$=150-30$

$=120°$

8. In the figure below, $m\angle ABC = 43 + x$. Find x.



$3x+1+6x-6=43+x$

$9x-5=43+x$

$8x=48$

$x=6$

9. What postulate did you need to use to solve the problem in #8?

Angle Addition Postulate

10. $\angle 1$ is twice the size of its compliment. What are the degree measures ~~of both~~ angles?

$\angle 1 = 2x$

$\angle 2 = x$

$x+2x=90$

$3x=90$

$x=30$

$\angle 1=60$

$\angle 2=30$

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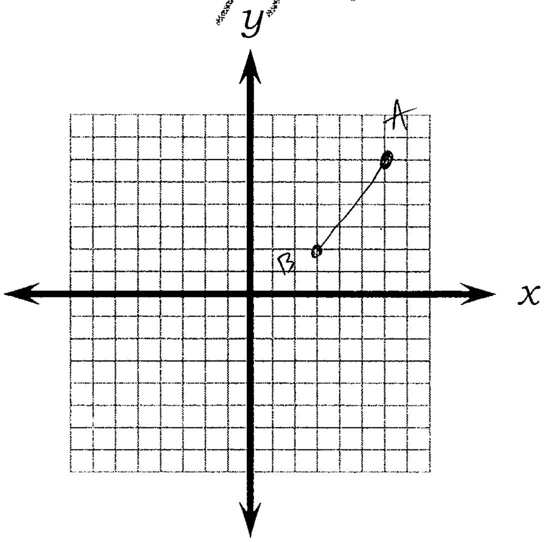
U1 D5 Part 1: The Coordinate Plane

1. The coordinates of point A is **(6, 6)** and point B is **(3, 2)**. Plot the points below.

2. What is the length of segment AB (round to nearest tenth if necessary)?

3. What is the midpoint of segment AB?

WARM UP



$$d = \sqrt{(6-3)^2 + (6-2)^2}$$
$$= \sqrt{3^2 + 4^2}$$
$$= \sqrt{9+16} = \sqrt{25} = 5$$

$$M = \left(\frac{6+3}{2}, \frac{6+2}{2}\right)$$
$$= \left(\frac{9}{2}, \frac{8}{2}\right) = (4.5, 4)$$

Midpoint Formula

$$\text{Mdpt} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

Distance Formula

$$d = \sqrt{(x_2-x_1)^2 + (y_1-y_2)^2}$$

<u>Honors Level Question</u>: The endpoint of a segment is (2, 3) and the midpoint is (3, -4). What is the other endpoint?

x_1, y_1

$$(3,-4) = \left(\frac{2+x_2}{2}, \frac{3+y_2}{2}\right)$$

$2 + x_2 = 6$

$x_2 = 4$

$3 + y_2 = -8$

$y_2 = -11$

$(4, -11)$

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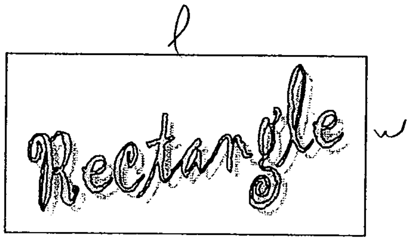
U1 D5 Part 2 Perimeter, Circumference and Area

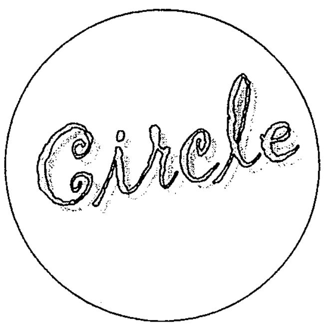


Area

$A = l \cdot w$

Perimeter

$P = 2w + 2l$



Area

$A = \pi r^2$

Circumference

$C = 2\pi r$

1. What is the perimeter and area of a rectangle with a height of 6 and base of 14?

$A = 6 \cdot 14 = 84u^2$ $P = 2(6)+2(14) = 12+28 = 40$

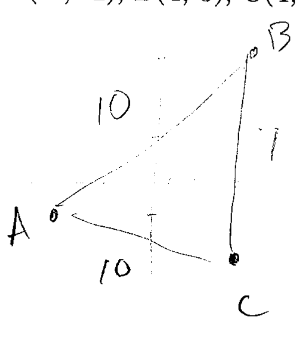
2. What is the area of a circle with a circumference of 14π?

$C = 2\pi r$

$14\pi = 2\pi r \Rightarrow r = 7$ $\rightarrow$ $A = \pi r^2$

$A = \pi (7)^2$

3. What is the perimeter of the figure created on the coordinate plane with the points...
A(-4, -1), B(4, 5), C(4, -2)



$AB = \sqrt{(4-4)^2 + (-1-5)^2}$

$= \sqrt{8^2 + 6^2} = \sqrt{64+36} = \sqrt{100} = 10$

$AC = \sqrt{(-4-4)^2 + (-1-5)^2}$

$= \sqrt{8^2 + 6^2} = \sqrt{100} = 10$

$P = 27$

Wrap Up: Confidence Meter for tomorrow's quiz? 1 2 3 4 5 6 7 8 9 10

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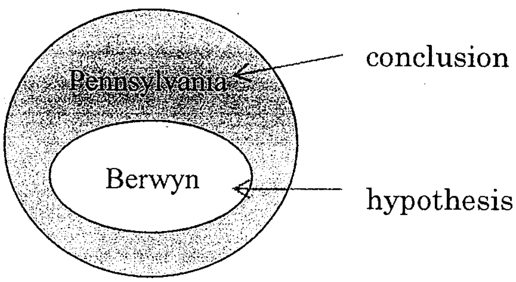
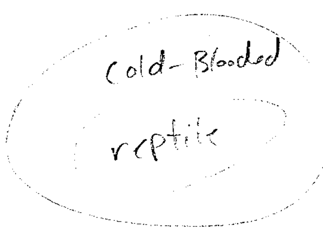
U1 D7: Conditional Statements, Biconditionals & Definitions

Conditionals can be represented visually using a Venn diagram.

Conditional: If you live in Berwyn, then you live in Pennsylvania.



Example #1: If an animal is a reptile, then it is cold-blooded.



Conditional: If an angle's measure is 90 degrees, then the angle is right.

Converse: If an angle is right, then its measure is 90 degrees.

When both the conditional and the converse are true, you can combine them into one statement.

⇨ An angle is right if and only if it's measure is 90.

known as a biconditional.

Make up a Biconditional…

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U1 D8: Deductive Reasoning & Reasoning in Algebra

Directions: Make a valid conclusion from each set of statements below.

1. If a student wants to go to college, then a student must study hard.
   Rashid wants to go to the University of North Carolina.

   Conclusion: Rashid must study hard.

2. If an animal is a red wolf, then its scientific name is *Canis rufus*.
   If an animal is named *Canis rufus*, then it is endangered.

   Conclusion: If an animal is a red wolf, then it's endangered.

3. If you read a good book, then you enjoy yourself.
   If you enjoy yourself, then your time is well spent.

   Conclusion: If you read a good book, then your time is well spent.

4. If there is lightning, then it is not safe to be out in the open.
   Maria sees lightning from the soccer field.

   Conclusion: It is not safe to be on the soccer field

The **Law of Detachment**:

The **Law of Syllogism**:

These laws are forms of deductive reasoning, which is strong reasoning based on facts.

Inductive reasoning is more of a "guess," and is based on continuing a pattern.

1. We can use deductive reasoning to perform proofs.
   a. Remember, a theorem **must be proven**!

2. Example: An Algebraic Proof. Solve $\frac{1}{2}x+6=10$

Statements (Steps to Solve)	Reasons (What you did)
1. $\frac{1}{2}x+6=10$	1. Given
2. $\frac{1}{2}x=4$	2. Subtr. Prop
3. $x=8$	3. Mult. Prop

3. Properties you are probably familiar with...
   a. Addition Property of Equality
   b. Subtraction Property of Equality
   c. Multiplication Property of Equality
   d. Division Property of Equality
   e. The Distributive Property
   f. Simplifying

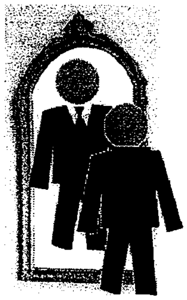
4. For the two examples below, describe the difference in the operations. Which reason would you use for each?

a) If $8+2x+3=23$, then $2x+11=23$ Combine like terms $\Rightarrow$ Simplifying	b) If $3x-5=13$, then $3x=18$ $+5 \quad +5$ Addition Property

5. Properties you probably are not familiar with
   a. The Reflexive Property
   b. The Symmetric Property
   c. The Transitive Property

d. Substitution Property

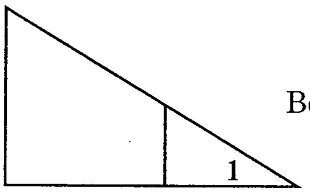
a) The **Reflexive** Property: Think of when you look in a mirror and you see your **reflection**.



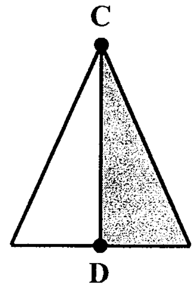
Any time you have a number (angle, side length, etc.), you can always write that it is equal (or congruent) to **itself**.

Examples: $10 = 10$, $x = x$, $\overline{AB} \cong \overline{AB}$, $m\angle ABC = m\angle ABC$

When will this be used? Whenever two figures <u>share</u> something.



Both the little triangle and the big triangle share angle 1, so $\angle 1 \cong \angle 1$.



Both the white triangle and the grey triangle share side CD, so...

$\overline{CD} \cong \overline{CD}$

b) The Symmetric Property: Think of when you solve equations and the x is on the right.

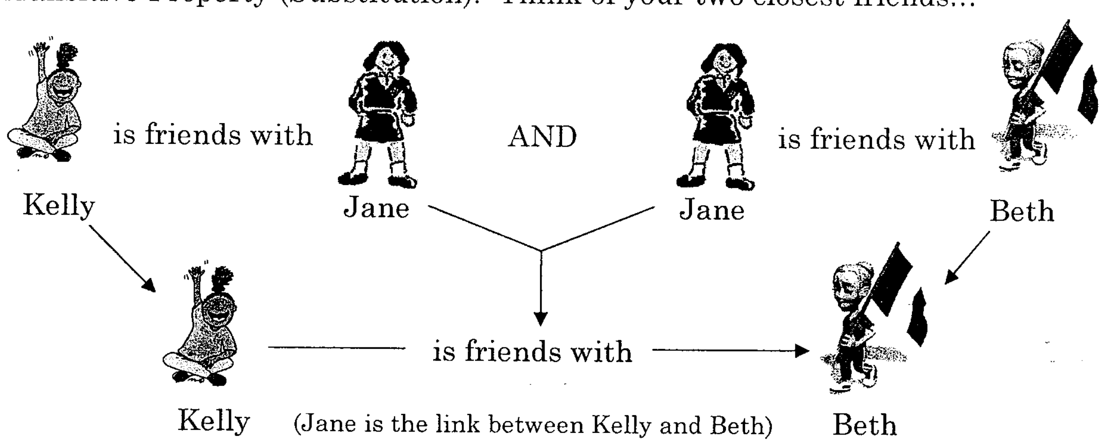
You might like to always have your x on the left hand side, and you probably learned that you are allowed to switch sides – this is the symmetric property.

When solving an equation, if you end with this: $6 = x$

You can switch it to this: $x = 6$

Other examples: $\overline{CD} \cong \overline{FG}$ switches to $\overline{FG} \cong \overline{CD}$ $\angle 1 \cong \angle 2$ switches to $\angle 2 \cong \angle 1$

c) The Transitive Property (Substitution): Think of your two closest friends...

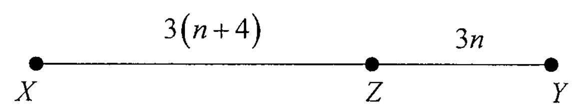


★ Football analogy.

Example #1: Fill in each reason on the right that matches with the statement on the left

1. $5(x+3)=5-9$	1. Given
2. $5x+15=5-9$	2. Distributive Prop
3. $5x+15=-4$	3. Simplifying
4. $5x=-19$	4. Subtr. Prop
5. $x=\frac{-19}{5}$	5. Division Prop

Example #2: Geometric Proof.



Given: $XY=42$

1. $XZ+ZY=XY$	1. Segment Add. Post
2. $3(n+4)+3n=42$	2. Substitution
3. $3n+12+3n=42$	3. Distr. Prop
4. $6n+12=42$	4. Simplifying
5. $6n=30$	5. Subtr. Prop
6. $n=5$	6. Division Prop

Other Reasons you might use...

a. Definition of a midpoint
b. Definition of an angle bisector
c. Vertical angles property

Reasons are comprised of properties, postulates, theorems, definitions, and sometimes a few other things

Wrap Up: Partner Quizzo

Partner A: use your notes and quiz your partner B about reasons we learned today.

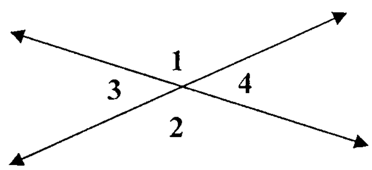
NAME Once you have successfully described 3 reasons ... NOTES

Date __________ Period__________ GEOMETRY H

U1 D9: Proving Angles Congruent

1. Vocabulary Review:
   h. An accepted fact is known as a postulate.
   i. An educated guess is known as a conjecture or hypothesis.
   j. A proven fact is known as a Theorem.

2. Let's prove a theorem:
   k. **The Vertical Angles Theorem:** Vertical angles are congruent.



i. **Given:** Intersecting lines that form angles 1 – 4.

Sometimes this is stated for you, sometimes you must "get it" from a picture.

ii. **Prove:** $\angle 1 \cong \angle 2$

Usually it is just what the theorem says
Sometimes interpreted to **<u>your</u>** picture.

3.

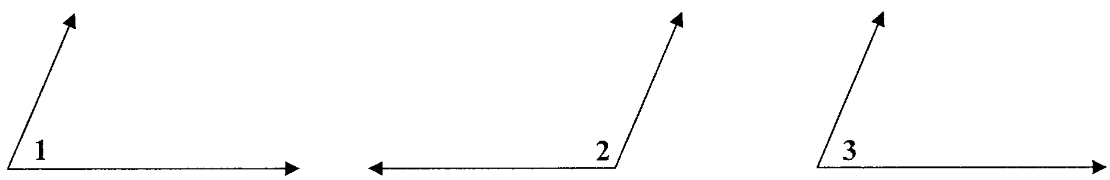
Statements	Reasons (Postulates, Theorems, Definitions)
1. Inter. Lines form ∠'s 1–4	1. Given
2. $\angle 1 + \angle 4 = 180°$	2. Angle Add Post.
3. $\angle 4 + \angle 2 = 180°$	3. Angle Add Post
4. $\angle 1 + \angle 4 = \angle 4 + \angle 2$	4. Substitution
5. $\angle 1 = \angle 2$	5. Subtr. Prop
6. $\angle 1 \cong \angle 2$	6. Def of Congruence

The type of proofs we've done so far are called 2 column proofs. You can also do paragraph proofs by writing your steps out as sentences (this is usually more difficult – especially for beginners).

4. **Congruent Supplements Theorem:** If two angles are supplements of the same angle (or of congruent angles), then the two angles are congruent

Given: $\angle 1$ and $\angle 2$ are supplementary & $\angle 3$ and $\angle 2$ are supplementary

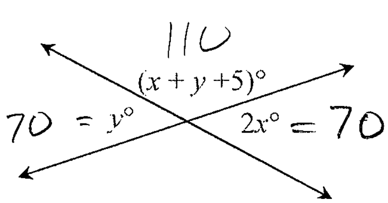
Prove: $\angle 1 \cong \angle 3$



Statements	Reasons (Postulates, Theorems, Definitions)
1. $\angle 1$ & $\angle 2$ are supp. $\angle 3$ & $\angle 2$ are supp	1. Given
2. $\angle 1 + \angle 2 = 180°$ $\angle 3 + \angle 2 = 180°$	2. Def'n supp $\angle$'s
3. $\angle 1 + \angle 2 = \angle 3 + \angle 2$	3. Subst.
4. $\angle 1 = \angle 3$	4. Subtr. Prop
5. $\angle 1 \cong \angle 3$	5. Def'n $\cong$

(The proof above can also be done as a paragraph proof)

<u>#31 from tonight's Homework</u>:



$x + y + 5 + y = 180$

$x + 2y = 175$

$x + 2(2x) = 175$

$5x = 175$

$x = 35$

$y = 2x$

$y = 2(35)$

$y = 70$

Wrap up: List of "Reasons" on board

NAME **KEY!** HOMEWORK

Date __________ Period__________ GEOMETRY H

Unit 1 Review: Sections 1.3-1.9, 2.1-2.5

1. Fill in the blanks below with *always*, *sometimes*, or *never*.

   a. $\overrightarrow{AC}$ is in Plane Q, so point B is *sometimes* in Plane Q.

   b. Two planes that do not intersect are *always* parallel.

   c. $\overrightarrow{JK}$ and $\overrightarrow{JM}$ *sometimes* the same ray.

   d. Three points are *always* coplanar.

   e. Intersecting lines are *never* parallel.

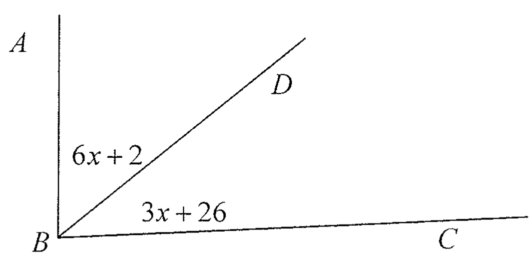
2. $\angle A$ and $\angle B$ are complimentary. $\angle A$ is twice as big as $\angle B$, what are the measure of the two angles?

   Let $m\angle B = x \Rightarrow m\angle A = 2x$, because the angles are complimentary, they add to 90.

$$\begin{aligned} x + 2x &= 90 \\ 3x &= 90 \\ x &= 30 \end{aligned}$$

So, $m\angle B = 30°$, $m\angle A = 60°$

3. $\overrightarrow{BD}$ bisects $\angle ABC$; $\angle ABD = 6x + 2$ and $\angle DBC = 3x + 26$. Draw the figure and find $m\angle ABC$.



Because it is a bisector, angles are $\cong$

$$\begin{aligned} 6x + 2 &= 3x + 26 \\ 3x &= 24 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} &6(8) + 2 \\ &48 + 2 \\ &50 \end{aligned}$$

Each angle is 50, so $m\angle ABC = 100°$

4. Point X is the midpoint of W and Y. XW = $3x$ + 8 and XY = $9x$ – 10. What is the length of WY?

   Because X is the midpoint, that means that both pieces are congruent

$$\begin{aligned} 3x + 8 &= 9x - 10 \\ 18 &= 6x \\ x &= 3 \end{aligned}$$

$$\begin{aligned} XW &= 3x + 8 \\ XW &= 3 \cdot 3 + 8 \\ XW &= 17 \\ \Rightarrow WY &= 2 \cdot 17 = 34 \end{aligned}$$

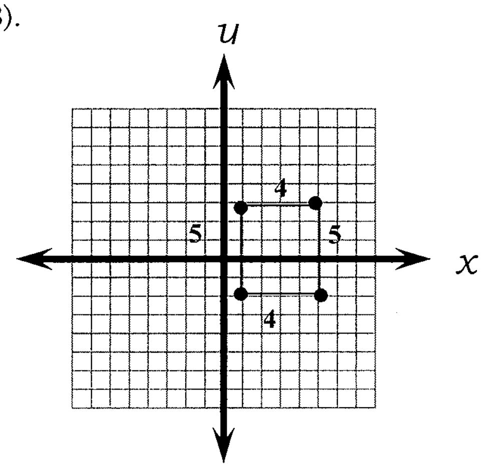
5. The area of a circle is 36п, what is the circumference of that circle?

$$A = \pi r^2$$
$$36\pi = \pi r^2$$
$$36 = r^2$$
$$r = 6$$

$$C = 2\pi r$$
$$C = 2\pi(6)$$
$$C = 12\pi$$

6. A rectangle has coordinates A(5, 3), B(5, -2), C(1, -2), D(1, 3).
What is the area of rectangle ABCD?

$$A = 5 \cdot 4 = 20$$



7. M is the midpoint of segment AB. A(5, 9) and M(11, 19). What are the coordinates of B?

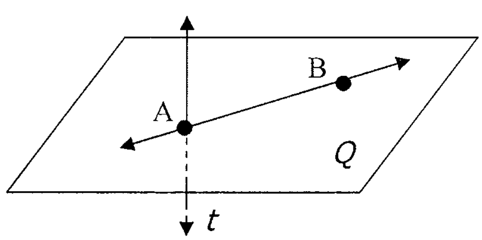
$$Mdpt = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$
$$(11,19) = \left(\frac{5 + x_2}{2}, \frac{9 + y_2}{2}\right)$$

$$11 = \frac{5 + x_2}{2}$$
$$22 = 5 + x_2$$
$$x_2 = 17$$

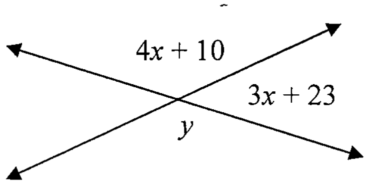
$$19 = \frac{9 + y_2}{2}$$
$$38 = 9 + y_2$$
$$y_2 = 29$$

$$(17,29)$$

8. Line AB is in Plane Q. Line t intersects plane Q at point A. Draw and label the figure.



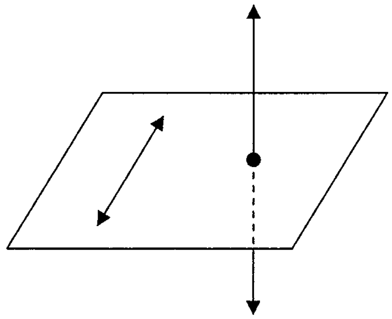
9. Solve for x and y in the figure below.



$$(4x + 10) + (3x + 23) = 180$$
$$7x + 33 = 180$$
$$7x = 147$$
$$x = 21$$

$$(4x + 10) = y$$
$$4(21) + 10 = y$$
$$84 + 10 = y$$
$$y = 94$$

10. Draw skew lines.



11. In the conditional below, underline the hypothesis, and circle the conclusion.

If <u>two segments have equal measures</u>, then they are congruent.

12. Write the converse of the condition from #11.

If two segments are congruent, then they have equal measures.

13. Define/Describe a biconditional. Give a mathematical example

A biconditional is the combination of conditional and its converse <u>when both are true</u>.

Two angles have the same measure *if and only if* they are congruent

14. Write a valid conclusion or write "no valid conclusion for the statements below."

a. **Conditional:** If M is the midpoint of AB, then AM = BM.

   i. **Given:** M is the midpoint of AB

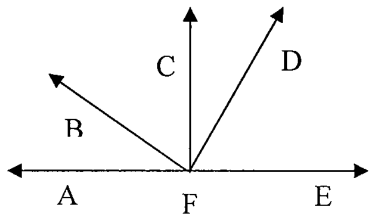
   ii. **Conclusion:** **AM = BM**

b. **Conditional:** Given 3 random points, they are always coplanar.

   i. **Given:** Points X, Y, Z

   ii. **Conclusion:** **Points X, Y, Z are coplanar**

15. Find the measures of the indicated angles below.



a. $\angle BFD =$ __90°______

b. $\angle CFE =$ ___90°____

c. $m\angle AFB = 55; m\angle BFC =$ _35°__

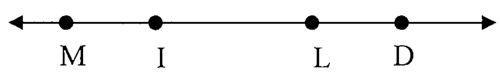
d. $m\angle CFD = 42; m\angle DFE =$ __48°___

Note: $\overleftrightarrow{AE} \perp \overleftrightarrow{FC}$, $\overline{BF} \perp \overline{FD}$

16. Complete the proof below...

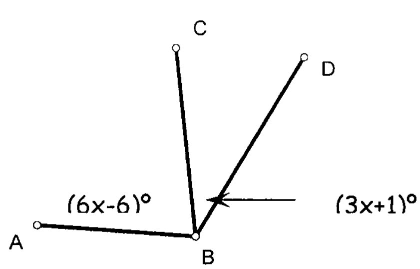
Given: $MI = LD$

Prove: $ML = ID$



Statements	Reasons
1. $MI = LD$	1. Given
2. $IL = IL$	2. Reflexive Property
3. $MI + IL = LD + IL$	3. Addition Property of Equality (add steps 1 + 2)
4. $MI + IL = ML$ *and* $LD + IL = ID$	4. Segment Addition Postulate
5. $ML = ID$	5. Substitution Property

17. Solve for *x*, then find m∠ CBD given that m∠ ABD = (43+x)°.



$$(6x-6)+(3x+1)=43+x$$
$$9x-5=43+x$$
$$8x=48$$
$$x=6$$