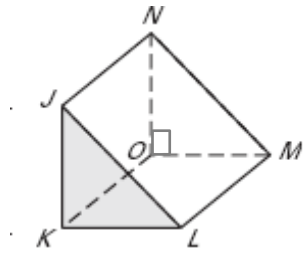
Name _____ Per_____

2.1 Angle Relationships in Parallel Lines

Vocabulary	
Parallel lines	**Skew lines**
Perpendicular lines	**Transversal**

Example 1:

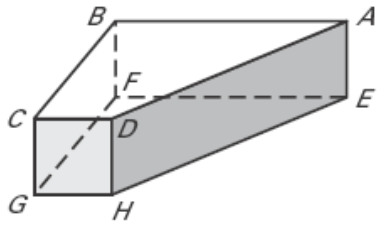
1.



Fill in the blank with **parallel**, **perpendicular,** or **skew**

(b) $\overline{JL}$ is _____ to $\overline{NM}$. (c) $\overline{NO}$ is _____to $\overline{KL}$.

2.

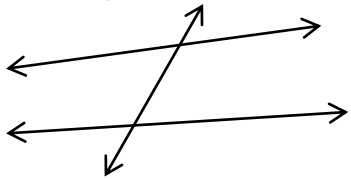


Fill in the blank with **parallel**, **perpendicular,** or **skew**.

(b) $\overline{DH}$ is _____ to $\overline{GH}$. (c) $\overline{BF}$ is _____to $\overline{CG}$.

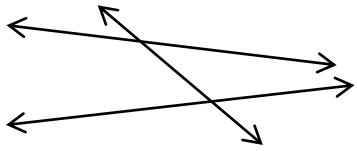
ANGLE PAIRS in two lines cut by a transversal

Corresponding angles



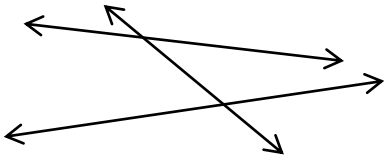
- corresponding positions.

Consecutive (same side) interior angles



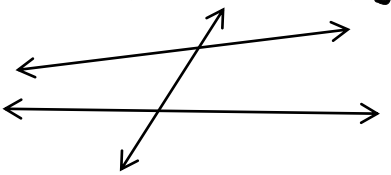
- same side
- between the two lines

Alternate interior angles



- alternate sides
- between the two lines

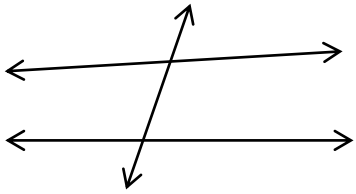
Alternate exterior angles



- alternate sides
- outside the two lines

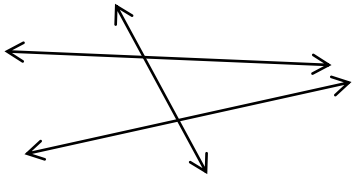
Other angle relationships that you will need to remember…

Vertical angles



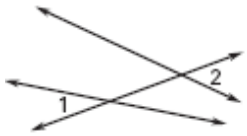
- opposite ∠s with the same vertex

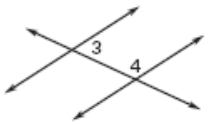
Linear Pair

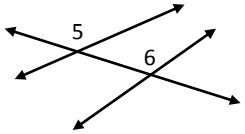


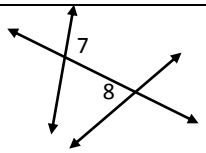
- adjacent ∠s that make a straight line

Example 2: Classify the pair of numbered angles.

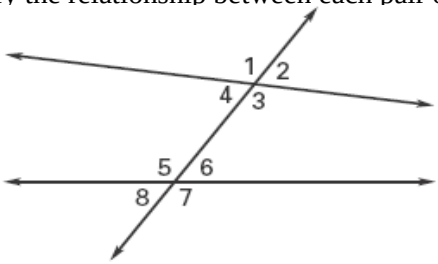
1. 

2. 

3. 

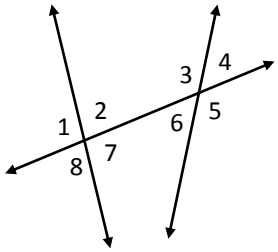
4. 

5. Identify the relationship between each pair of angles, if any.



1) ∠1 and ∠7
2) ∠4 and ∠6
3) ∠8 and ∠7
4) ∠3 and ∠8
5) ∠3 and ∠5
6) ∠2 and ∠4

6. Identify all pairs of the following angles.

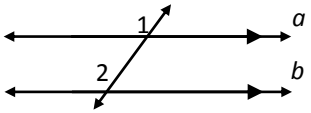


a. Corresponding angles
b. Alternate interior angles
c. Consecutive interior angles
d. Alternate exterior angles
e. Vertical Angles
f. Linear Pairs

WHEN LINES ARE PARALLEL! (Magic happens…HARRY POTTER!)

Corresponding Angles Postulate

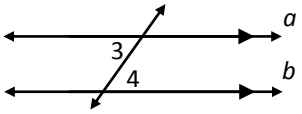
If two parallel lines are cut by a transversal, then pairs of corresponding angles a_____.



Statements	Reasons
1. $a \parallel b$	1.
2. ∠____ ≅ ∠____	2.

Alternate Interior Angles Theorem

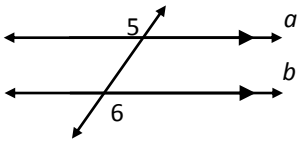
If two parallel lines are cut by a transversal, then pairs of alternate interior angles are _____.



Statements	Reasons
1. $a \parallel b$	1.
2. ∠____ ≅ ∠____	2.

Alternate Exterior Angles Theorem

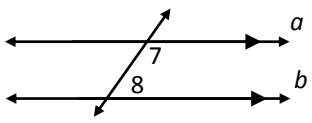
If two parallel lines are cut by a transversal, then pairs of alternate exterior angles are _____.



Statements	Reasons
1. $a \parallel b$	1.
2. ∠____ ≅ ∠____	2.

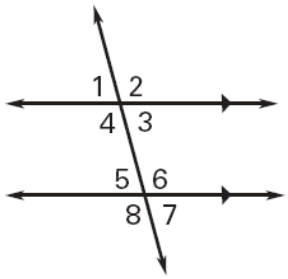
Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then pairs of consecutive interior angles are _____.



Statements	Reasons
1. $a \parallel b$	1.
2. ∠___ & ∠___ are supp.	2.
3.	3.

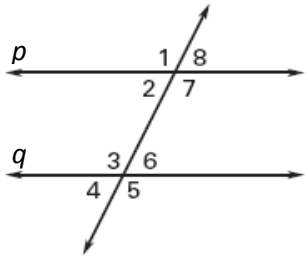
Example 3: Use the diagram below to find the angle measures. Explain your reasoning.



1. If the $m\angle 2 = 113°$, what is the $m\angle 6$?
2. If the $m\angle 4 = 100°$, what is the $m\angle 6$?
3. If the $m\angle 1 = 84°$, what is the $m\angle 3$?
4. If the $m\angle 7 = 75°$, what is the $m\angle 1$?
5. If the $m\angle 3 = 81°$, what is the $m\angle 4$?
6. If the $m\angle 6 = 111°$, what is the $m\angle 3$?

Example 4: Finding all the angle measures.

If $p \parallel q$ and $m\angle 1 = 75°$, find the measures of all the angles formed by the parallel lines cut by the transversal.



$m\angle 1 =$ $m\angle 2 =$

$m\angle 3 =$ $m\angle 4 =$

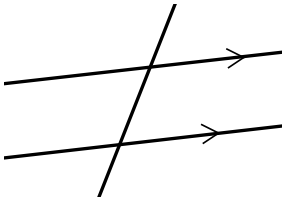
$m\angle 5 =$ $m\angle 6 =$

$m\angle 7 =$ $m\angle 8 =$

DO YOU NOTICE A PATTERN???? Describe it!

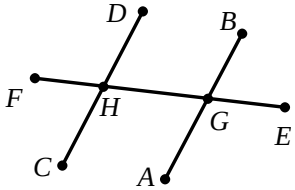
THE HARRY POTTER SCAR!

1. Mark any angle with a dot
2. Find its vertical ∠ and mark it with a dot
3. Copy the same dot pattern on the other parallel
4. Connect the dots



- **If they both have a dot or are both blank (SAME) →** _____
- **If one has a dot and the other it blank (DIFFERENT) →** _____

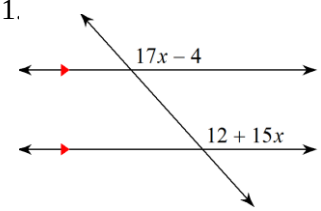
Example 5: If $\overline{DC} \parallel \overline{BA}$, are the angles congruent or supplementary?



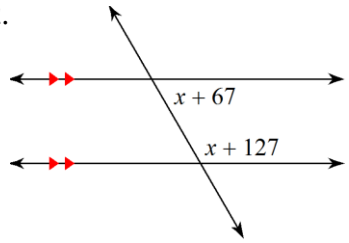
1. $\angle DHG$ and $\angle HGA$
2. $\angle FHC$ and $\angle DHG$
2. $\angle BGE$ and $\angle FHC$
3. $\angle EGA$ and $\angle GHC$
4. $\angle AGH$ and $\angle EGA$
5. $\angle DHG$ and $\angle BGH$

Example 6: Solve for x and explain your reasoning.

1.



2.



2.2 Converses

Vocabulary

Conditional Statement

Ex: "If you have visited the statue of Liberty, then you have been to New York."

Converse

Ex:

Example 1: Write the converse of the given statement.

1. *If an animal has wings, then it can fly.*
2. *If you are student, then you have a student I.D. card.*
3. *All sharks have a boneless skeleton.*
4. *All police officers eat donuts.*

Example 2: (a) Write the converse of the true statement. (b)Then decide whether the converse is true or false. If false, provide a counterexample.

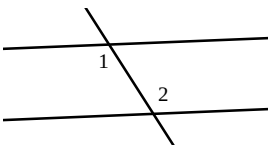
1. *If an animal is an owl, then it is also a bird.*
2. *If two lines form right angles, then they are perpendicular.*
3. *If an angle measures 130°, then it is obtuse.*
4. *If two angles are adjacent, then they are congruent.*

Checkpoint

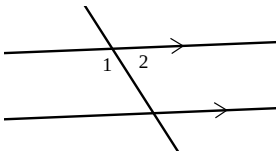
1. Find a counterexample to the statement below.

If two angles are supplementary, then they are formed by two parallel lines cut by a transversal.

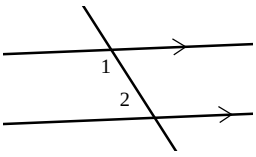
a.



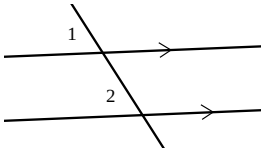
b.



c.



d.



2. Write the converse of the statement below. Then determine whether each statement is true or false. If false, give a counterexample.

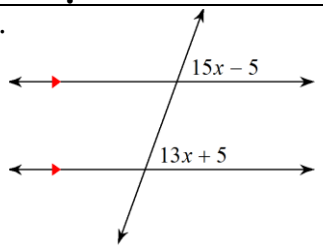
Conditional Statement: *If two angles are right angles, then they are congruent.* T or F

Converse:_____ T or F

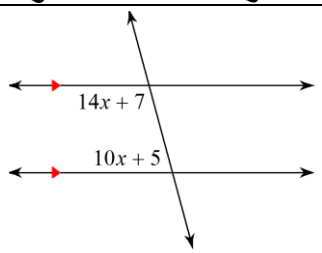
2.3 Parallel & Perpendicular Lines

Example 1: Solve for x and explain your reasoning.

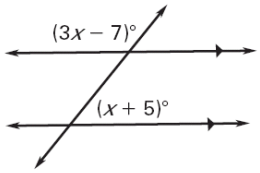
1.



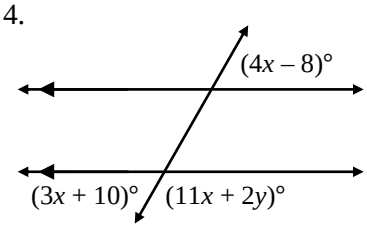
2.



3.

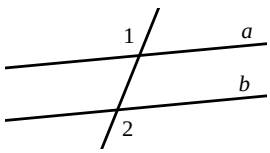


4.

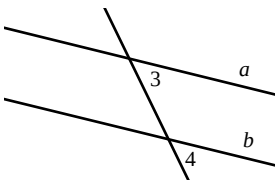


Baby Proofs

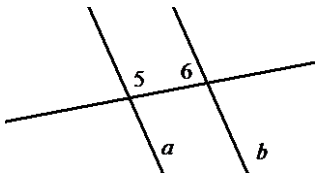
1. Given: $a \parallel b$; $m\angle 1 = 103°$
   Prove: $m\angle 2 = 77°$



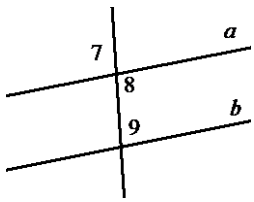
2. Given: $a \parallel b$; $m\angle 3 = 64°$
   Prove: $m\angle 4 = 64°$



3. Given: $a \parallel b$; $m\angle 5 = 112°$
   Prove: $m\angle 6 = 68°$

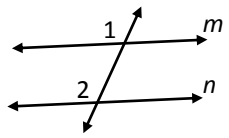


4. Given: $a \parallel b$; $m\angle 7 = 93°$
   Prove: $m\angle 9 = 87°$



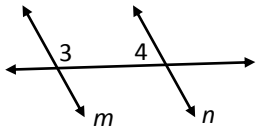
MORE PROOFS

1. Given: $m \parallel n;\ m\angle 1 = (9x + 13)°;$
$m\angle 2 = (11x - 3)°$
Prove: $x = 8$



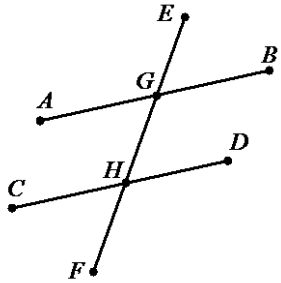
Statements	Reasons
1. $m \parallel n;\ m\angle 1 = (9x + 13)°;\ m\angle 2 = (11x - 3)°$	1.

2. Given: $m \parallel n;\ m\angle 3 = (20x - 3)°;$
$m\angle 4 = (9x + 9)°$
Prove: $m\angle 4 = 63°$



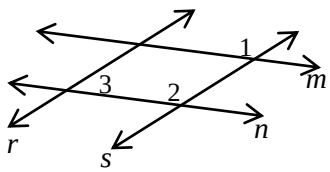
Statements	Reasons
1. $m \parallel n;\ m\angle 3 = (20x - 3)°;\ m\angle 4 = (9x + 9)°$	1.

3. Given: $\overline{AB} \parallel \overline{CD};\ m\angle BGE = (7x - 6)°;$
$m\angle CHF = (5x + 18)°$
Prove: $m\angle CHF = 78°$



Statements	Reasons
1. $\overline{AB} \parallel \overline{CD};\ m\angle BGE = (7x - 6)°; m\angle CHF = (5x + 18)°$	1.

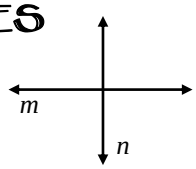
4. Given: $m \parallel n,\ r \parallel s;$
$m\angle 1 = 130°$
Prove: $m\angle 3 = 50°$



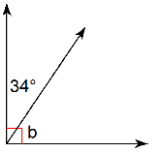
Statements	Reasons
1. $m \parallel n,\ r \parallel s, m\angle 1 = 130°$	1.

PERPENDICULAR LINES

Two lines that form four _____ _____.



- So if two adjacent angles are formed by ⊥ lines, then they are_____.

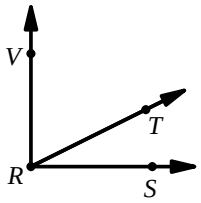


Example 2: Perpendicular Lines

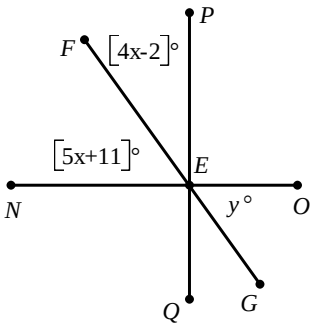
1. a. Given $\overrightarrow{RV} \perp \overrightarrow{RS}$, complete the sentence using your new vocabulary.

   $\angle VRS$ is a _____angle, because the definition of_____.

   b. If $m\angle VRT = (x-4)°$ and $m\angle TRS = (3x+2)°$ the find the value of *x*. Explain.



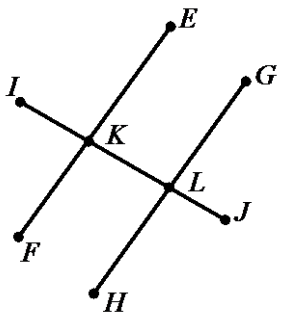
2. If $\overline{NO} \perp \overline{PQ}$, solve for *x* and *y*. Explain.



LET"S KEEP PRACTICING THOSE ANGLE NAMES!

Name the angle pair. Then state if they are congruent or supplementary.

$\overline{EF} \parallel \overline{GH}$



a. $\angle EKL$ and $\angle GLJ$

b. $\angle IKF$ and $\angle GLJ$

c. $\angle JKF$ and $\angle KLH$

d. $\angle ILH$ and $\angle JLH$

e. $\angle JLH$ and $\angle ILG$

f. $\angle EKL$ and $\angle HLK$

g. $\angle JLH$ and $\angle JKF$

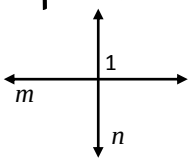
h. $\angle EKJ$ and $\angle GLK$

2.4 Perpendicular lines + Proofs

PERPENDICULAR LINES in proof

Given: $m \perp n$

_____→ _____ →_____

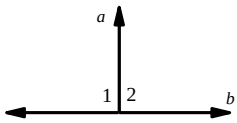


Statements	Reasons
1. $m \perp n$	1.
2.	2.
3.	3.

RIGHT ANGLES CONGRUENCE THEOREM

All right angles are _____.

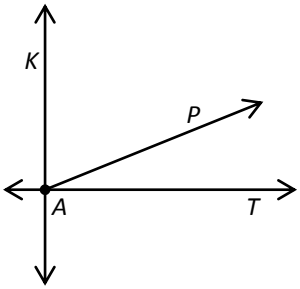
_____→ _____ →_____



Statements	Reasons
1. $a \perp b$	1.
2.	2.
3.	3.

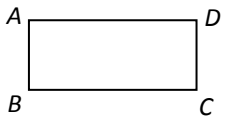
Example 2: Using Perpendicular lines in a proof.

1. Given: $\overleftrightarrow{KA} \perp \overleftrightarrow{AT}$, $m\angle PAT = 20°$
   Prove: $m\angle KAP = 70°$



Statements	Reasons
1. $\overleftrightarrow{KA} \perp \overleftrightarrow{AT}$, $m\angle PAT = 20°$	1.
2. ∠_____ is a right angle	2.
3.	3.
4.	4. Angle Addition Postulate
5.	5.
6.	6.

3. Given: $\overline{AB} \perp \overline{BC}$; $\overline{DC} \perp \overline{BC}$
   Prove: $\angle B \cong \angle C$



Statements	Reasons
1. $\overline{AB} \perp \overline{BC}$; $\overline{DC} \perp \overline{BC}$	1.

PROVING LINES PARALLEL

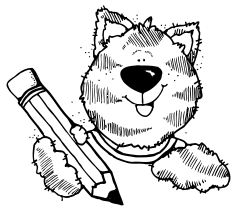
**REMEMBER: Magic happens only if the lines are parallel, so…

You can use angle measures to PROVE lines are parallel!

When to use the CONVERSE!!!

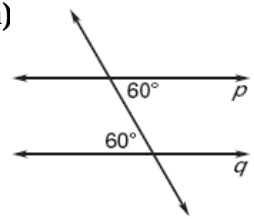
$a \parallel b$ ⇨ $\angle 1 \cong \angle 2$ _____

$\angle 1 \cong \angle 2$ ⇨ $a \parallel b$ _____

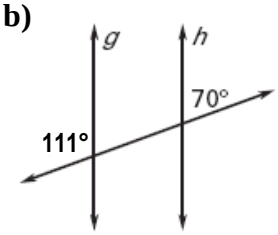


Example#1: Determine whether each set of lines are parallel or not. Explain!

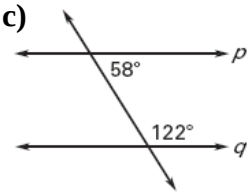
a)



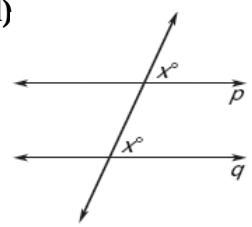
b)



c)

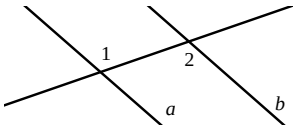


d)

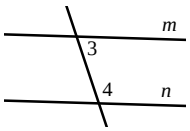


PROOFS

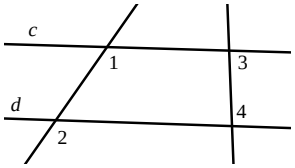
1. Given: $\angle 1 \cong \angle 2$
   Prove: $a \parallel b$



2. Given: $m \parallel n; m\angle 3 = 80°$
   Prove: $m\angle 4 = 100°$

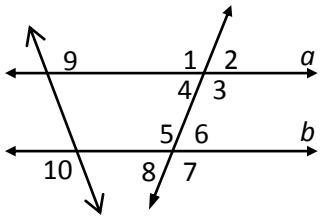


2. Given: $\angle 1 \cong \angle 2$;
   $m\angle 3 = 88°$
   Prove: $m\angle 4 = 92°$



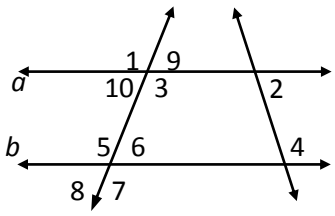
Statements	Reasons
1. $\angle 1 \cong \angle 2; m\angle 3 = 88°$	1.

3. Given : $\angle 10 \cong \angle 9$;
   $m\angle 5 = (5x + 4)°$,
   $m\angle 3 = (6x - 16)°$
   Prove: $x = 20$



Statements	Reasons
1. $\angle 10 \cong \angle 9$; $m\angle 5 = (5x + 4)°$, $m\angle 3 = (6x - 16)°$	1.

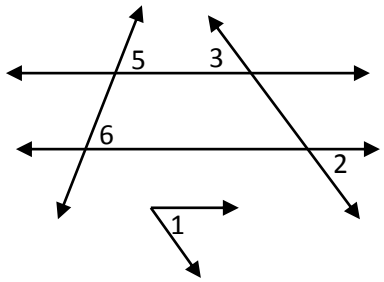
2. Given: $\angle 2$ and $\angle 4$ are supplementary,
   $m\angle 1 = 40°$
   Prove: $m\angle 8 = 140°$



Statements	Reasons
1. $\angle 2$ and $\angle 4$ are supplementary, $m\angle 1 = 40°°$	1.

Remember this???	**Transitive Property**	If a = b and b =c, then _____

3. Given: $\angle 2 \cong \angle 1$, $\angle 1 \cong \angle 3$, $m\angle 5 = 64°$
Prove: $m\angle 6 = 64°$

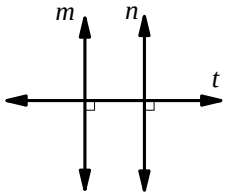


Statements	Reasons
1. $\angle 2 \cong \angle 1$, $\angle 1 \cong \angle 3$, $m\angle 5 = 64°$	1.

PERPENDICULAR TRANSVERSAL THEOREM

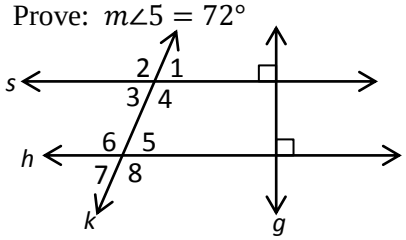
If $m \perp t$ and $n \perp t$,
then _____

Statements	Reasons
1. $m \perp t$; $n \perp t$	1. given
2.	2.



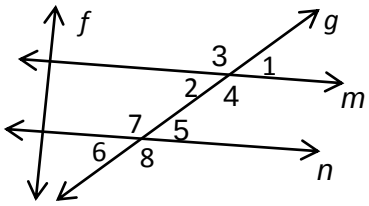
Proofs

4. Given: $s \perp g$, $g \perp h$, $m\angle 1 = 72°$
Prove: $m\angle 5 = 72°$



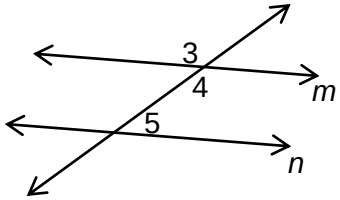
Statement	Reason
1. $s \perp g$, $g \perp h$, $m\angle 1 = 72°$	1. Given
2. $s \parallel h$	2.
3.	3.
4. $m\angle 5 = 72°$	4.

5. Given: $f \perp m$, $f \perp n$, $m\angle 6 = 30°$
Prove: $m\angle 3 = 150°$



Statement	Reason
1. $f \perp m$, $f \perp n$, $m\angle 6 = 30°$	1.

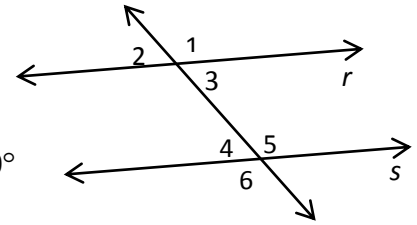
6. Given: $m \parallel n$; $m\angle 3 = 128°$
Prove: $m\angle 5 = 52°$



Statement	Reason
1. $m \parallel n$; $m\angle 3 = 128°$	1.

2.5 Review + Multiple Choice

1. In the diagram line r is parallel to line s. Which of the following statements must be true?



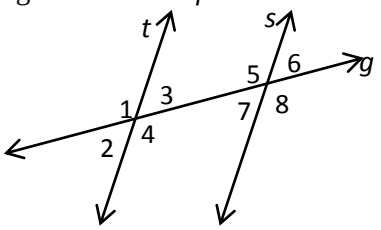
A. $m\angle 3 = m\angle 5$

B. $m\angle 5 = m\angle 4$

C. $m\angle 2 + m\angle 3 = 180°$

D. $m\angle 2 = m\angle 4$

2. Given: line t ‖ line s and neither is perpendicular to line g. Which of the following statements is *false?*



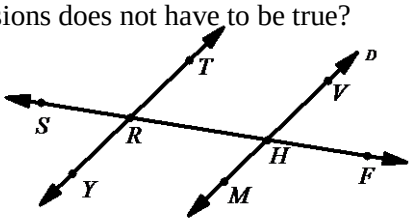
A. $m\angle 2 + m\angle 5 = 180°$

B. $m\angle 1 = m\angle 7$

C. $m\angle 3 + m\angle 5 = 180°$

D. $m\angle 2 = m\angle 3$

3. In the diagram $\overleftrightarrow{YT} \parallel \overleftrightarrow{MV}$ and $m\angle YRH = 100°$. Which of the following conclusions does not have to be true?



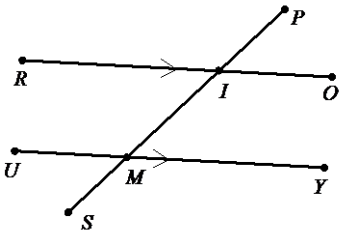
A. $m\angle MHF = 100°$

B. $m\angle RHM = 80°$

C. $\angle SRT$ and $\angle MHF$ are alternate exterior angles

D. $\angle SRY$ and $\angle RHV$ are alternate interior angles

4. Based on the diagram, which theorem or postulate would support the statement $m\angle RIP = m\angle SMY$?



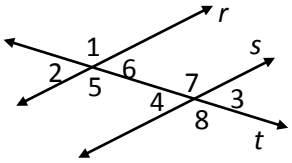
A. Alternate Exterior Angles Theorem

B. Alternate Interior Angles Theorem

C. Consecutive Interior Angles Theorem

D. Corresponding $\angle s$ Postulate

5. In the diagram below, $\angle 2 \cong \angle 3$. Which of the following must be true?



A. $r \perp t$

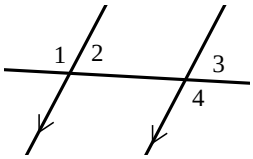
B. $m\angle 8 = m\angle 6$

C. $m\angle 4 = m\angle 6$

D. $m\angle 5 = m\angle$

6. Which type of angles are a counterexample to the conjecture below?

"If two lines are parallel, then each pair of angles are supplementary".



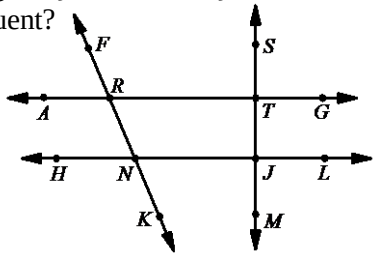
A. $\angle 1, \angle 2$

B. $\angle 3, \angle 1$

C. $\angle 4, \angle 2$

D. $\angle 1, \angle 4$

7. In the diagram to the right, $\overleftrightarrow{TJ} \perp \overleftrightarrow{AG}$ and $\overleftrightarrow{TJ} \perp \overleftrightarrow{HI}$ then which angles are congruent?



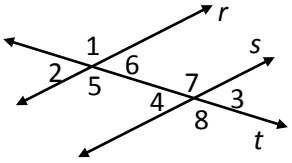
A. $\angle ARF, \angle NRA$

B. $\angle FRT, \angle RNH$

C. $\angle LNR, \angle ARN$

D. $\angle FRG, \angle KNJ$

8. In the diagram below, $m\angle 6 + m\angle 7 = 180°$. Which of the following does not have to be true?



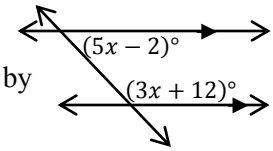
A. $m\angle 1 + m\angle 4 = 180°$

B. $m\angle 5 + m\angle 4 = 180°$

C. $r \parallel s$

D. $m\angle 2 = m\angle 7$

9. Allison wanted to solve for x, so she set up the equation $(5x - 2)° + (3x + 12)° = 180°$. What would her reasoning be?



"If two parallel lines are intersected by a transversal, then…

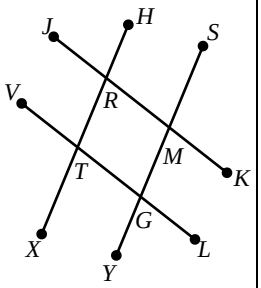
A. linear pairs are supplementary."

B. corresponding angles are supplementary."

C. alternate interior angles are congruent."

D. consecutive (same-side) interior angles are supplementary."

10. In the diagram below, which pair of angles are alternate interior angles?



A. $\angle TRM$ and $\angle TGM$

B. $\angle HTL$ and $\angle YGL$

C. $\angle JMG$ and $\angle SGL$

D. $\angle KRT$ and $\angle HTG$

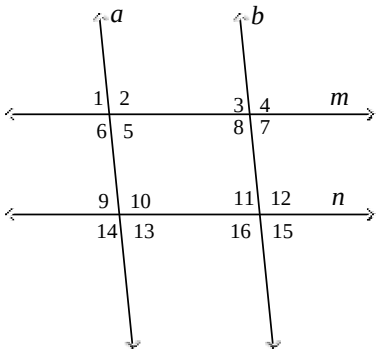
11. Use the diagram to determine which of the pair of angles is alternate exterior angles.

A. ∠1 and ∠15

B. ∠9 and ∠15

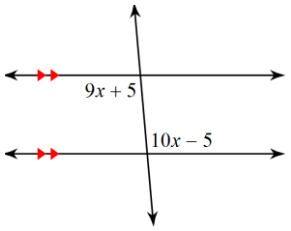
C. ∠4 and ∠11

D. ∠2 and ∠8



12. To solve for x in the diagram below, Betty used the equation $9x + 5 = 10x - 5$.

Betty can justify her equation by the following statement:



"If two parallel lines are intersected by a transversal, then ...

A. alternate interior angles are congruent.
B. alternate exterior angles are congruent.
C. corresponding angles are congruent.
D. consecutive interior angles are supplementary.

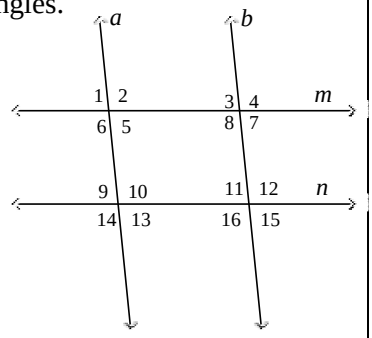
13. Use the diagram to determine which of the pair of angles is corresponding angles.

A. ∠2 and ∠10

B. ∠8 and ∠11

C. ∠4 and ∠10

D. ∠10 and ∠12



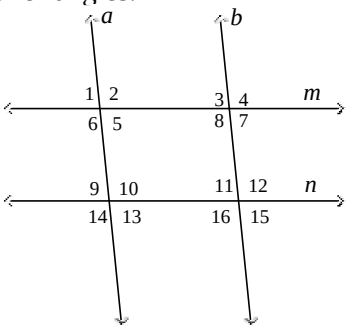
14. Use the diagram to determine which of the pair of angles is consecutive interior angles.

A. ∠3 and ∠11

B. ∠13 and ∠16

C. ∠9 and ∠13

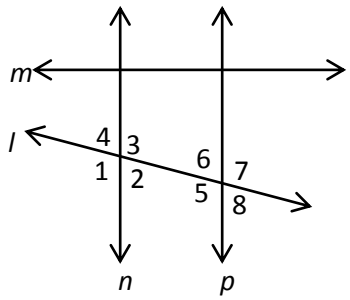
D. ∠10 and ∠13



EXTRA PRACTICE

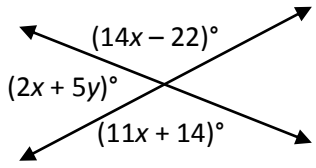
1. Given: $m\angle 2 = (5x - 3)°$, $m\angle 5 = (11x - 41)°$, $n \perp m$, $p \perp m$

Prove: $x = 14$



Statements	Reasons
1. $m\angle 2 = (5x - 3)°, m\angle 5 = (11x - 41)°, n \perp m, p \perp m$	1.

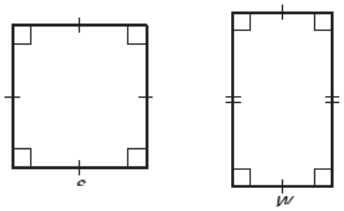
2. Solve for x and y. Explain your reasoning for each equation you set up!



2.5 Perimeter & Area

Formulas for Perimeter (P), Area (A), and Circumference (C)

Rectangle or Square



***P* = _____**

***A* = _____**

b = _____, *h* = _____

Triangle

***P* = _____**

***A* = _____**

b = _____, *h* = _____

Circle

***C* = _____**

***A* = _____**

r = _____ π = _____

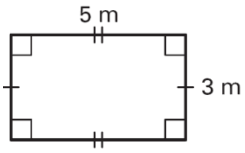
****NOTE****

- **Height** is always _____ to the base
- **Perimeter, Circumference:**

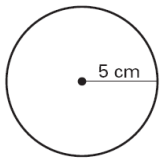
_____ units (Ex:)

Example 1: Find perimeter, circumference, and area

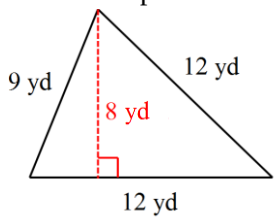
1. Find the perimeter and area of the rectangle.



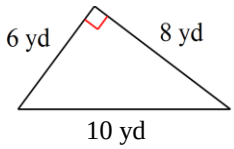
2. Find the circumference and area of the circle. Leave your answers in terms of π.



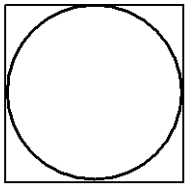
3. Find the perimeter and area of the figure.



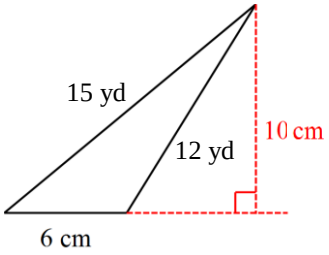
4. Find the perimeter and area of the figure.



5. Find the area and circumference of the **circle** inscribed in the square.

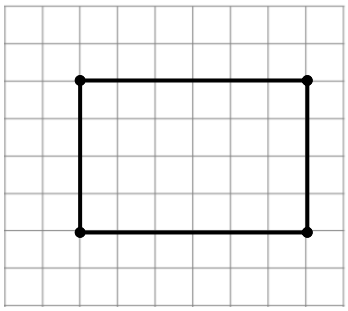


6. Find the perimeter and area of the figure.

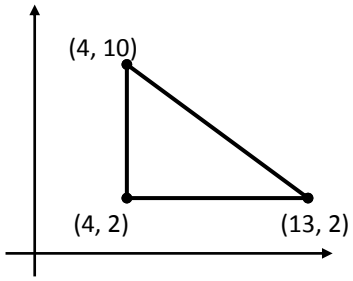


AREA ON A COORDINATE PLANE (2 methods)

- **Count the units**

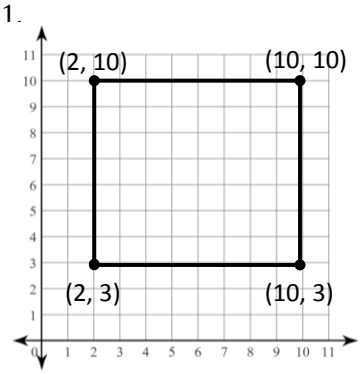


- **Subtract values**

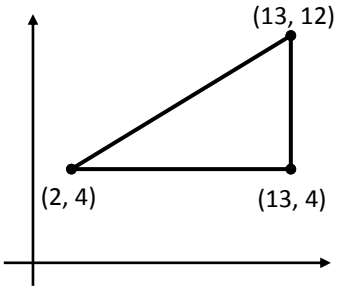


Example 2: Find the area of the figure shown.

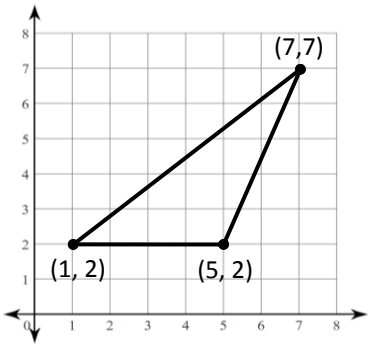
1.



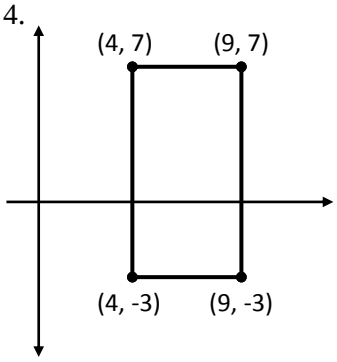
2.



3.



4.



Example 3: Find unknown length

1. The base of a triangle is 12 feet. It's area is 36 square feet. Find the height of the triangle.

2. The area of a rectangle is 243 square meters. The rectangle is three times its width. Find the length and width of the rectangle.

3. The perimeter of a square is 128 inches.
   a. Find the length of one side of the square.

   b. Then find the area of the square.

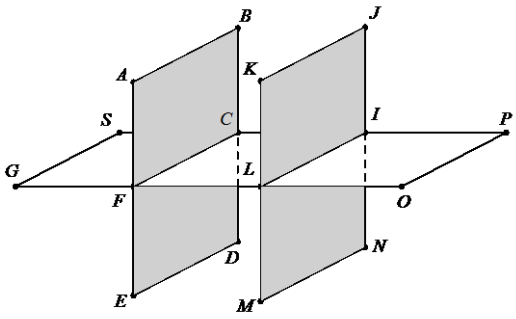
4. The circumference of a circle is 14π centimeters. Find the area of the circle.

SPIRAL REVIEW

I. Points, Lines, Planes…

- **Collinear:**
- **Coplanar:**

Use the diagram below.



a. Name a point that is collinear with *C*, *S*, and *P*.

b. Name a point that is coplanar with *A*, *C*, and *D*.

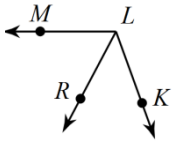
c. Circle the correct set of 3 collinear points.
B, K, L *K, M, L*
P, I, L *G, S, C*

d. Circle the correct set of 4 coplanar points.
G, O, J, P *K, I, J, F*
L, C, I, O *A, C, S, C*

II. Addition Postulates

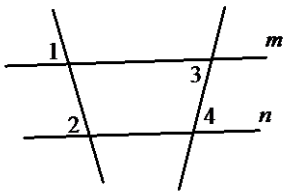
1. *A* is between *H* and *T*. If *HA* = $3x + 1$, *AT* = $5x - 6$, and *HT*=*35*, solve for *x* and explain.

2. If $\angle KLM = (13x + 6)°$, $m\angle RLM = (7x + 6)°$, and $m\angle KLR = 48°$, find $m\angle RLM$ and explain.

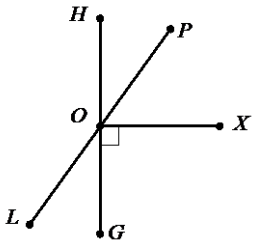


EXTRA PROOF PRACTICE

1. Given: $\angle 1 \cong \angle 2$;
$m\angle 3 = (13x - 1)°$;
$m\angle 4 = (11x + 15)°$
Prove: $x = 8$

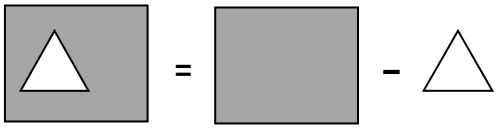


2. Given: $m\angle LOG = 37°$;
$\angle HOP$ and $\angle POX$ are complementary
Prove: $m\angle POX = 53°$



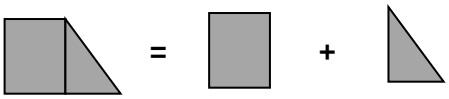
2.7 Composite Area

PARTIALLY SHADED...



$\text{Area}_{\text{region}} = \text{Area}_{\text{shaded}} - \text{Area}_{\text{unshaded}}$

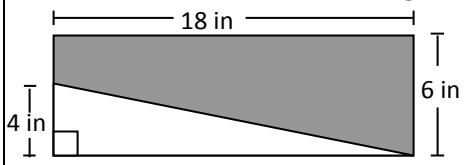
FULLY SHADED...



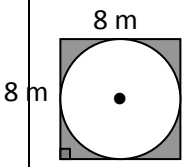
$\text{Area}_{\text{region}} = \text{Area}_{\text{shaded}} + \text{Area}_{\text{shaded}}$

Example 1: Fins the area of the shaded region.

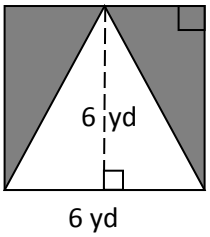
1. Find the area of the shaded region.



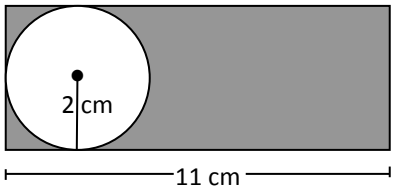
2. Find the area of the shaded region. (Round to the tenths)



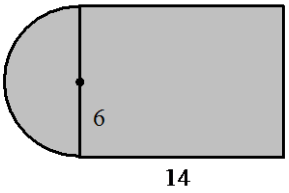
3. Find the area of the shaded region



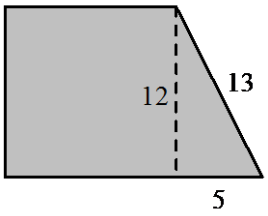
4. Find the area of the shaded region



5. Find the area of the figure below comprised of a rectangle and a semicircle.

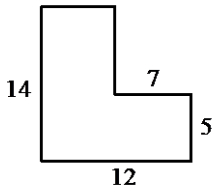


6. Find the area of the figure below comprised of a square and a right triangle.

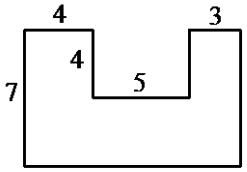


Example 2: Composite figures

1. Find the area and perimeter of the figure below if all line segments meet at right angles. (Figure not drawn to scale)



2. Find the area and perimeter of the figure below if all line segments meet at right angles. (Figure not drawn to scale)



SPIRAL REVIEW

Rotations

For every 90° → 1 quadrant over
Switch #'s

1. If $K(-51, 43)$ is rotated 90° counterclockwise about the origin, then what would be the coordinates of the new point?
2. If $P(4, -3)$ is rotated 180° clockwise about the origin, then what are the coordinates of its image?
3. If $M(5, 6)$ then what are the coordinates of its image after a rotation 90° clockwise about the origin?

Translations

1. If $A(-4, 2)$ translates to $A'(3, -9)$, then $B(-1, -5)$ is translated to what point?
2. If $G(3, 5)$ translates to $G'(-5, 12)$, then $K(-4, 1)$ is translated to what point?

PRACTICE MAKES PERFECT!

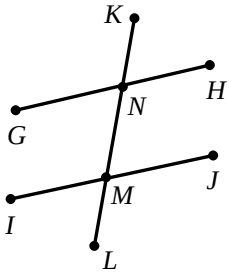
1. In the figure, $\overline{GH}$ and $\overline{IJ}$ are intersected by $\overline{KL}$. $\angle HNL$ and which of the following angles are known as corresponding angles?

   A. $\angle JMN$

   B. $\angle JML$

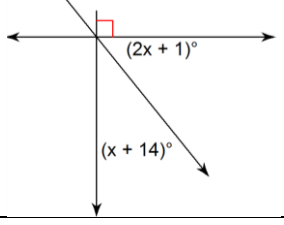
   C. $\angle NMI$

   D. $\angle IML$

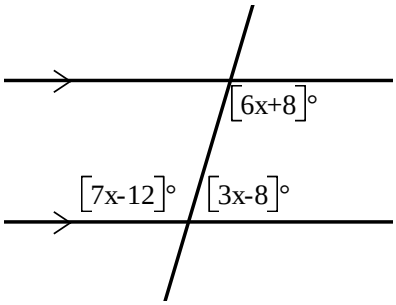


2. You are planting grass on a rectangular plot of land. You are also building a fence around the edge of the plot. The plot is 45 yards long and 30 yards wide. How much area do you need to cover with grass s eed? How many yards of fencing do you need?

3. Solve for *x* and explain your reasoning.



4.

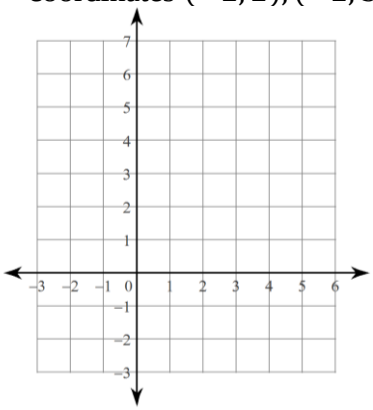


a. Write an equation that can be used to find the value of *x* and justify your equation.

b. Find the value of *x*.

c. Find the measure of one of the acute angles.

5. Find the area of the triangle formed by the coordinates $(-2, 2), (-2, 3)$, and $(6, 6)$.

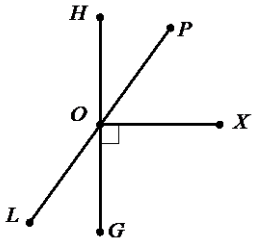


6. a) Write the converse of the statement.

If two angles formed by parallel line cut by a transversal are corresponding angles, then they are congruent.

b) Is the converse true or false? If false, give a counterexample.

2. Given: $m\angle LOG = 37°$;
$\angle HOP$ and $\angle POX$ are complementary
Prove: $m\angle POX = 53°$



3. Given: $\angle 1 \cong \angle 2, m\angle 6 = 87°$
Prove: $m\angle 9 = 93°$