

## Warm Up:

Solve the following Systems:

1.  $(x - 2y = 15) \cdot 2 \rightarrow -2x + 4y = -30$   
 $2x + 3y = 2 \rightarrow 2x + 3y = 2$

$$\begin{array}{r} -2x + 4y = -30 \\ 2x + 3y = 2 \\ \hline 7y = -28 \\ y = -4 \end{array}$$

$x - 2(-4) = 15$   
 $x + 8 = 15$   
 $x = 7$

$(7, -4)$

2.  $(6x + 7y = -9) \cdot 2 \rightarrow 12x + 14y = -18$   
 $(-4x - 5y = 5) \cdot 3 \rightarrow -12x - 15y = 15$

$$\begin{array}{r} 12x + 14y = -18 \\ -12x - 15y = 15 \\ \hline -y = -3 \\ y = 3 \end{array}$$

$-4x - 5(3) = 5$   
 $-4x - 15 = 5$   
 $-4x = 20$   
 $x = -5$

$(-5, 3)$

# Homework Answers

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2.  $\overleftrightarrow{PT}, \overleftrightarrow{TP}$

3. any two of the following:  
 $\overleftrightarrow{AR}, \overleftrightarrow{RA}, \overleftrightarrow{AT}, \overleftrightarrow{TA}, \overleftrightarrow{RT}, \overleftrightarrow{TR}$

4. any two of the following:  
 $\overleftrightarrow{MA}, \overleftrightarrow{MS}, \overleftrightarrow{AS}, \overleftrightarrow{AM}, \overleftrightarrow{SA}, \overleftrightarrow{SM}$

8.  $\overline{AC}$  or  $\overline{CA}$

9.  $\overline{PQ}$  or  $\overline{QP}$

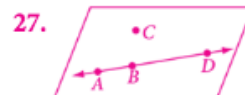
10.  $\overline{TR}$  or  $\overline{RT}$ ,  $\overline{RI}$  or  $\overline{IR}$ , and  $\overline{TI}$  or  $\overline{IT}$

18. R is the midpoint of  $\overline{PQ}$ . X is the midpoint of  $\overline{WY}$ . Y is the midpoint of  $\overline{XZ}$ . No midpoints are shown in  $\triangle ABC$ .

21.  $\overrightarrow{AB}, \overrightarrow{AC}$

22.  $\overrightarrow{PM}, \overrightarrow{PN}$

23.  $\overrightarrow{XY}, \overrightarrow{XZ}$



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1. (3, 4)

2. (-9, 1.5)

3. (5.5, 5.5)

4. (-6, 44)

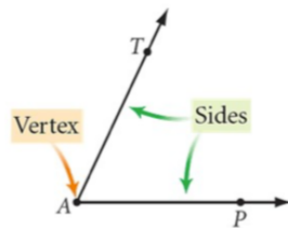
5. Yes. The coordinates of the midpoint of a segment with endpoints  $(a, b)$  and  $(c, d)$  are found by taking the average of the  $x$ -coordinates,  $\frac{a+c}{2}$ , and the average of the  $y$ -coordinates,  $\frac{b+d}{2}$ . Thus the midpoint is  $(\frac{a+c}{2}, \frac{b+d}{2})$ .

7. Find the midpoint, then find the midpoint of each half.

6. (3, 2) and (6, 4). To get the first point of trisection, sum the coordinates of points A and B to get (9, 6), then multiply those coordinates by  $\frac{1}{3}$  to get (3, 2). To get the second point of trisection, sum the coordinates of points A and B to get (9, 6), then multiply those coordinates by  $\frac{2}{3}$  to get (6, 4). This works because the coordinates of the first point are (0, 0).

## 1.2 - Angles

Angle - formed by two rays that share a common endpoint



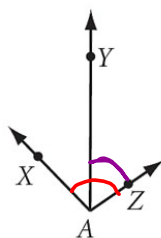
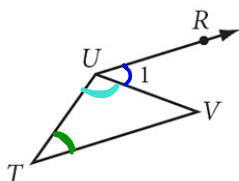
to name this angle:

$\angle TAP$  ,  $\angle PAT$

$\angle A$

EXAMPLE A

Name all the angles in these drawings.



$\angle VUT$

$\angle RUV, \angle 1,$   
 $\angle VUR$

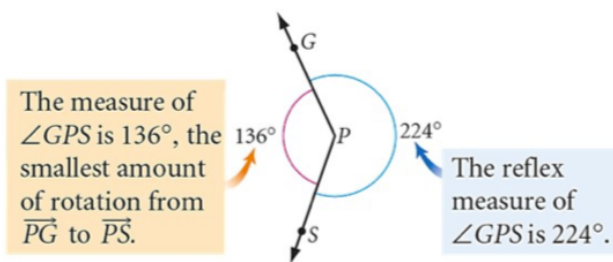
$\angle T, \angle UTV, \angle VTU$

$\angle XAZ, \angle ZAX$

$\angle YAZ, \angle ZAY$

Measure of an angle -  $< 180^\circ$

Reflex of an angle -  $180^\circ < \text{angle} < 360^\circ$

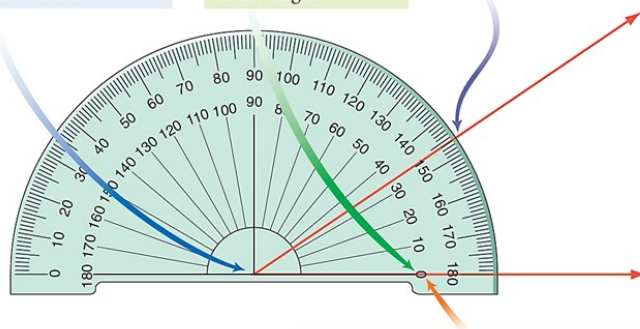


The geometry tool you use to measure an angle is a **protractor**.

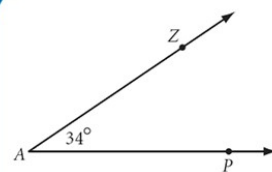
**Step 1:** Place the center mark of the protractor on the vertex.

**Step 2:** Line up the 0-mark with one side of the angle.

**Step 3:** Read the measure on the protractor scale.



**Step 4:** Be sure you read the scale that has the 0-mark you are using! The angle in the diagram measures  $34^\circ$  and not  $146^\circ$ .



$$m\angle ZAP = 34^\circ$$

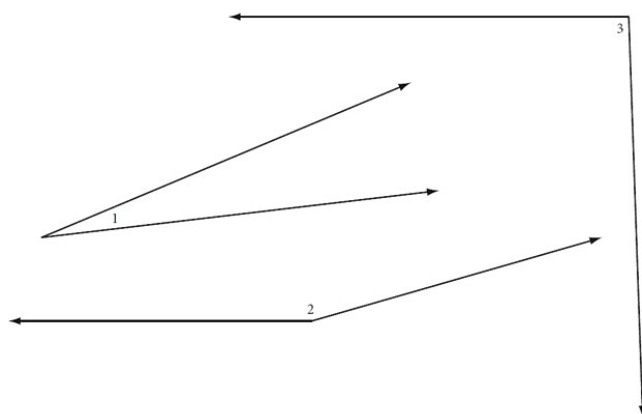
To show the measure of an angle, use an  $m$  before the angle symbol. For example,  $m\angle ZAP = 34^\circ$  means the measure of  $\angle ZAP$  is 34 degrees.

Lesson 1.2 Finding Angles

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## EXAMPLE B

Use your protractor to measure these angles as accurately as you can. Which ones measure more than  $90^\circ$ ?



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

A ray is the **angle bisector** if it contains the vertex and divides the angle into two congruent angles.

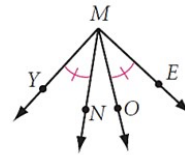
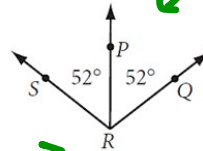
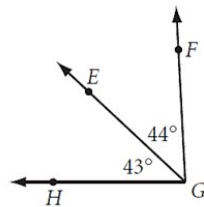


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## EXAMPLE C

Look for angle bisectors and congruent angles in the figures below.

- Name each angle bisector and the angle it bisects.
- Name all the congruent angles in the figure. Use the congruence symbol and name the angles so there is no confusion about which angle you mean.



$\overrightarrow{RP}$   
angle bisector  
of  
 $\angle SRQ$   
 $\angle SRP \cong \angle QRP$

$\angle YMN \cong \angle NMO$

