

## 2-5 Exploring Angle Relationships

Warm-up

Simplify and write in scientific notation

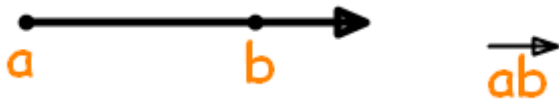
1.  $(3 \times 10^2)(5 \times 10^{-5})$

2.  $\frac{200 \times 10^3}{10}$

3. 0.00059

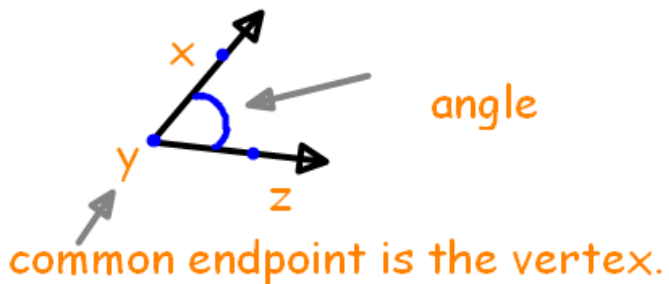
### Key Terms

Ray – A part of a line that extends forever in one direction.



Angle – The figure formed when two rays meet at a common endpoint.

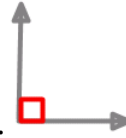
Vertex of an angle – The common endpoint of the two rays that form an angle.



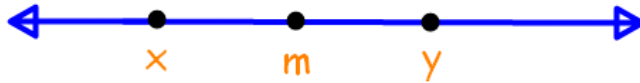
Central angle of a circle – An angle with its vertex at the center of a circle.

Six types of special angles.

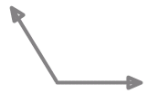
Right angle – An angle whose measure is  $90^\circ$ .



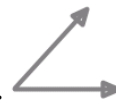
Straight angle – An angle whose measure is  $180^\circ$ .



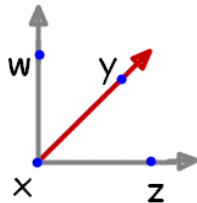
Obtuse angle – An angle whose measure is between  $90^\circ$  and  $180^\circ$ .



Acute angle – An angle whose measure is between  $0^\circ$  and  $90^\circ$ .

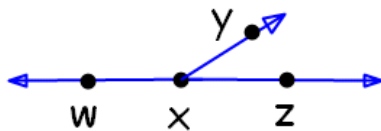


Complimentary angles – Two angles whose measures add up to  $90^\circ$ .



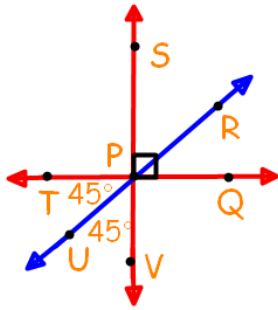
$$\angle wxy + \angle yxz = 90^\circ$$

Supplementary angles – Two angles whose measures add up to  $180^\circ$ .



$$\angle wxy + \angle yxz = 180^\circ$$

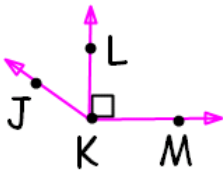
## Example



1. What rays form  $\angle TPU$ ?
2. Name 2 acute angles.
3. Name 3 obtuse angles.
4. Name a pair of complementary angles.
5. Name a pair of supplementary angles.

## Example 2

Suppose  $\angle JKL$  has a measure of  $32^\circ$ . Find  $\angle JKM$

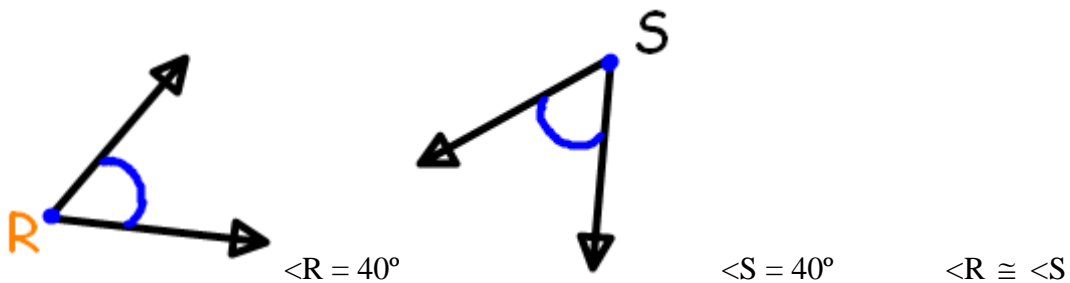


## Solution

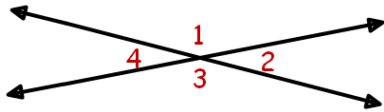
$$\angle JKL = 32^\circ \text{ and } \angle LKM = 90^\circ$$

$$\text{So, } \angle JKM = 32 + 90 = 122^\circ$$

Congruent angles – Angles with equal measures. The symbol  $\cong$  means “is congruent to”.



Vertical angles – Two angles formed by intersecting lines and facing in opposite directions. Vertical angles are equal in measure.

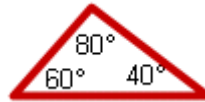


$\angle 1$  &  $\angle 3$  are vertical angles  
 $\angle 2$  &  $\angle 4$  are vertical angles

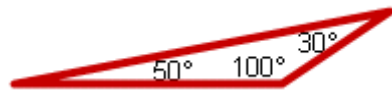
Triangles – Sum of the measures of the angles is  $180^\circ$ .

Special Triangles:

Acute triangle – A triangle with three acute angles.



Obtuse triangle – A triangle with one obtuse angle.



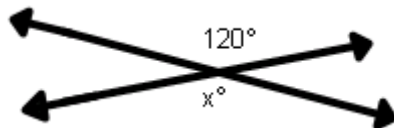
Right triangle – A triangle with one right angle.

Example

Find the unknown angles measures.

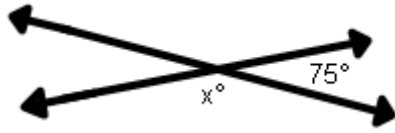


- a.
- Solution:  $100 + 25 + x = 180$   
 $125 + x = 180$   
 $-125 \quad -125$   
 $x = 55^\circ$



b.

- Solution  
Supplementary angles  
 $180 - 75 = 105$  so  $x = 105^\circ$



- c.
- Solution  
Vertical angles  
 $x = 120^\circ$

### Homework

Read pg. 85-89

Practice 13 #1-20

Pg. 657 Skill 16 #1-9