

## ANGLE RELATIONSHIPS IN TRIANGLES

### ANGLES OF A TRIANGLE

- Triangles can be named by the three angles. They can be described by the terms \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

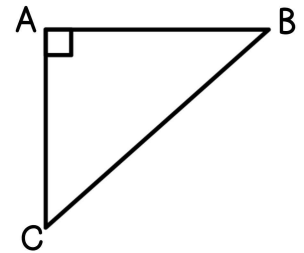
- Angles can be named in two different ways:

Ex: Triangle ABC is shown at right.

- $\angle A$  can also be called angle \_\_\_\_\_ or \_\_\_\_\_.

- $\angle B$  can also be called angle \_\_\_\_\_ or \_\_\_\_\_.

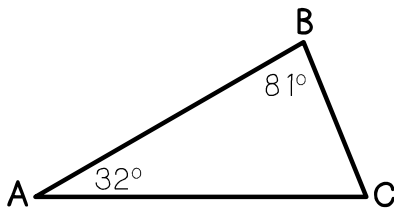
- $\angle C$  can also be called angle \_\_\_\_\_ or \_\_\_\_\_.



- The \_\_\_\_\_ of the three angles in a triangle is \_\_\_\_\_. You can set up an equation to determine the missing angle measures.

Determine the missing angle in the triangles below.

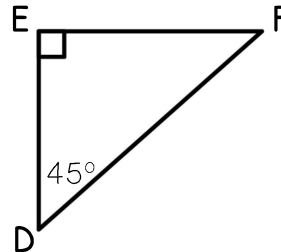
1. Find the measure of  $\angle C$ .



Equation: \_\_\_\_\_

$m\angle C$ : \_\_\_\_\_

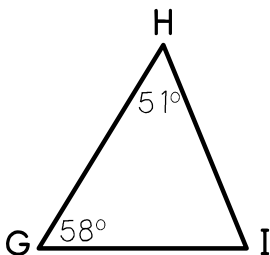
2. Find the measure of  $\angle F$ .



Equation: \_\_\_\_\_

$m\angle F$ : \_\_\_\_\_

3. Find the measure of  $\angle HIG$ .



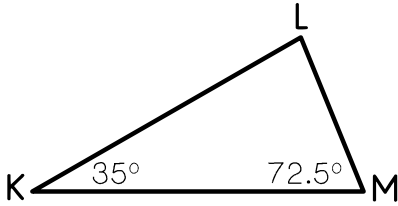
Equation: \_\_\_\_\_

$m\angle HIG$ : \_\_\_\_\_

4. Triangle JHL has angle HLJ, which measures  $65^\circ$ , and angle LJH, which measures  $50^\circ$ . Draw a sketch of triangle JHL and determine the missing angle measure.

Mark the statements in questions 5-7 as true or false. Then correct the false statement in the space provided.

5.



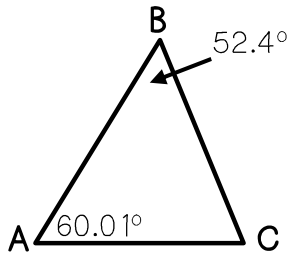
\_\_\_\_\_ a. The measure of  $\angle LKM$  is  $35^\circ$ , the measure of  $\angle KML$  is  $72.5^\circ$  and the measure of  $\angle KLM$  is unknown.

\_\_\_\_\_ b. The equation  $35 + 72.5 + x = 180$  can be used to find the measure of  $\angle KLM$ .

\_\_\_\_\_ c. The measure of  $\angle KLM$  is  $35^\circ$ .

Correct the false statement:

6.



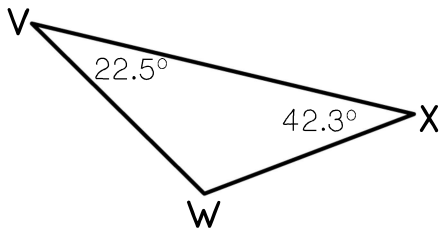
\_\_\_\_\_ a. Both  $\angle B$  and  $\angle A$  are acute angles.

\_\_\_\_\_ b. The equation  $60.01 + 52.4 + x = 180$  can be used to find the measure of  $\angle BCA$ .

\_\_\_\_\_ c. The measure of  $\angle BCA$  is  $114.75^\circ$ .

Correct the false statement:

7.



\_\_\_\_\_ a. The equation  $22.5 + x = 42.3$  can be used to find the measure of  $\angle VWX$ .

\_\_\_\_\_ b. The measure of  $\angle XWV$  is  $115.2^\circ$ .

\_\_\_\_\_ c. Triangle  $VWX$  is an obtuse triangle, since the measure of  $\angle W$  is greater than  $90^\circ$ .

Correct the false statement:

Use your understanding of triangles to answer the questions below.

8. The measure of angle  $G$  is  $35^\circ$  and the measure of angle  $E$  is  $62.2^\circ$ . Which of the following must be the measure of angle  $F$  in order to form triangle  $EFG$ ?

- A.  $117.2^\circ$
- B.  $83.2^\circ$
- C.  $82.8^\circ$
- D.  $27.8^\circ$

9. Mrs. Tonell writes the measure of 3 angles on the board. Rachel says the three angles will form an acute triangle. Do you agree or disagree? Explain.

$$\begin{aligned} \angle M &= 57^\circ \\ \angle N &= 78^\circ \\ \angle O &= 55^\circ \end{aligned}$$

Summarize today's lesson:

## ANGLE RELATIONSHIPS & TRIANGLES

Answer each of the questions below. Be sure to show your thinking.

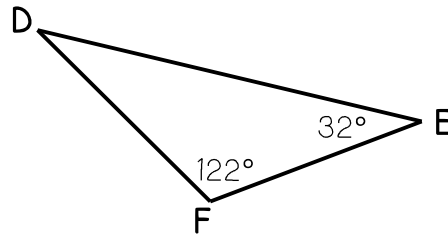
1. Which set of angle measures CANNOT be the angle measures of a triangle?

- A.  $65^\circ, 65^\circ, 50^\circ$
- B.  $54.3^\circ, 47.5^\circ, 78.2^\circ$
- C.  $22.5^\circ, 36.4^\circ, 110.1^\circ$
- D.  $40^\circ, 40^\circ, 100^\circ$

2. The measure of angle S is  $29.1^\circ$  and the measure of angle R is  $80^\circ$ . Which of the following must be the measure of angle Q in order to form triangle QRS?

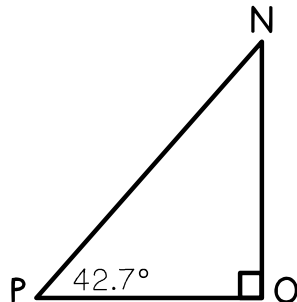
- A.  $109.1^\circ$
- B.  $71.1^\circ$
- C.  $150.9^\circ$
- D.  $70.9^\circ$

3. Triangle DEF is shown below. What is the measure of  $\angle D$ ?



4. Triangle NOP is shown below. What is the measure of  $\angle N$ ?

- A.  $47.3^\circ$
- B.  $137.3^\circ$
- C.  $48.8^\circ$
- D.  $132.8^\circ$



5. In triangle EFG, the measure of angle E is  $97^\circ$ , and the measure of angle F is  $15^\circ$ . What is the measure of angle G?

6. Anna solved three problems on her math test. One of them was incorrect. Circle the problem that was solved incorrectly and find the correct answer.

Triangle ABC is shown with vertices A, B, and C. Angle B is labeled  $74.1^\circ$ , angle A is labeled  $83.2^\circ$ , and angle C is labeled  $x^\circ$ . An arrow points to angle B.

$$83.2 + 74.1 + x = 180$$

$$157.3 + x = 180$$

$$x = 22.7^\circ$$

Triangle XYZ is shown with vertices X, Y, and Z. Angle W is labeled  $42^\circ$ , angle Y is labeled  $36.08^\circ$ , and angle X is labeled  $x^\circ$ .

$$42 + 36.08 + x = 180$$

$$78.08 + x = 180$$

$$x = 101.92^\circ$$

Triangle MNL is shown with vertices M, N, and L. Angle M is labeled  $x^\circ$ , angle N is labeled  $32^\circ$ , and angle L is labeled  $108^\circ$ .

$$32 + x = 108$$

$$x = 76^\circ$$