Learning Activity Sheets (LAS)

8 - Mathematics

Name:_____ **Date:**_____ **Score:**_____

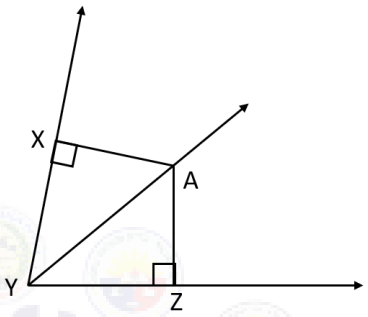
Application of Triangle Congruence to Construct Perpendicular Lines and Angle Bisectors

DIRECTIONS: Complete the proof of the following. Choose from the box below.

1. Given: $\overrightarrow{YA}$ bisects ∠XYZ

   $\overrightarrow{YX} \perp \overline{XA}$, and $\overrightarrow{YZ} \perp \overline{AZ}$

   Prove: $\overline{AX} \cong \overline{AZ}$



Statement	Reason
1. $\overrightarrow{YA}$ bisects ∠XYZ a) _____	1. Given
2. ∠XYA ≅ ∠ZYA	2. b) _____
3. c) _____	3. Definition of perpendicular lines
4. ∠AXY ≅ ∠AZY	4. All right angles are congruent
5. $\overrightarrow{YA} \cong \overrightarrow{YA}$	5. d) _____
6. △XYA ≅ △ZYA	6. e) _____
7. f) _____	7. CPCTC

∠AXY and ∠AZY are right angles	$\overrightarrow{YX} \perp \overline{XA}$ and $\overrightarrow{YZ} \perp \overline{AZ}$
Definition of an angle bisector	$\overline{AX} \cong \overline{AZ}$
SAA Congruence Postulate	Reflexive Property

Quarter 3 **Week 8-9**

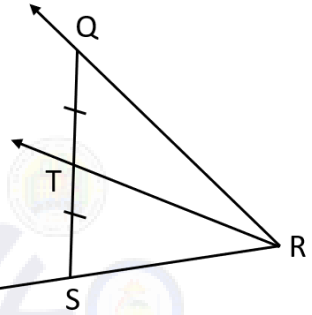
Target Competency: applies triangle congruence to construct perpendicular lines and angle bisectors; M8GE-IIIk-47

Note to the Teacher: Remind the students the proper use of ruler and protractor for better scaling.

PERFORMANCE TASK

Directions: Answer the following questions. You may use the space provided below.

1. **THINK**: Is the information enough to determine if $\overrightarrow{RT}$ is the angle bisector of $\angle QRS$? Explain your answer.

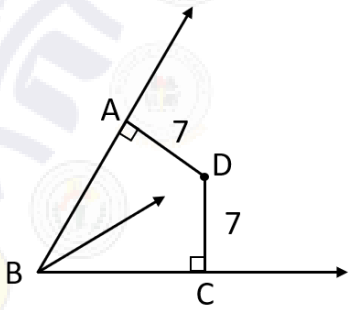


Answer:

_____

_____

2. Is D a part of the angle bisector of ∠ABC? Why or why not?



Answer:

_____

_____

_____

RUBRIC FOR THE ACTIVITY

Score	Description
10	The given answer is precise, neatly written and answered all the questions completely.
7	The given answer is precise, neatly written but did not answered all the questions completely.
5	The given answer is not precise, but neatly written and answered all the questions completely.
3	The given answer is not precise, neatly written but did not answered all the questions completely.
1	The given answer is not precise, not neatly written and did not answered all the questions completely.
0	The learner did not attempt to answer at all.

Target Competency: applies triangle congruence to construct perpendicular lines and angle bisectors; M8GE-IIIk-47

Note to the Teacher: Remind the students the proper use of ruler and protractor for better scaling. *(This is a Government Property. Not For Sale.)*

Answer Key:

1. a. $\overrightarrow{YX} \perp \overline{XA}$, and $\overrightarrow{YZ} \perp \overline{AZ}$
   b. Definition of an angle bisector
   c. ∠AXY and ∠AZY are right angles
   d. Reflexive Property
   e. SAA Congruence Postulate
   f. $\overline{AX} \cong \overline{AZ}$

Performance Task

1. No, because T does not necessarily mean equidistant from $\overline{QR}$ and $\overline{RS}$. We may also state that the angles in the diagram is not certain a right angles.

2. If D is on the angle bisector, then AD = CD and both segments need to be perpendicular to the sides of the angle. From the markings, we know that $\overline{BA} \perp \overline{DA}$, and $\overline{BC} \perp \overline{CD}$. Also, AD = CD = 7. Therefore, yes, D is a part on the angle bisector of ∠ABC.

Target Competency: applies triangle congruence to construct perpendicular lines and angle bisectors; M8GE-IIIk-47
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