



## Vocabulary

### Review

Use a word from the list below to complete each sentence. Use each word just once.

interior                  rays                  vertex

1. The   ? of an *angle* is the region containing all of the points between the two sides of the angle.

2. When you use three points to name an *angle*, the   ? must go in the middle.

3. The sides of  $\angle QRS$  are   ?  $RS$  and  $RQ$ .

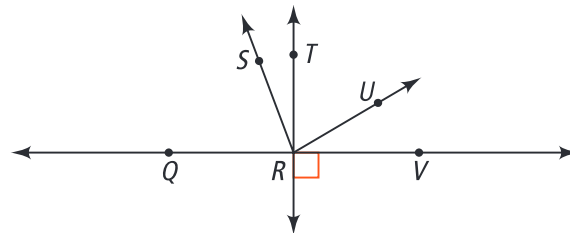
Use the figure below for Exercises 4–7. Identify each angle as *acute*, *right*, *obtuse*, or *straight*.

4.  $\angle SRV$

5.  $\angle TRS$

6.  $\angle TRQ$

7.  $\angle VRQ$



### Vocabulary Builder

**conclusion** (noun) kun kloo zhun

**Other Word Forms:** conclude (verb)

**Definition:** A **conclusion** is the end of an event or the last step in a reasoning process.

### Use Your Vocabulary

Complete each sentence with *conclude* or *conclusion*.

8. If it rains, you can   ? that soccer practice will be canceled.

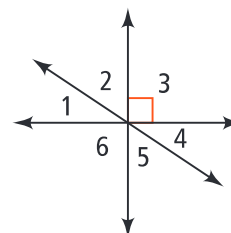
9. The last step of the proof is the   ?.

## Key Concept Types of Angle Pairs

Angle Pair	Definition
Adjacent angles	Two coplanar angles with a common side, a common vertex, and no common interior points
Vertical angles	Two angles whose sides are opposite rays
Complementary angles	Two angles whose measures have a sum of 90
Supplementary angles	Two angles whose measures have a sum of 180

Draw a line from each word in Column A to the angles it describes in Column B.

Column A	Column B
10. supplementary	$\angle 1$ and $\angle 2$
11. adjacent	$\angle 2$ and $\angle 3$
12. vertical	$\angle 2$ and $\angle 5$
13. complementary	$\angle 3$ and $\angle 6$



### Problem 1 Identifying Angle Pairs

**Got It?** Use the diagram at the right. Are  $\angle AFE$  and  $\angle CFD$  vertical angles? Explain.

14. The rays of  $\angle AFE$  are  $\overrightarrow{FE}$  and  $\overrightarrow{FC} / \overrightarrow{FA}$ .

15. The rays of  $\angle CFD$  are  $\overrightarrow{FC}$  and  $\overrightarrow{FD} / \overrightarrow{FA}$ .

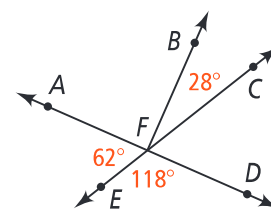
Complete each statement.

16.  $\overrightarrow{FE}$  and  are opposite rays.

17.  $\overrightarrow{FA}$  and  are opposite rays.

18. Are  $\angle AFE$  and  $\angle CFD$  vertical angles?

Yes / No



### Problem 2 Making Conclusions From a Diagram

**Got It?** Can you conclude that  $\overline{TW} \cong \overline{WV}$  from the diagram? Explain.

19. Circle the items marked as congruent in the diagram.

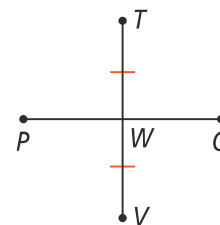
$\overline{PW}$  and  $\overline{WQ}$

$\overline{TW}$  and  $\overline{WV}$

$\angle TWQ$  and  $\angle PWT$

$\angle TWQ$  and  $\angle VWQ$

20. Can you conclude that  $\overline{TW} \cong \overline{WV}$ ? Why or why not?



Take note

### Postulate 1–9 Linear Pair Postulate

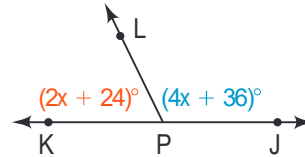
If two angles form a linear pair, then they are supplementary.

21. If  $\angle A$  and  $\angle B$  form a linear pair, then  $m\angle A + m\angle B = \square$ .



### Problem 3 Finding Missing Angle Measures

**Got It? Reasoning**  $\angle KPL$  and  $\angle JPL$  are a linear pair,  $m\angle KPL = 2x + 24$ , and  $m\angle JPL = 4x + 36$ . How can you check that  $m\angle KPL = 64$  and  $m\angle JPL = 116$ ?



22. What is one way to check solutions? Place a  $\checkmark$  in the box if the response is correct. Place an  $\times$  in the box if it is incorrect.

Draw a diagram. If it looks good, the solutions are correct.

Substitute the solutions in the original problem statement.

23. Use your answer(s) to Exercise 22 to check the solutions.

24. How does your check show that you found the correct angle measurements?



### Problem 4 Using an Angle Bisector to Find Angle Measures

**Got It?**  $\overline{KM}$  bisects  $\angle JKL$ . If  $m\angle JKL = 72$ , what is  $m\angle JKM$ ?

25. Write a justification for each step.

$m\angle JKM = m\angle MKL$

$m\angle JKM + m\angle MKL = m\angle JKL$

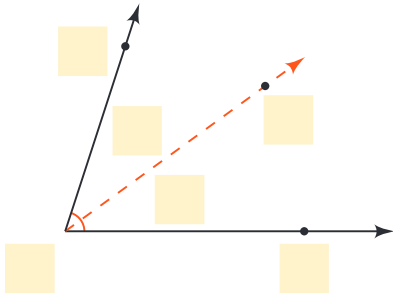
$2m\angle JKM = m\angle JKL$

$m\angle JKM = \frac{1}{2}m\angle JKL$

26. Complete.

$m\angle JKL$  5 , so  $m\angle JKM$  5 .

27. Now complete the diagram below.



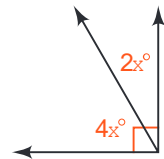
### Lesson Check • Do you UNDERSTAND?

**Error Analysis** Your friend calculated the value of  $x$  below. What is her error?

~~$$4x + 2x = 180$$

$$6x = 180$$

$$x = 30$$~~



28. Circle the best description of the largest angle in the figure.

acute                      obtuse                      right                      straight

29. Complete:  $4x + 1 + 2x + 5 =$

30. What is your friend's error? Explain.

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### Math Success

Check off the vocabulary words that you understand.

angle     complementary     supplementary     angle bisector     vertical

Rate how well you can find missing angle measures.

