

## ASSIGNMENT #18: NOTES



## Vocabulary

## ● Review

Draw a line from each word in Column A to its symbol or picture in Column B.

## Column A

1. congruent
2. point
3. ray
4. vertex
5. intersection of segments

## Column B



• W

 $\cong$ 

## ● Vocabulary Builder

**perpendicular** (adjective) pur pun DIK yoo lur

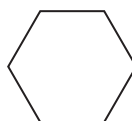
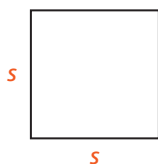
**Definition:** **Perpendicular** means at right angles to a given line or plane.

**Example:** Each corner of this paper is formed by **perpendicular** edges of the page.

**Non-Examples:** Acute, obtuse, and straight angles do not have **perpendicular** rays.

## ● Use Your Vocabulary

6. Circle the figure that shows *perpendicular* segments.





## Problem 1 Constructing Congruent Segments

**Got It?** Use a straightedge to draw  $\overline{XY}$ . Then construct  $\overline{RS}$  so that  $RS = 2XY$ .

7. A student did the construction at the right. Describe each step of the construction.

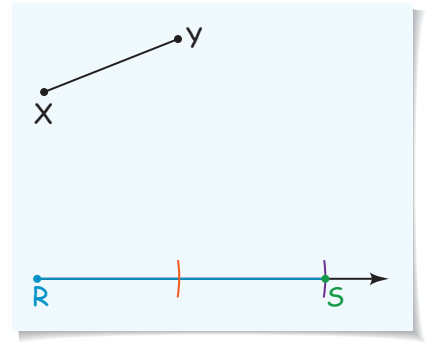
Step 1

Step 2

Step 3

Step 4

Step 5



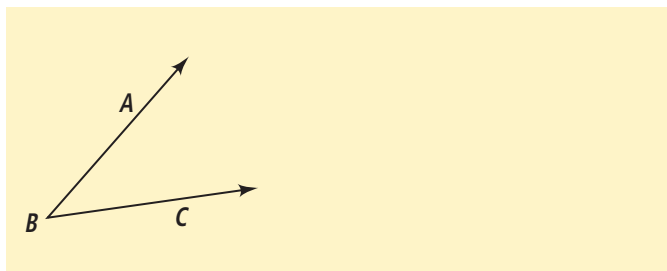
## Problem 2 Constructing Congruent Angles

**Got It?** Construct  $\angle F$  so that  $m\angle F = 2m\angle B$  at the right.

8. Use *arc* or *compass* to complete the sentence(s) in each step.  
In the large box, construct  $\angle F$ .

**Step 1** Use a straightedge to construct a ray with endpoint  $F$ .

**Step 2** With your   ?   point on vertex  $B$ , draw a(n)   ?   that intersects both sides of  $\angle B$ . Label the points of intersection  $A$  and  $C$ .



**Step 3** Use the same compass setting. Put the   ?   point on point  $F$ . Draw a long   ?   and label its intersection with the ray as  $S$ .

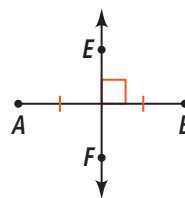
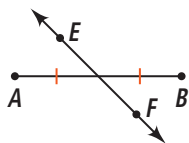
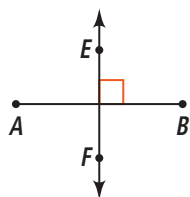
**Step 6** Draw  $\overrightarrow{FR}$ .

**Step 5** Use the same compass setting. Put the   ?   point on point  $T$ . Draw an   ?   and label its intersection with the first   ?   as point  $R$ .

**Step 4** Open the   ?   to the length of  $AC$ . With the compass point on point  $S$ , draw an   ?  . Label where this arc intersects the other arc as point  $T$ .

A *perpendicular bisector* of a segment is a line, segment, or ray that is perpendicular to the segment at its midpoint.

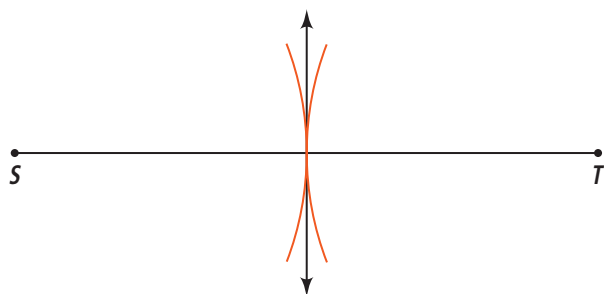
9. Circle the drawing that shows the perpendicular bisector of a segment.



### Problem 3 Constructing the Perpendicular Bisector

**Got It?** Draw  $\overline{ST}$ . Construct its perpendicular bisector.

10. **Error Analysis** A student's construction of the perpendicular bisector of  $\overline{ST}$  is shown below. Describe the student's error.




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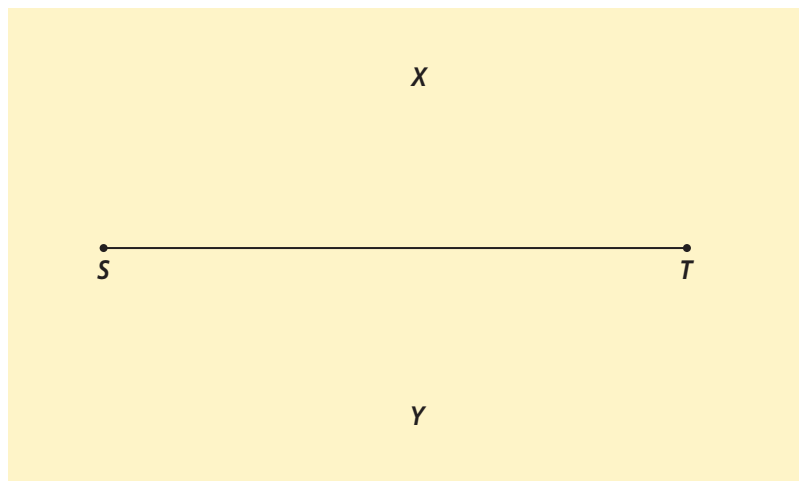


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11. Do the construction correctly in the box below.

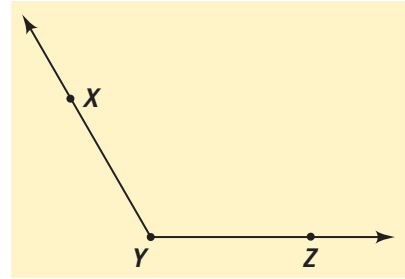




## Problem 4 Constructing the Angle Bisector

**Got It?** Draw obtuse  $\angle XYZ$ . Then construct its bisector  $\overrightarrow{YP}$ .

12. Obtuse  $\angle XYZ$  is drawn in the box at the right. Complete the flowchart and do each step of the construction.



**Step 1** Put the compass point on vertex . Draw an arc that intersects the sides of . Label the points of intersection A and B.



**Step 2** Put the compass point on point A and draw an arc. With  the same / a different compass setting, draw an arc using point B. Be sure the arcs intersect. Label the point where the two arcs intersect P.



**Step 3** Draw .



## Lesson Check • Do you UNDERSTAND?

**Vocabulary** What two tools do you use to make constructions?

Draw a line from each task in Column A to the tool used in Column B.

### Column A

13. measure lines
14. measure angles
15. construct arcs
16. construct lines

### Column B

- compass
- protractor
- ruler
- straightedge



## Math Success

Check off the vocabulary words that you understand.

☐ straightedge

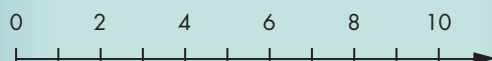
☐ compass

☐ construction

☐ perpendicular bisector

Rate how well you can *construct angles and bisectors*.

**Need to review**



**Now I get it!**