

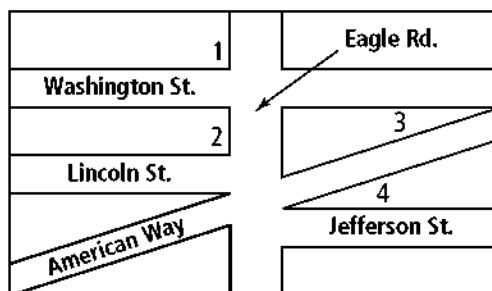
# 3-4

## Practice

Form K

### Parallel and Perpendicular Lines

1. A developer is planning a new housing complex. The map of the complex is shown at the right. Assume that all streets lie in a plane.

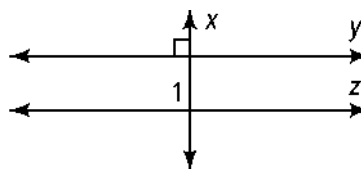


a. If Washington and Lincoln Streets are to be parallel, what must be true of  $\angle 1$  and  $\angle 2$ ?

b. Which streets must be parallel if  $\angle 3 \cong \angle 4$ ? Justify your answer.

c. If  $m\angle 1 = 90$  and your answers to parts (a) and (b) are true, to what roads is Eagle Road perpendicular?

2. **Developing Proof** Copy and complete this paragraph proof of the Perpendicular Transversal Theorem (Theorem 3-9).



**Given:** In a plane,  $x \perp y$  and  $y \parallel z$ .

**Prove:**  $x \perp z$

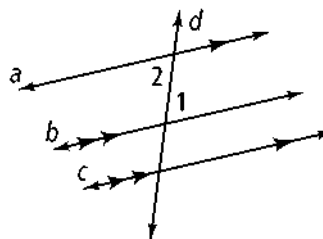
Since  $y \parallel z$ ,  $m\angle 1 = \underline{\quad ? \quad}$  by the  $\underline{\quad ? \quad}$ .

By the definition of  $\underline{\quad ? \quad}$  lines,  $x \perp \underline{\quad ? \quad}$ .

3. Write a paragraph proof.

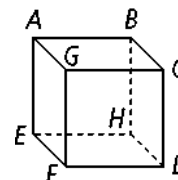
**Given:**  $a \parallel c; b \parallel c; m\angle 2 = 65$

**Prove:**  $m\angle 1 = 65$



4. **Error Analysis** A classmate drew the cube at the right.

He said that according to the Perpendicular Transversal Theorem,  $\overline{AB} \parallel \overline{CD}$ , since they are both perpendicular to  $\overline{BC}$ . Explain your classmate's error.



# 3-6

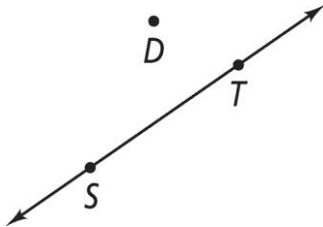
## Practice

Form K

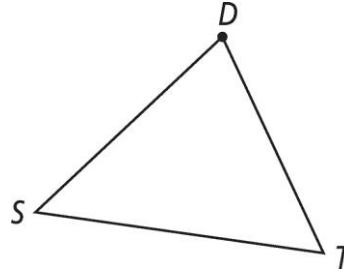
### Parallel and Perpendicular Lines

For Exercises 5–6, construct the line through point  $D$  that is parallel to  $\overleftrightarrow{ST}$ .

5.

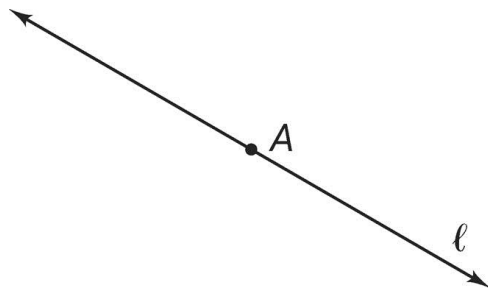


6.



For Exercises 7 and 8, construct the line that is perpendicular to  $\ell$  at point  $A$ .

7.

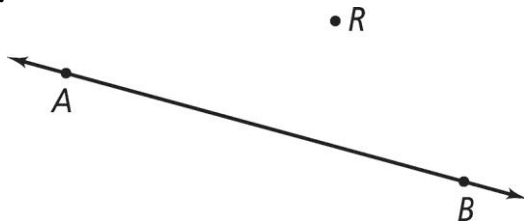


8.

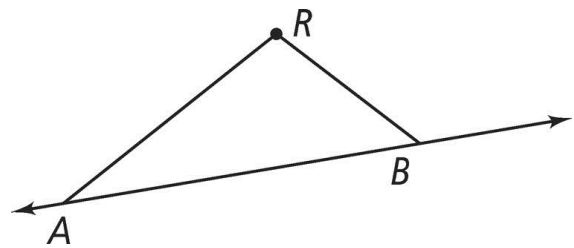


For Exercises 9 and 10, construct the line through point  $R$  that is perpendicular to  $\overleftrightarrow{AB}$ .

9.



10.



For Exercise 11 use the segments at the right.

11. Construct a rectangle with a base  $x$  and height  $y$

