

What's Your Line?

Purpose

Students will identify, describe and draw parallel, perpendicular, and oblique lines using appropriate tools and technology.

Materials

For the teacher: overhead projector, overhead markers, overhead transparency from an aerial map showing streets (found in a social studies book), 2 pieces of rope at least six feet long

For each student: math journal, copy of Black Line Master (BLM) *Geometry and the Alphabet*, pencils

Activity

A. Pre-Activity Preparation

1. Make an overhead transparency from an aerial map found in a social studies textbook.
2. Cut two pieces of light-weight rope at least six feet long.

B. Introduction

1. Show students the map on the overhead projector.
2. Say: "Look at the streets on this map. Let's list some things you notice." (Students should observe that some streets form right angles where they intersect and some form other kinds of angles, that some streets go from right to left and some top to bottom of map, etc.)
3. Tell students that they are going to learn the names of the types of lines they see on the map.

C. Teacher-Led Activity

1. Tell students that the first type of lines they will learn about are called *parallel lines*.
2. Have four students come to the front of the room. Have them stand facing a partner. Measure equal distances between the partners so A and B and also C and D are equal distances apart.

Student A ○

Student C ○

Student B ○

Student D ○

Have A and C hold one rope and B and D another.

(continued)

connecting
across the
curriculum



Visual Arts

Have students draw designs using lines and angles they have learned about. Direct students to write descriptions of their designs (e.g., in my design I used two pairs of parallel lines, one right angle, and three acute angles).

INCORPORATING
TECHNOLOGY



Have students use a geometry software program to draw different lines and angles.

Standards Links
4.4.1, 4.4.3, 4.4.4

Activity (continued)

3. Say: “The rope that A and C are holding is *parallel* to the rope B and D are holding.” Write on the overhead, *Parallel lines are lines that never intersect.* Have students write this definition in their math journal.
4. Have C and D move toward each other until their ropes cross. Say, “The ropes are now *intersecting*. Two lines that intersect in this way are called *oblique lines*” Write on the overhead, *Oblique lines are lines that intersect. The angles that are formed at the intersection are either acute or obtuse.* Have students write this definition in their math journal.
5. Say: “If lines intersect at a right angle, they are called *perpendicular lines*.” Tell students A and C to make a line with their rope that would be perpendicular to B and D. Write on the overhead, *Two lines intersecting to form four right angles are perpendicular lines.*
6. Look again at the map used in the introduction. Ask students to discuss the streets again, this time using the terms they have just learned (i.e., Maple Street is perpendicular to Oak Street, Main Street and Walnut Street are parallel, Roosevelt Street and Jefferson Street form oblique lines, etc.).


D. Student Activity


1. Hand out the BLM *Geometry and the Alphabet*.
2. Have students complete it using geometry terms for angles and lines. Some letters will have none.

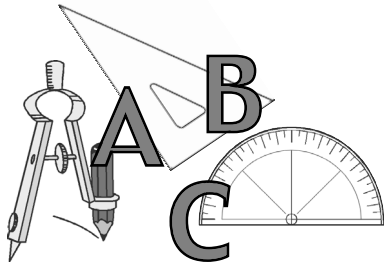
Questions for Review

Basic Concepts and Processes

During the activity, discuss the following questions with students to gauge their understanding of the indicator:

 Can you see [*any parallel lines/a pair of oblique lines/a pair of perpendicular lines*]?

 Can you draw for me [*a pair of parallel lines/a pair of oblique lines/a pair of perpendicular lines*]?



Name: _____

GEOMETRY AND THE ALPHABET

Look at each capital letter of the alphabet. Look for lines and angles. Use the following terms to tell which ones describe the way in which the letter is formed. Some letters will have more than one term; some will have none:

Parallel lines
Perpendicular lines
Oblique lines

Right angle
Acute angle
Obtuse angle

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y
Z				

GEOMETRY AND THE ALPHABET

Teacher Directions

Have students write in the box below each letter the types of lines and angles used to make the letter.

Answer Key

- A: acute angle, oblique lines
- B: none
- C: none
- D: none
- E: parallel lines, perpendicular lines, right angles
- F: parallel lines, perpendicular lines, right angles
- G: none
- H: parallel lines, perpendicular lines, right angles
- I: parallel lines, perpendicular lines, right angles
- J: perpendicular line, right angles
- K: acute angles, obtuse angle, oblique lines
- L: perpendicular lines, right angle
- M: parallel lines, oblique lines, acute angles
- N: parallel lines, oblique lines, acute angles
- O: none
- P: none
- Q: none
- R: oblique lines, acute angle
- S: none
- T: perpendicular lines, right angles
- U: none
- V: oblique lines, acute angle
- W: oblique lines, acute angles
- X: oblique lines, acute angles, obtuse angles
- Y: oblique lines, acute angles, obtuse angles
- Z: parallel lines, oblique lines, acute angles