Parallel and Perpendicular

5606

Introduction

In this activity, students send several equations to Activity Center, using trial and error to determine characteristics of parallel and perpendicular lines.

Grades 9-12

NCTM Algebra Standards

- Understand patterns, relations, and functions
- Understand and compare the properties of classes of functions, including exponential, polynomial, rational, logarithmic, and periodic functions

Files/Materials Needed

Parallel.act, Perpendicular.act

1

a. Launch TI-Navigator™ on the computer and start the session.
b. Have each student log into NavNet on their calculator.

2

a. Load the activity settings file *Parallel.act*.
b. Press the **Graph-Equation** tab and enter an equation (e.g. $y = 6x - 2$). Press Add. The graph of this equation will appear on the coordinate grid in the Activity Center.
c. Start the activity and instruct students to enter an equation on their calculator that would produce a graph parallel to the graph in the Activity Center
Their equation must be in slope-intercept form
$(y = mx + b)$.
d. Have students press **SEND** to submit their equation. Students can make changes to their equation and continue to send to the Activity Center during the activity.
e. Stop the activity and discuss the graphs.

3

a. Repeat the activity in step 2 with another equation, but this time, have students submit an equation whose graph is parallel to the given graph *and* that passes through a given point (e.g. $y = -2x + 3$; $(-3, 5)$).
b. Repeat with as many different equations and ordered pairs as time permits.

4

Use **Quick Poll** (with *Always Sometimes or Never*) to ask:
- *Parallel lines have the same slope.*
- *Parallel lines have the same y-intercept.*

Discuss the results.

5

a. Load the activity settings file *Perpendicular.act*.
b. Press the **Graph-Equation** tab and enter an equation (e.g. $y = x - 3$). Press Add. The graph of this equation will appear on the coordinate grid in the Activity Center.
c. Start the activity and instruct students to enter an equation on their calculator that would produce a graph perpendicular to the graph in the Activity Center. Their equation must be in slope-intercept form $(y = mx + b)$.

Parallel and Perpendicular

d. Have students press **SEND** to submit their equation. Students can make changes to their equation and continue to send to the Activity Center during the activity.

e. Stop the activity and discuss the graphs.

6

a. Repeat the activity in step 5 with another equation, but this time, have students submit an equation whose graph is perpendicular to the given graph *and* that passes through a given point (e.g. $y = 2x + 7$; (–2, 5)).

b. Repeat with as many different equations and ordered pairs as time permits.

7

Use **Quick Poll** (with *Always Sometimes or Never*) to ask:
- *Perpendicular lines have the same slope.*
- *Perpendicular lines have the same y-intercept.*

Discuss the results.