LESSON 3.5 Graphing Calculator Activity: Identifying Parallel Lines

For use before the lesson "Graph Using Slope-Intercept Form"

QUESTION **How can you use a graphing calculator to identify parallel lines?**

Two different lines in the same plane are *parallel* if they do not intersect.

EXAMPLE **Identify parallel lines**

Use a graphing calculator to determine which of the following lines are parallel.

Line a: $-3x + 2y = -4$ Line b: $-4x + 2y = 6$ Line c: $-2x + y = -1$

STEP 1   Rewrite equations
Write each equation in slope-intercept form.

Line a: $-3x + 2y = -4$ Line b: $-4x + 2y = 6$ Line c: $-2x + y = -1$
$\qquad\qquad 2y = 3x - 4$ $\qquad\qquad\qquad 2y = 4x + 6$ $\qquad\qquad\qquad y = 2x - 1$
$\qquad\qquad y = \dfrac{3}{2}x - 2$ $\qquad\qquad\qquad y = 2x + 3$

STEP 2   Enter equations
Enter the equations into
the Y= screen.

```
Y1= (3/2)x - 2
Y2= 2x + 3
Y3= 2x - 1
Y4=
Y5=
Y6=
Y7=
```
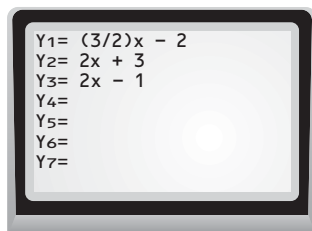
STEP 3   Graph equations
Graph the equations in the standard
viewing window.
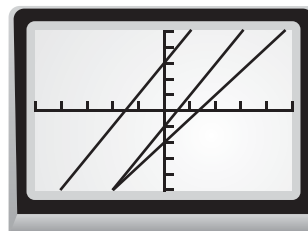
STEP 4   Analyze graphs
You can see from the graph that lines a and c intersect. Use the *intersect* feature in the calc menu to determine whether lines a and b intersect and whether lines b and c intersect. The calculator will give you an error if the lines do not intersect. Using this method, you will find that lines b and c do not intersect. So, lines b and c are parallel.

PRACTICE **Use a graphing calculator to determine whether the graphs of the two equations are parallel lines.**

1. $y = -x + 5$
$\quad y + x = -2$

2. $y = 10 + 3x$
$\quad 3x - 4 = y$

3. $y + 6x + 7 = 0$
$\quad 2y = 12x + 4$

4. $6y - 2x = 6$
$\quad 8y = 2x - 24$

5. $-15 = 2x - 3y$
$\quad 9y + 9 = 6x$

6. $5y = -10 - 4x$
$\quad 10y - 8x = 30$

7. In Exercises 1–6, what do you notice about the equations of the lines that are parallel?

LESSON 3.5

Graphing Calculator Activity: Identifying Parallel Lines *continued*

For use before the lesson "Graph Using Slope-Intercept Form"

TI-83 Plus

| Y= | (| 3 | ÷ | 2 |) | X,T,θ,*n* | − | 2 |

| ENTER | 2 | X,T,θ,*n* | + | 3 | ENTER | 2 |

| X,T,θ,*n* | − | 1 | ZOOM | 6 |

Casio CFX-9850GC Plus

From the main menu, choose GRAPH.

| (| 3 | ÷ | 2 |) | X,θ,T | − | 2 | EXE |

2 | X,θ,T | + | 3 | EXE | 2 | X,θ,T | − | 1

| EXE | SHIFT | F3 | F3 | EXIT | F6 |

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