Question Bank
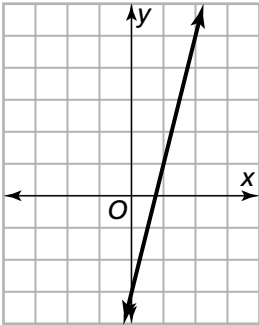
1. Brent's Video Shack charges $1.50 to rent a video game for a night. Mr. Buck's Entertainments opens a new store in town, charging $1.00 per night for a game, and starts to take customers away from Brent's Video Shack.

   a. Graph each price scheme on the same set of axes.

   b. How could Brent change his charges, so that he includes a one-time membership fee and drops his rental fee below Mr. Buck's, to get his customers back without losing too much money? Graph your proposal and explain to Brent how it will work.

2. Big A's Bike Rentals charges $300 plus $20 per bike to rent bikes for a week. Little Cheeper's rental shop charges $50 plus $35 per bike for a week. You need to determine which company to use for your bike-touring project. Write an explanation to a student who has never used a graphing calculator to help that student display and solve this problem on a graphing calculator.

3. Gretchen was absent when the class developed strategies for solving linear equations. Write an explanation to her about how to solve equations using the symbolic method. Use the equation $4n - 17 = 43$ as an example.

4. **a.** This table shows two points that are on the same straight line. Complete the table to show three other points on the same line.

x	−3				1
y	−2				6

   b. Find the slope and the y-intercept of this line that represents the data.

5. Given one of the representations below, find the other two.

Table	Graph	Equation
<table><tr><td>**x**</td><td>**y**</td></tr><tr><td>−2</td><td>14</td></tr><tr><td>0</td><td>8</td></tr><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>2</td></tr><tr><td>3</td><td>−1</td></tr></table>		
	(graph of a line)	
		$y = \frac{1}{3}x + 1$

a. Find the *y*-intercept for each representation above.

b. Find the slope for each representation above.

6. Sam made up a set of tables based on some equations. He gave the tables to Adrian and challenged her to find the equations for each table. Adrian added two columns to each table to help her find the equations. Adrian used the extra columns to find the differences in x-values and y-values. Below is the start of her work.

Table A

Diff. x	x	y	Diff. y
None	-2	-1	
1	-1	1	2
	0	3	
	1	5	
	2	7	

Table B

Diff. x	x	y	Diff. y
	-3	-8	
	-1	0	
	1	0	
2	3	-8	
	5	-24	

Table C

Diff. x	x	y	Diff. y
	-3	$-\frac{1}{2}$	
	-1	$\frac{1}{2}$	1
	0	1	
	3	2.5	
	5	3.5	

Table D

Diff. x	x	y	Diff. y
	-2	-5	
	-1	-3	
	0	-1	
	1	1	2
	2	3	

a. Complete these columns for each table.

b. Describe any patterns you see in the columns of differences.

c. Find the equation of any linear relationship represented in these tables.

d. Explain why Adrian added the columns to the tables Sam gave her. Do you think it helped her to find the equations? Explain your thinking.

7. The formula relating n (the number of cricket chirps per minute) to t (the temperature in degrees Fahrenheit) is $n = 4t - 160$.

a. Using a symbolic method, find how many times a cricket would chirp in a minute at 90°F.

b. It is evening, and a cricket is chirping 48 times per minute. Use a symbolic method to find the temperature.