## Warm-up

- 1. Look at the coordinate grid. How many points and in which coordinate plane?
- 2. Point A has coordinates (4, 2). True/False
- 3. What are the coordinates of Point B? Point C? Point D?

## Practice

You will need grid paper.

4. Each graph below is a graph of a linear relation. Describe the relationship between the variables in each graph.
a) y = 4x - 1
b) y = -3x + 9

х



**5.** Graph each relation for integer values of *x* from 0 to 5.

<b>a)</b> $y = 2x$	<b>b)</b> $y = 3x$
<b>c)</b> $y = 4x$	<b>d)</b> $y = 5x$
<b>e)</b> $y = -2x$	<b>f</b> ) $y = -3x$
<b>g)</b> $y = -4x$	<b>h</b> ) $y = -5x$



- **6.** Graph each relation for integer values of *x* from 0 to 5.
  - a) y = 2x + 1b) y = 2x - 1c) y = -2x + 1d) y = -2x - 1e) y = 3x + 1f) y = 3x - 1g) y = -3x + 1h) y = -3x - 1
- 7. Here is a graph of the linear relation y = 8x + 3.

Graph of $y = 8x + 3$							
45	У						
45				(5	, )		
40							
35				-	(4,	35)	
30					`		
25			•	•(,	27)		
20			(2	)			
15			(_,	′			
10	•	(1,	11)				
5							
5	(0,	3)				x	
0			2 3	3 4	1 {	5	

Each point on the graph is labelled with an ordered pair.

Some numbers in the ordered pairs are missing. Find the missing numbers. Explain how you did this. **8.** Here is a graph of the linear relation y = -6x - 5.



Each point on the graph is labelled with an ordered pair.

Some numbers in the ordered pairs are missing. Find the missing numbers. Explain how you did this.

**9.** Use the data from *Example 1*, page 361. An equation for the linear relation is: c = 11 + 2n,

where *n* is the number of toppings on the pizza, and *c* is the total cost of the pizza in dollars. Here is a table of values.

n	0	1	2	3	4	5	6	7	8
с	11	13	15	17	19	21	23	25	27

- a) Construct a graph for the data.
- **b)** Describe the relationship between the variables in the graph.
- c) Find the ordered pair on the graph that shows the cost of a pizza with 6 toppings.

**10.** Use the data from Lesson 6.6 *Practice* question 12, page 357. An equation for the linear relation is: m = 100 - 2n,

where n is the number of months that Herbie trains and m is his mass at any time in kilograms.

Here is a table of values.

n	0	2	4	6	8	10
m	100	96	92	88	84	80

- a) Construct a graph for the data.
- **b)** Describe the relationship between the variables in the graph.
- c) Find the ordered pair on the graph that indicates Herbie's mass after 7 months. Explain how you did this.
- **11.** Regina plans a marshmallow roast. She will buy

8 marshmallows for each person who attends, and 12 extra marshmallows in case someone shows up unexpectedly. Let *n* represent the number of people who attend. Let *m* represent the number of marshmallows Regina must buy. An equation that relates the number of marshmallows to the number of people is: m = 8n + 12

- a) Create a table of values for the relation.
- **b**) Graph the relation.
- c) Describe the relationship between the variables in the graph.
- d) Is the relation linear? How do you know?

- **12.** Graph each relation for integer values of x from -4 to 4.
  - a) y = 8x + 2 b) y = -8x 2c) y = -7x + 4 d) y = 5x - 4
- **13.** Peter's Promoting is organizing a concert. The cost of the venue and the rock band is \$15 000. Each concert ticket sells for \$300. Peter's profit is the money he makes from selling tickets minus the cost. Let *n* represent the number of tickets sold. Let *p* represent Peter's profit. An equation that relates the profit to the number of tickets sold is:
  - $p = 300n 15\ 000$
  - a) Create a table of values for the relation. Use these values of *n*: 10, 20, 30, 40, 50, 60, 70, 80
  - **b)** Graph the relation. What do negative values of *p* represent?
  - c) Describe the relationship between the variables in the graph.
  - **d)** How can you use the graph to find the profit when 75 tickets are sold?

14. A computer repair company charges \$60 to make a house call, plus an additional \$40 for each hour spent repairing the computer. An equation that relates the total cost to the time in hours for a house call is

C = 60 + 40n, where *n* represents the time in hours, and *C* represents the total cost of the house call in dollars.

- a) Graph the relation.
- **b**) Describe the relationship between the variables in the graph.
- c) Does the point (-1, 20) lie on the graph? What does this point represent? Does this point make sense in the context of the problem? Explain.

## 15.

- a) Graph each relation.Describe the relationship between the variables in the graph.
  - i) y = -9x + 4 ii) y = 6x 3
  - iii) y = -7x 2 iv) y = 4x + 11
  - v) y = 7x + 5 vi) y = 3x 8
  - **vii)** y = -9x 6 **viii)** y = -8x + 7
- b) Which graphs go up to the right?Which graphs go down to the right?
- c) How can you use the equation of a linear relation to tell if its graph goes up to the right or down to the right?