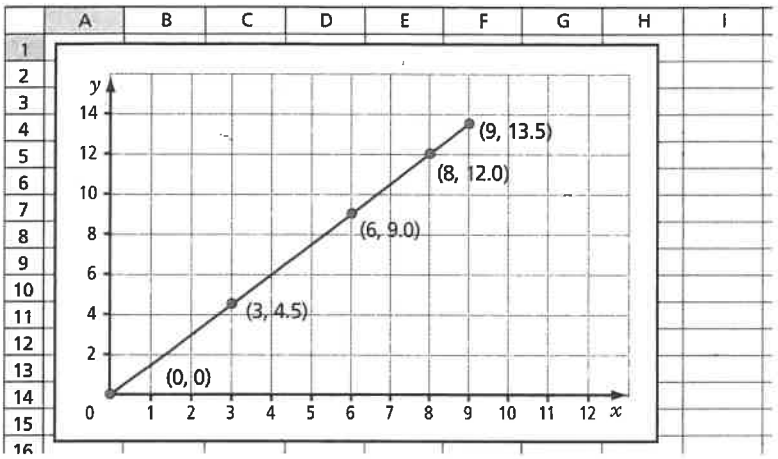
3. a) Describe a real-life situation to represent the data on this graph.



b) Explain how you would determine the equation that represents the graph. Give your explanation to a classmate.

c) Can you interpolate or extrapolate values on this graph? Explain your thinking.

WWW Web Link

For practice matching graphs and linear equations, go to www.mathlinks9.ca and follow the links.

Practise

For help with #4 to #7, refer to Example 1 on pages 232–234.

4. Ian works part-time at a movie theatre. He earns $8.25/h. The relationship between his pay, p, and the time he works, t, can be modelled with the equation $p = 8.25t$.

a) Show the relationship on a graph.

b) Explain how you know the graph represents the equation.

c) Ian works 8 h in one week. Use two methods to determine his pay.

5. Andrea is travelling by bus at an average speed of 85 km/h. The equation relating distance, d, and time, t, is $d = 85t$.

a) Show the relationship on a graph.

b) How long does it take Andrea to travel 300 km?

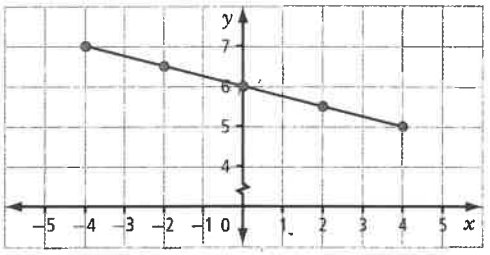
6. Choose the letter representing the graph that matches each linear equation.

a) $y = 5x$

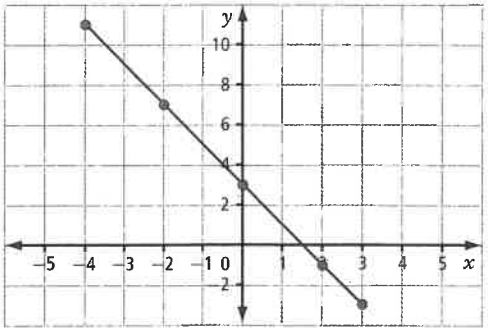
b) $y = -2x + 3$

c) $y = -\frac{x}{4} + 6$

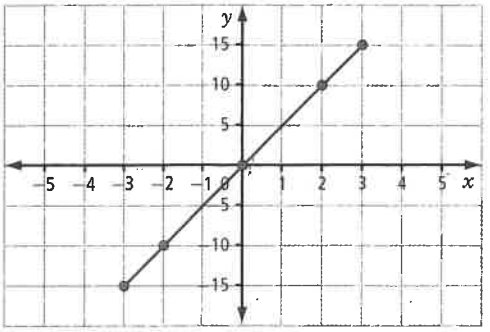
A



B



C



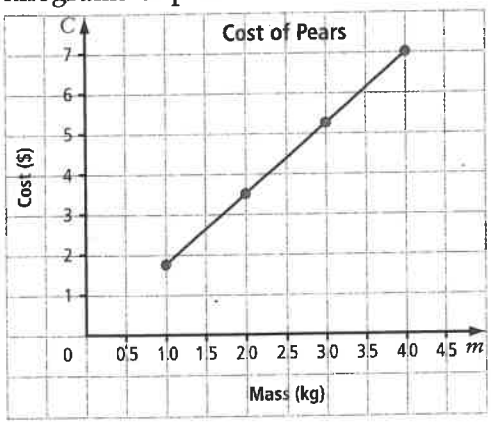
7. Create a table of values and a graph for each linear equation.

a) $x = 4$ **b)** $r = -3s + 4.5$

c) $m = \frac{k}{5} + 13$

For help with #8 to #11, refer to Example 2 on pages 234–236.

8. The graph shows the relationship between the cost, C, in dollars and the mass, m, in kilograms of pears.

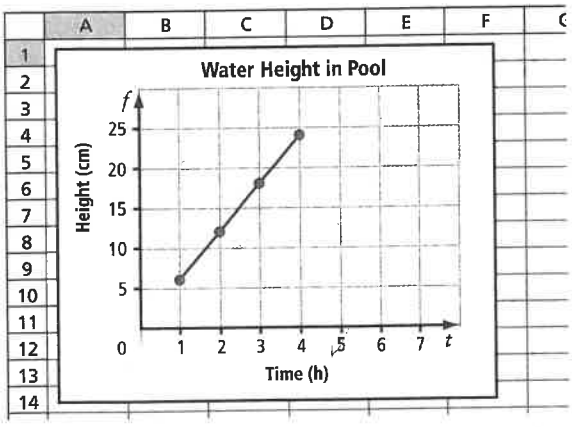


a) What is the linear equation?

b) How much could you buy for $5?

c) Is it appropriate to interpolate or extrapolate values on this graph? Explain.

9. The graph represents the relationship between the height of water in a child's pool, h, and the time, t, in hours as the pool fills.



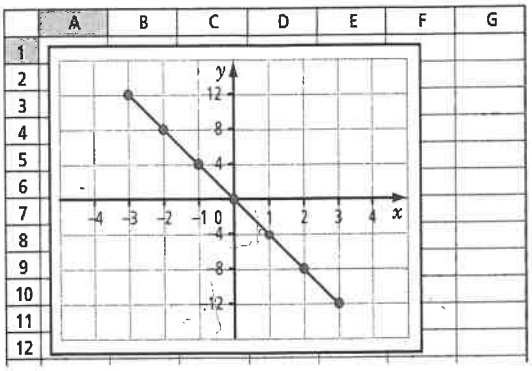
a) Determine the linear equation.

b) What is the height of the water after 5 h?

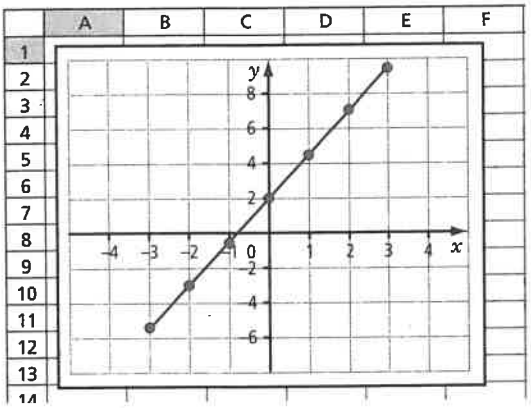
c) Is it appropriate to interpolate or extrapolate values on this graph? Explain.

10. Determine the linear equation that models each graph.

a)

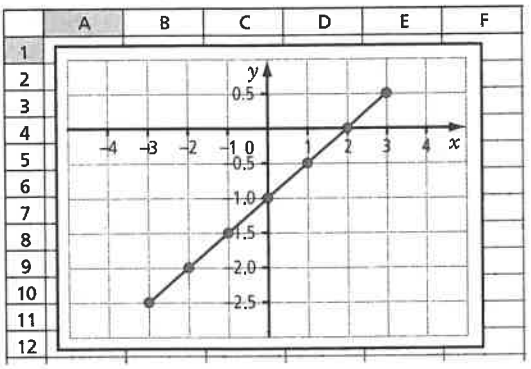


b)

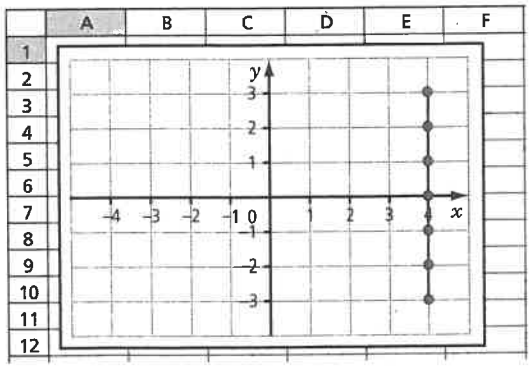


11. What linear equation does each graph represent?

a)



b)



12. Create a graph and a linear equation to represent each table of values.

a)

x	y
−3	−10
−2	−7
−1	−4
0	−1
1	2
2	5
3	8

b)

r	t
−3	−2.5
−2	−1.0
−1	0.5
0	2.0
1	3.5
2	5.0
3	6.5

c)

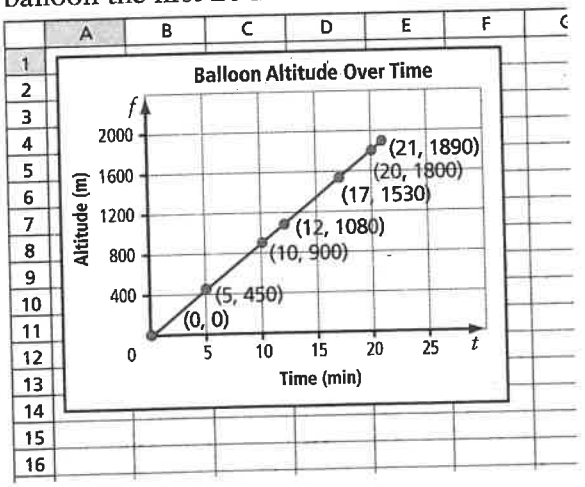
f	z
−3	−3
−2	−3
−1	−3
0	−3
1	−3
2	−3
3	−3

d)

h	n
−3	−0.75
−2	−0.5
−1	−0.25
0	0
1	0.25
2	0.5
3	0.75

Apply

13. The graph represents the altitude of a hot-air balloon the first 20 min after it was released.



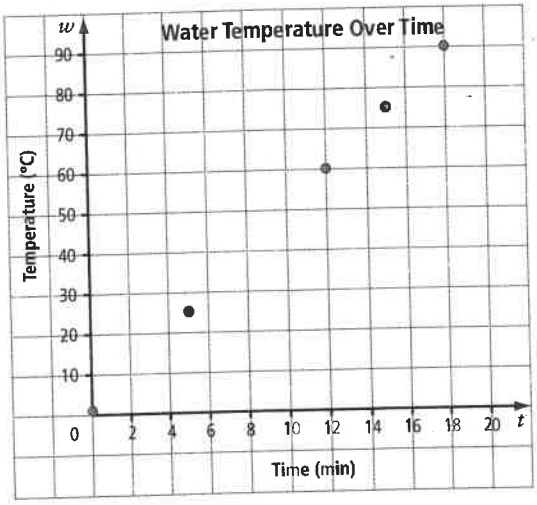
a) What was the approximate altitude of the balloon after 15 min?

b) Estimate how long it took for the balloon to rise to an altitude of 1 km.

c) What linear equation models the graph?

d) How fast is the balloon rising?

14. Sanjay conducted an experiment to determine how long it takes to heat water from 1 °C to its boiling point at 100 °C. He plotted his data on a graph.



a) Approximately how long did it take for the water to reach boiling point? Explain your reasoning.

b) What was the temperature of the water after 10 min?

c) At what rate did the water temperature increase? Explain your reasoning.

15. Paul drives from Edmonton to Calgary. He uses a table to record the data.

Time, t (h)	Distance, d (km)
0.5	55.0
0.9	99.0
1.2	132.0
1.5	165.0
2.3	253.0
2.7	297.0

a) Graph the linear relation.

b) How far did Paul drive in the first 2 h?

c) How long did it take Paul to drive 200 km?

d) Write the equation that relates time and distance.

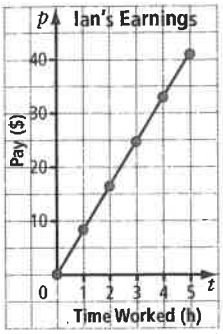
e) What was Paul's average driving speed? What assumptions did you make?

WWW Web Link

To learn about using a graphing calculator to enter data on a table and plot the data on a graph, go to www.mathlinks9.ca and follow the links.

6.3 Graphing Linear Relations, pages 239–243

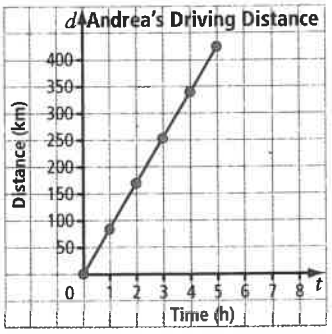
4. a)



b) The graph represents the equation because his pay increases at a rate of \$8.25 for each hour worked. The rate at which his pay increases is the coefficient in the equation.

c) \$66; substitute $t = 8$ into the equation and solve for p, or use the graph to estimate his pay using extrapolation.

5. a)

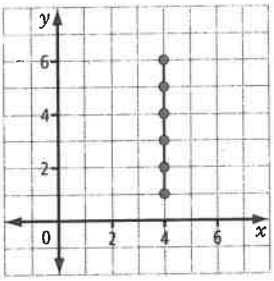


b) 3.5 h

6. a) C **b)** B **c)** A

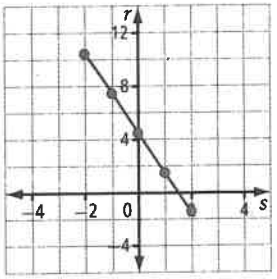
7. a)

x	y
4	0
4	1
4	2
4	3
4	4



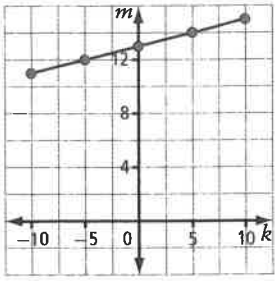
b)

s	r
−2	10.5
−1	7.5
0	4.5
1	1.5
2	−1.5



c)

k	m
−10	11
−5	12
0	13
5	14
10	15



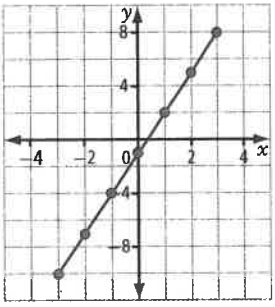
8. a) $C = 1.75m$ **b)** approximately 2.9 kg **c)** Yes, because the values exist beyond and between the points. However, a cost or mass value less than zero does not exist.

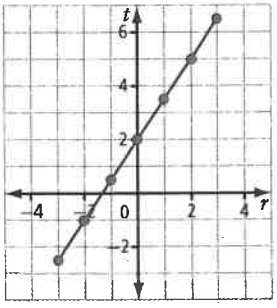
9. a) $h = 6t$ **b)** 30 cm **c)** Yes, because the values exist beyond and between the points. However, a height or time value less than zero does not exist.

10. a) $y = -4x$ **b)** $y = 2.5x + 2$

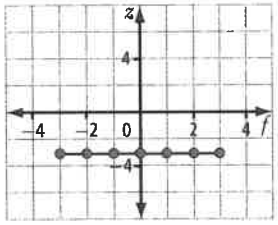
11. a) $y = 0.5x - 1$ **b)** $x = 4$

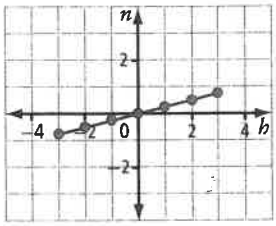
12. a) $y = 3x - 1$ **b)** $t = 1.5r + 2$





c) $z = -3$ **d)** $n = 0.25h$

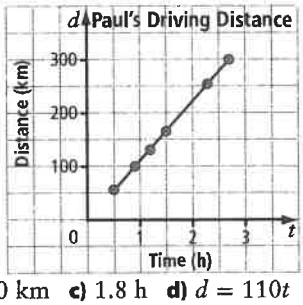




13. a) 1350 m **b)** 11 min **c)** $A = 90t$ **d)** 90 m/min

14. a) $t = 20$ min **b)** T = 50 °C **c)** 5 °C/min

15. a)



b) 220 km **c)** 1.8 h **d)** $d = 110t$ **e)** 110 km/h