

# Chapter Review

1. Name three strategies you can use to determine if a relation is linear. Explain how to use each strategy.

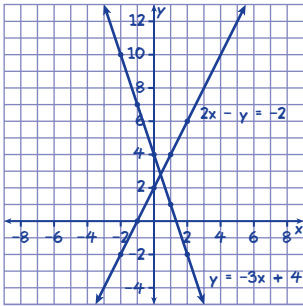
*A table of values: the rate of change is constant.*

*A graph: points lie along a straight line.*

*An equation: its degree is 1.*

2. Complete the table of values for each linear relation. Graph each relation on grid paper.

2. a), b)



a)  $y = -3x + 4$

x	y
-2	10
-1	7
0	4
1	1
2	-2

b)  $2x - y = -2$

x	y
-2	-2
-1	0
0	2
1	4
2	6

3. Yannik works at a clothing store in St. Boniface. An equation that represents his total weekly earnings is  $y = 0.05x + 300$ , where  $x$  represents his total weekly sales in dollars.

a) Is this a direct or partial variation? a partial variation

b) Suppose you graphed the relation. What would the slope be? 0.05

c) What does the slope represent?

*e.g., The rate of change of earnings per weekly sales is*

*$0.05 = 5\%$ . So the slope must be his commission rate on his weekly sales.*

d) Yannick sells \$2500 in clothes in 1 wk. What does he earn?

$$y = 0.05(\$2500) + \$300$$

$$y = \$125 + \$300$$

$$y = \$425$$

He earns \$425.

4. The table on the right shows the urban and rural populations of Canada over the last century.
- Use grid paper or technology. Create a scatter plot to show how the populations changed.
  - Describe the trends in the populations.  
e.g., As time increases, the urban population increases and the rural population decreases.

Year	Urban (%)	Rural (%)
1901	37	63
1911	45	55
1921	49	51
1931	54	46
1941	54	46
1951	62	38
1961	70	30
1971	76	24
1981	76	24
1991	77	23
2001	80	20

5. Ocean pressure is measured in decibars (dbar). Jerry is a salvage diver. He knows that the pressure at any spot in the ocean depends on the depth at that spot, in kilometres.

Depth (km)	Pressure (dbar)
0	0
1	1020
2	2040
3	3060
4	4080
5	5100

- Graph this relation on grid paper. Did you join the points? Explain your reason.

Yes, e.g., because the data is continuous.

- Is this a direct or partial variation? Explain.

Direct. e.g., The graph is a straight line that passes through (0, 0).

- Interpolate the pressure at 2.5 km. about 2550 dbar

- Extrapolate the depth when the pressure is 7140 dbar. about 7 km

- What is the slope of the graph? 1020

- What does the slope represent?

e.g., the rate of change in pressure per kilometre

- Write an equation for this relation.

Pressure =  $1020 \times \text{depth}$ , or  $y = 1020x$

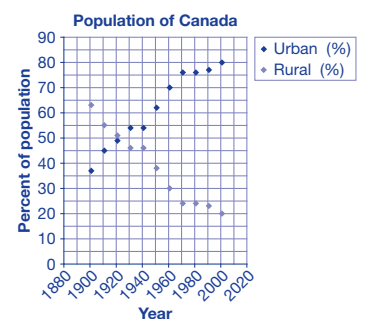
- Use the equation to determine the pressure at 3.5 km.

Pressure =  $1020(3.5)$ , or 3570 dbar

6. What are the independent and dependent variables in Question 5? Explain how you know.

The independent variable is depth. The dependent variable is pressure. e.g., The pressure underwater depends on the depth from the surface. OR In the table of values, depth is in the left column and pressure is in the right column.

4. a)



5. a)

