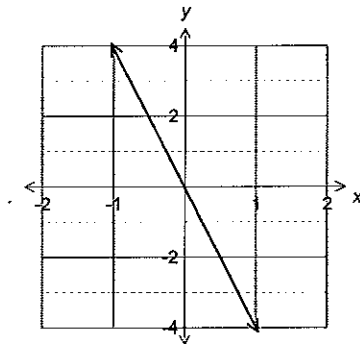# Topic Test 5 — Interpreting linear relationships

Section I — Multiple choice

1   A car rental company charges $80 for the hire of a car plus 30 cents for each kilometre travelled. The total cost (c) in dollars for (x) kilometres travelled is:

   A $c = 0.30x$ B $c = 0.30x + 80$ C $c = 0.30x - 80$ D $c = 30x + 80$

2   What is the gradient of this line?

   A -4

   B $-\dfrac{1}{2}$

   C $\dfrac{1}{2}$

   D 4

3   What is the y-intercept of this line?

   A   4   B   1

   C   0   D   4

4   What is the gradient of the line that passes through the points $(-3, 0)$ and $(0, 6)$?

   A   2   B   0.5   C   0.5   D   2

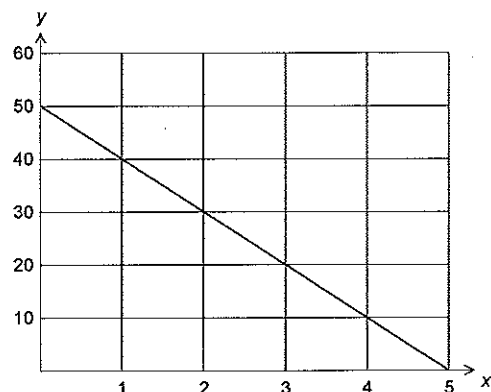5   Where does the line $y = -3x + 9$ cut the x-axis?

   A $(0, 3)$ B $(3, 0)$ C $(9, 0)$ D $(0, 9)$

6   A motor bike is travelling at a constant speed. It travels 100 km in 4 hours. This situation is described by the linear equation $d = mt$. What is the value of m?

   A   0.04   B   4   C   25   D   100

7   What is the equation of this line?

   A $y = 10x$ B $y = 10x + 50$

   C $y = -10x$ D $y = -10x + 50$

8   What is the value of y when x is 2.5?

   A   20   B   24

   C   25   D   30

Section II — Short answer

1 What is the gradient of the line that joins these points?

  a $(0, 0)$ and $(2, 2)$ b $(1, 0)$ and $(0, 5)$ c $(2, 1)$ and $(2, 13)$

2 Draw a graph of these linear functions and find the gradient and y-intercept.

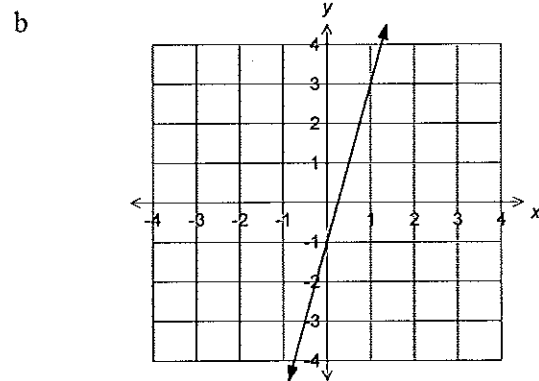 a $y = x - 4$ b $y = 1 - 3x$ c $y = \dfrac{1}{2}x - 1$
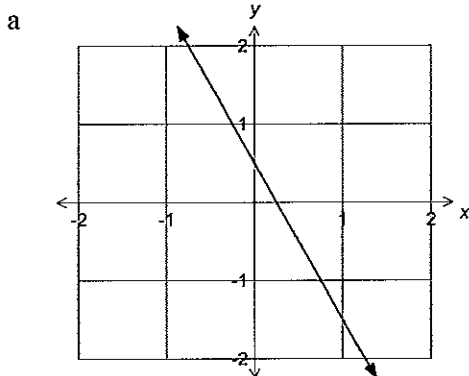
3 One Australian dollar (AUD) was converted to 7800 Indonesian Rupiah (IDR).

  a   Construct a table of values using of 0, 10, 20, 30 and 40 as values for AUD and calculate the IDR using the above conversion.

  b   Draw the graph of the AUD against IDR.
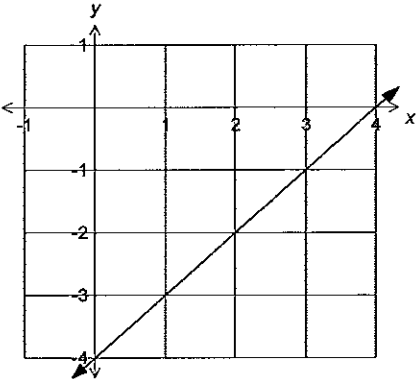
4 Find the equation of the following line graphs.

a

b

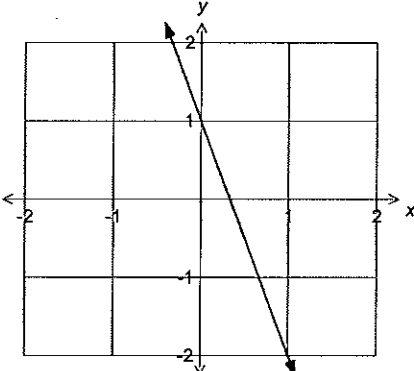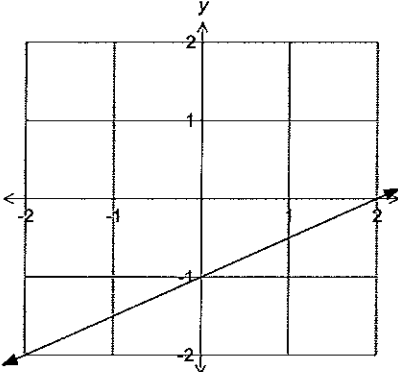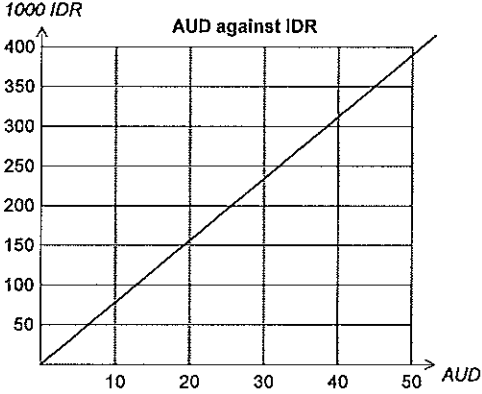## Topic Test 5 Interpreting linear relationships

Worked solutions

Section 1	Solution	Answer
1	30 cents is \$0.30 Formula is $c = 0.30x + 80$	B
2	Gradient is $-\dfrac{8}{2} = -4$	A
3	y-intercept is 0	C
4	Gradient $= \dfrac{6}{3} = 2$	D
5	Cuts the x-axis when $y = 0$ $y = -3x + 9$ $0 = -3x + 9$ or $3x = 9$ or $x = 3$ or $(3, 0)$	B
6	$d = mt$ $100 = m \times 4$ $m = \dfrac{100}{4} = 25$ km/h	C
7	Gradient is -10 and y-intercept is 50. Equation $y = mx + b$ or $y = -10x + 50$	D
8	$y = -10 \times 2.5 + 50$ $= 25$	C

Section II	Solution		
1a	Gradient $= \dfrac{\text{Rise}}{\text{Run}}$ $= \dfrac{2}{2}$ $= 1$	1b	Gradient $= \dfrac{\text{Rise}}{\text{Run}}$ $= \dfrac{5}{1}$ $= 5$
1c	Gradient $= \dfrac{\text{Rise}}{\text{Run}}$ $= \dfrac{-14}{4}$ $= -\dfrac{7}{2}$	2a	

2b		2c	

3a	AUD	0	10	20	30	40
	1000IDR	0	78	156	234	312

3b

4a

Gradient is −2 and *y*-intercept is $\frac{1}{2}$.

Equation $y = mx + b$

$$y = -2x + \frac{1}{2}$$

4b

Gradient is 4 and *y*-intercept is −1.

Equation $y = mx + b$

$$y = 4x - 1$$