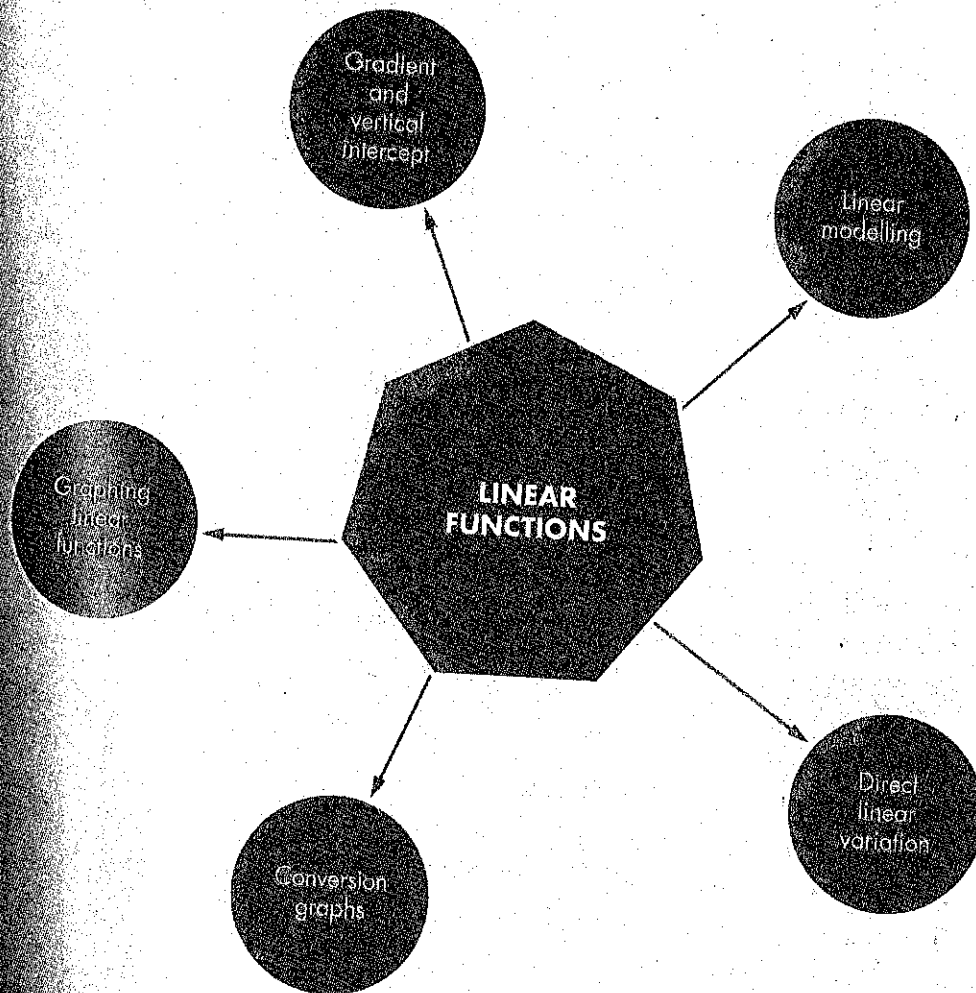


7. CHAPTER SUMMARY

This chapter, Linear functions, introduced the concept of the linear function and its graph and applications. Learn the meanings of the gradient and vertical intercept of a linear function and practise solving problems involving linear modelling, variation and conversion graphs.

Make a summary of this topic. Use the outline at the start of this chapter as a guide. An incomplete mind map is shown below. Use your own words, symbols, diagrams, boxes and reminders. Gain a 'whole picture' view of the topic and identify any weak areas.



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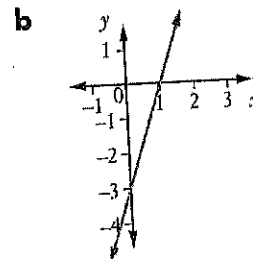
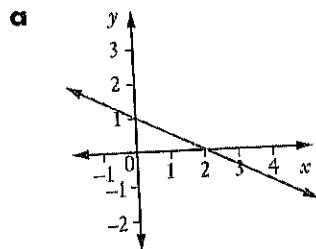
7. TEST YOURSELF

1 Graph each of these linear functions on a number plane.

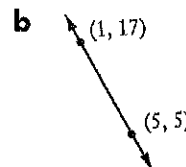
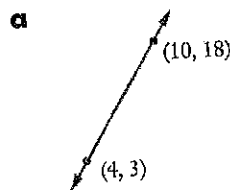
a $y = -2x + 1$

b $y = 4x$

2 Find the equation of each of these lines.



3 Find the gradient of each of these lines.



4 Find the gradient of the function for each of these tables of values.

a

x	0	4	6	12
y	12	14	15	18

b

x	2	5	9	11
y	42	30	14	6

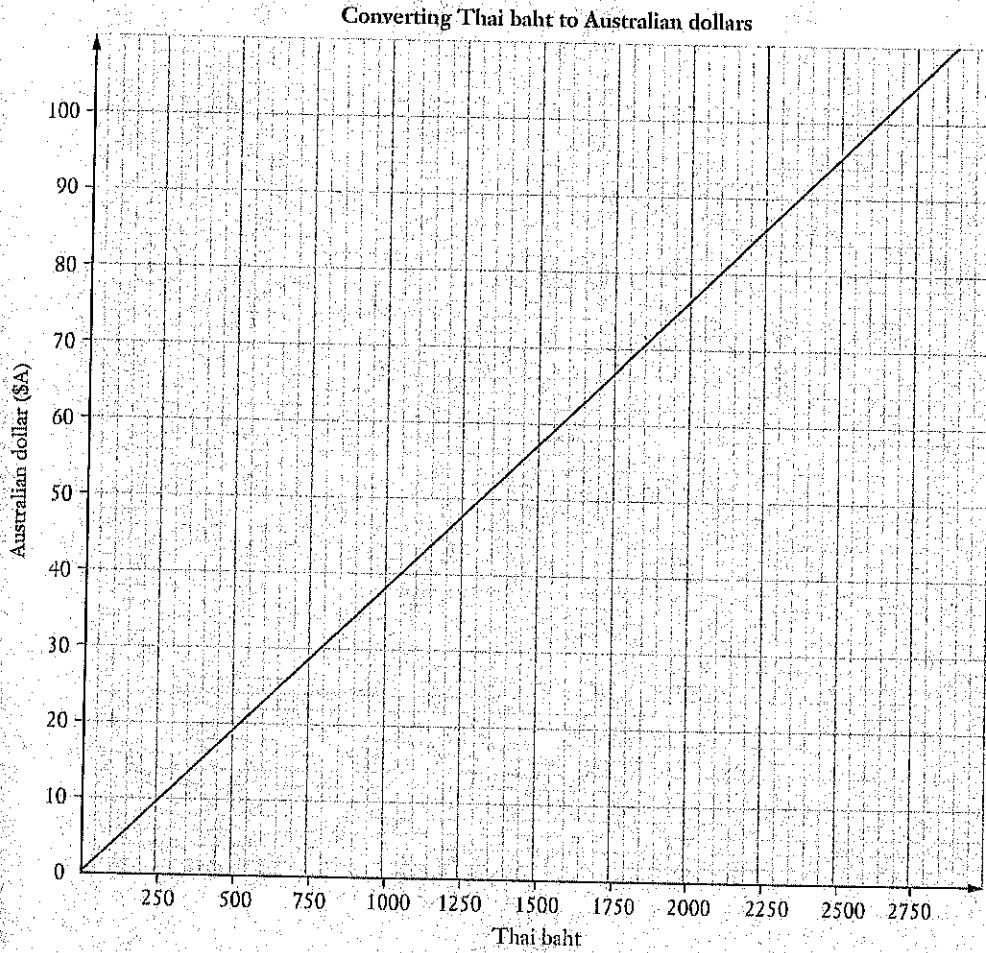
5 The length, L inches, of a shoe has a linear relationship with the size, S , of the shoe.

Shoe size, S	2	5	7	8	12
Length, L (inches)	9	10	$10\frac{2}{3}$	11	$12\frac{1}{3}$

- Which is the independent variable?
- Graph this linear relationship.
- What is the gradient, and what does this represent?
- How long is a shoe of size 0? How is this shown on the graph?
- What is the formula for L in terms of S ?
- What is the length of a shoe of size $7\frac{1}{2}$?
- What size is a shoe of length 13 inches?

6 The distance travelled by a car is directly proportional to the number of rotations of tyres. If 950 metres are travelled after 540 rotations, calculate how much distance, nearest kilometre, is covered after 10 000 rotations.

- 7 This currency conversion graph converts between Thai baht (the currency of Thailand) and Australian dollars (A\$).
- a Convert each of these Thai prices to Australian dollars (to the nearest dollar).
 - i 800 baht
 - ii 2450 baht
 - b Convert each of these Australian prices to Thai baht (to the nearest 50 baht).
 - i A\$65
 - ii A\$82
 - c Calculate the gradient of this graph, correct to two decimal places. What does this value represent?



Chapter quiz

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Solutions

Exercise 1.05

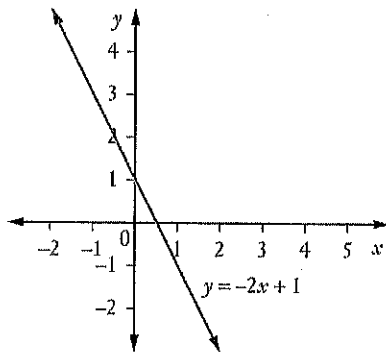
- 1 a 107 cm b 5.9 ft
 c i 61 cm ii 76 cm iii 182 cm
 2 a \$127 b \$52 c \$110
 d \$75 e \$36 f \$60
 3 a \$1.7 b \$1.15 c \$4.90 d \$1.80
 4 a €77 b €53 c €22 d €90
 e €75 f €5.20
 5 1.44, the no. of \$ per €, what €1 equals in \$
 6 a i 72 kg ii 56 kg iii 80 kg
 b i 187 cm ii 159 cm iii 193 cm
 c 0.65, rate of change of weight per height in kg/cm
 7 i \$51 ii \$74 iii \$70
 b i \$29 ii \$94 iii \$63
 c 0.85, the discount price as a proportion of the marked price
 d C
 8 a i 41 kg ii 62 kg iii 73 kg
 b i 88 lb ii 140 lb iii 198 lb
 0.46 kg/lb

Sample HS problem

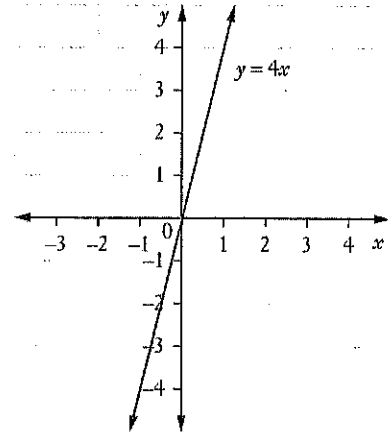
- a $P = 4 - 24$
 b 4, increase in pocket money in dollars per year of age
 c \$40 d 11
 e i Values of P will be 0 or less.
 ii After 18 years, children become adults and either receive no pocket money or an amount based on a different formula.

Test yourself 7

1 a

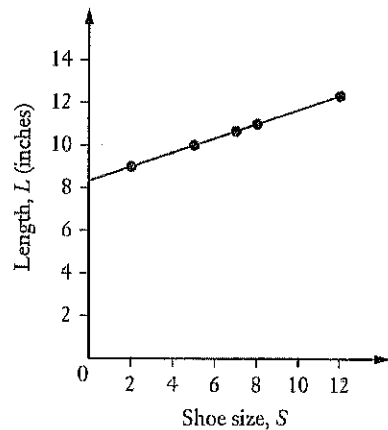


b



- 2 a $y = -\frac{1}{2}x + 1$ b $y = 3x - 3$
 3 a $2\frac{1}{2}$ b -3
 4 a $\frac{1}{2}$ b -4
 5 a S
 b

Lengths of shoes of different sizes



- c $\frac{1}{3}$, the increase in length per shoe size, in inches/size
 d $8\frac{1}{3}$ inches, the vertical intercept
 e $L = \frac{1}{3}S + 8\frac{1}{3}$
 f $10\frac{5}{6}$ g 14

- 6 18 km
 7 a i \$31 ii \$93
 b i 1700 baht ii 2150 baht
 c 0.04, number of A\$ per baht

- 5 2 years 6 12%
 7 \$7400 8 C
 9 a \$1984.50 b \$847.91
 c \$4680 d \$207.66
 10 0.035% 11 15 months
 12 0.8%

Chapter 8

Skillcheck

- 1 a 0.025 b 0.84
 c 1.06 d 0.1875
 2 a 2.5 b 3.75 c 0.45
 3 a 2653.41 b 12 174.94
 c 5299.09
 4 a \$773.40 b \$2135 c \$1474
 d \$346.88 e \$3648.13 f \$132.60
 5 a \$29.36 b \$2375 c \$96.80
 6 a 49 200 b 41 600 c 8.33

Exercise 8.01

- 1 \$4048 2 24 627 762
 3 \$84 346.35 4 \$1473.33
 5 \$87.02 6 \$950.40
 7 \$345.36 8 \$2523.74
 9 a \$102.35 b \$94.16
 c \$5.16 increase, 5.8% increase
 10 D
 11 a \$23 042.17 b 15.2% increase
 12 a 4% decrease b 4% decrease
 c 16.64% increase d 6.5% decrease
 e 9.76% decrease f 3.1% decrease
 13 a 207 t b 11.5%

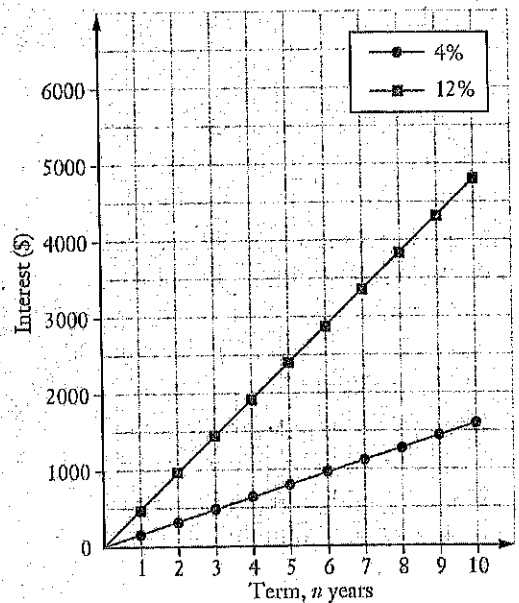
Exercise 8.02

- 1 C
 2 a \$320.40 b \$3717.90 c \$471.18
 d \$42.08 e \$625.50 f \$569.58
 3 \$1620 4 11%

Exercise 8.03

- 1 C
 2 a \$10 800 b \$3000 c \$9120
 3 a 8.3 years b $3\frac{1}{2}$ years c 7.1 years
 4

Simple interest earned on an investment of \$4000



- 5 a 480, the interest (\$) earned per year
 b i \$960 ii \$3840
 c The second graph is three times as steep as the first graph.
 6 A
 7 a \$4200 b 6% c 45 months
 d 4.6 years e \$2800 f 4%