

ANSWERS

CHAPTER 1 Line and Angles II

1.1 Properties of Angles Associated with Transversals and Parallel Lines

- 1 (a) (i) PQ
 (ii) k° and w° , l° and x° , n° and z° , m° and y°
 (iii) w° and m° , l° and z°
 (iv) l° and w° , m° and z°
- (b) (i) RS
 (ii) p° and t° , q° and u° , r° and v° , s° and w°
 (iii) q° and w° , r° and t°
 (iv) q° and t° , r° and w°
- 2 (a) (i) $a^\circ = b^\circ$
 (ii) $a^\circ = 50^\circ$
 (iii) $a^\circ = 125^\circ$
- (b) (i) $a^\circ = b^\circ$
 (ii) $x^\circ = 46^\circ$
 (iii) $y^\circ = 130^\circ$
- (c) (i) 180
 (ii) 180
 (iii) 180
- 3 (a) 115
 (b) 80
- 4 (a) 54
 (b) 128
 (c) 46
- 5 (a) 48
 (b) 17
- 6 (a) 70
 (b) 70
 (c) 20
- 7 (a) $x = 69$
 (b) $x = 150$ (c) $x = 15$
 (d) (i) $x = 56$ (ii) $y = 38$

KBAT CORNER

- 1 $x = 132$
 2 (a) $x = 55$ (b) $y = 60$
 (c) $z = 80$

PISA/TIMSS CORNER

- 1 $x + y + z = 134$
 2 (a) $x = 48$ (b) $y = 58$
 (c) $z = 10$

PT3 PRACTICE

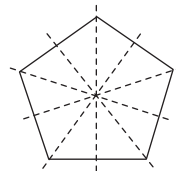
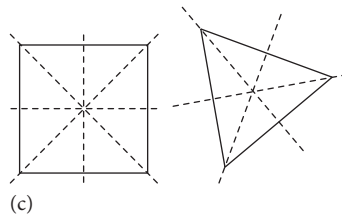
- 1 (a) (i) $x = 58$ (ii) $y = 46$
 (b) (i) $\angle FDA = 60^\circ$
 (ii) $x = 64$
 (c) (i) $x = 62$ (ii) $x = 62$
- 2 (a) $x = 82$ (b) $x = 68$
 (c) $x = 20$ (d) $x = 117$

CHAPTER 2 Polygons II

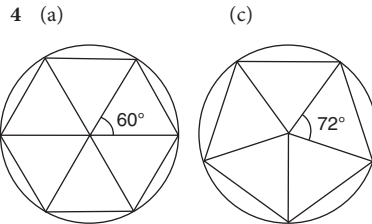
2.1 Regular Polygons

- 1 (a) \times (b) \checkmark
 (c) \checkmark (d) \times

- 2 (a) (b)



- 3 (a) 4, 4 (b) 5, 5
 (c) 4 (d) 5



2.2 Exterior and Interior Angles

- 1 (a) $x = 84$ (b) $x + y = 112$
- 2 (a) 45° (b) $51\frac{3}{7}^\circ$
- 3 (a) 67 (b) 126
 (c) 95
- 4 (a) 140° (b) 150°
- 5 (a) 900° (b) 1 440°
- 6 (a) 5 (b) 15
- 7 (a) 12 (b) 20
- 8 (a) Total interior angle = 540°
 (b) Equal interior angle = 108°
 (c) Equal exterior angle = 72°
 (d) Total exterior angle = 360°
- 9 (a) $x - y = 30$
 (b) (i) 30 (ii) 168

KBAT CORNER

- 1 (a) $x = 252$ (b) $y = 57$
 2 $x = 13, y = 40$

PISA/TIMSS CORNER

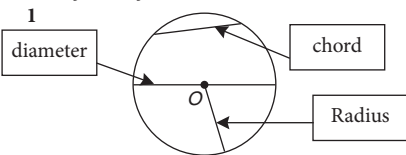
- 1 $x = 36$
 2 120 cm

PT3 PRACTICE

- 1 (a) $x = 134$ (b) $x = 143$
 (c) (i) $x = 45$ (ii) $y = 67.5$
- 2 (a) $x = 62$ (b) $x + y = 334$
 (c) (i) A (ii) $n = 10$
- 3 (a) $x = 96$ (b) $y = 42$
 (c) (i) $x = 112$ (ii) $y = 92$

CHAPTER 3 Circles II

3.1 Properties of Circles Involving Symmetry, Chords and Arcs



- 2 (a) (i) 3 cm (ii) 3 cm
 (iii) 1 cm
 (b) 13 cm (c) 12 cm
 (d) 9 cm

3.2 Properties of Angles in Circles

- 1 (a) $x = y = 39$ (b) $x = y = 32$
 (c) $x = 22$
- 2 (a) $x = 57$ (b) $x = 27$
- 3 (a) $x = 15$ (b) $x = 27$
 (c) $x = 18$ (d) $x = 34$

3.3 Cyclic Quadrilaterals

- 1 (a) (i) $x = 98$ (ii) $y = 84$
 (b) $x = 38$ (c) $x = 106$
- 2 (a) $x = 54$ (b) $x = 55$
 (c) $x = 116$ (d) $x = 31$

KBAT CORNER

- 1 (a) $x = 128$ (b) $y = 50$
 2 (a) $\angle GBC = 119^\circ$ (b) $\angle AGB = 76^\circ$

PISA/TIMSS CORNER

- 1 120 cm² 2 3.2 m

PT3 PRACTICE

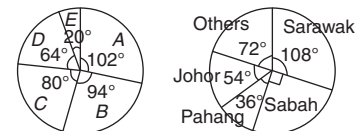
- 1 (a) 32 cm
 (b) (i) $x + y = 54$ (ii) $x = 14$
 (c) $x = 50$
- 2 (a) $FG = 12$ cm (b) $w = 34$
 (c) $y = 53$

CHAPTER 4 Statistic II

4.1 Pie Chart

- 1 (a) (i) 75% (ii) $\frac{1}{6}$
 (b) (i) a. 50% b. 35%
 (ii) Johor : 30
 Pahang : 21
 Melaka : 9

- 2 (a) (b)



- 3 (a) (i) RM120 (ii) RM200

- (iii) RM300
 (b) (i) $p = 53$
 (ii) $124 : 2(53) = 62 : 53$
 (iii) 96

4.2 Mode, Median and Mean

- 1 (a) Mode = 14 and 16
 (b) Mode = B
 2 (a) Mode = Motorcycle
 (b) Mode = C and E
 3 (a) 7 (b) 5.5
 (c) 19.5
 4 (a) 43 (b) 1.5
 (c) 14
 5 (a) 4.85 (b) 5.20
 6 (a) 1.25 (b) 5.7
 (c) 53.76
 7 (a) 55.25 kg (b) 68.33 kg
 (c) 8.75

KBAT CORNER

- 1 (a) $y = 13$ (b) median = 4
 2 Suggested answer:
 Students can take an article from each section in a certain newspaper, that is from the sports section, local news, business etc.
 The number of words in each sentence is counted and its mean is determined.
 The bar chart can be used to compare the length of sentences in the different sections in the newspaper.

PISA/TIMSS CORNER

1

	Mean	Mode	Median
Sample A	7.186	7.23	7.23
Sample B	7.222	7.26	7.26

Sample B is more alkaline because its average of pH value is more than the average of pH value of sample A.

PT3 PRACTICE

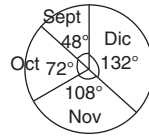
- 1 (a) (i) D (ii) 18
 (iii) RM680
 (b) $x = 8$
 (c)

State	Students	Sector angle
Johor	12	$\frac{12}{72} \times 360^\circ = 60^\circ$
Melaka	19	$\frac{19}{72} \times 360^\circ = 95^\circ$
Trengganu	26	$\frac{26}{72} \times 360^\circ = 130^\circ$
Pahang	15	$\frac{15}{72} \times 360^\circ = 75^\circ$
	72	360°



2 (a)

Month	Total of cars	Sector angle
Dic	66	$\frac{66}{180} \times 360^\circ = 132^\circ$
Nov	54	$\frac{54}{180} \times 360^\circ = 108^\circ$
Oct	36	$\frac{36}{180} \times 360^\circ = 72^\circ$
Sept	24	$\frac{24}{180} \times 360^\circ = 48^\circ$
	180	360°



- (b) (i) C (ii) mode = 0
 (c) 64

CHAPTER 5 Index

5.1 Indices

- 1 (a) $(-3) \times (-3)$
 (b) $\left(-\frac{1}{2}\right) \times \left(-\frac{1}{2}\right)$
 (c) $(-0.63) \times (-0.63) \times (-0.63) \times (-0.63)$
 2 (a) $\left(\frac{1}{2}\right)^3 = \left(\frac{1}{2}\right) \times \left(\frac{1}{2}\right) \times \left(\frac{1}{2}\right)$
 $= \frac{1}{8}$
 (b) $(-0.2)^3 = (-0.2) \times (-0.2) \times (-0.2)$
 $= -0.008$
 (c) $(-2)^3 = (-2) \times (-2) \times (-2)$
 $= -8$
 3 (a) 1.3^5
 (b) $(-6)^3$
 (c) $\left(\frac{3}{2}\right)^4$
 4 (a) $81 = 9^2$ (b) $81 = 3^4$
 (c) $64 = 4^3$

5.2 Multiplication of Numbers in Index Notation

- 1 (a) 3^6 (b) $(-2)^5$
 (c) 7^6 (d) 2^{12}
 (e) $\left(\frac{1}{2}\right)^7$
 2 (a) m^7 (b) n^9
 (c) k^{12} (d) $3^6 \times 2^3$
 (e) $2^7 \times 3^4$ (f) $2^7 \times 7^3$
 (g) $5^9 \times 3^6$
 3 (a) h^3h^2 (b) g^2k^7
 (c) j^5k^2 (d) u^6w^4
 (e) f^8g^5 (f) p^7q^6
 (g) $6k^4p^5$ (h) $12m^7w^3$
 (i) $-48a^5b^8$ (j) $27p^6q^4$

5.3 Division of Numbers in Index Notation

5.4 Numbers and Algebraic Terms Expressed in Index Notation Raised to a Power

- 1 (a) 3^8 (b) 1
 (c) $9y^2$ (d) $7m^3$
 (e) $7k^6$
 2 (a) 3^{10} (b) 5^{24}
 (c) u^6 (d) y^{30}
 (e) 1
 3 (a) $2^5 \times 3^{20} \times 7^{15}$ (b) $2^{3n} \times 3^{4n}$
 (c) $a^3 \times b^6$ (d) $9p^8$
 (e) $8m^9n^{12}$
 4 (a) $\frac{7^{12}}{5^9}$ (b) $\frac{a^6}{b^3}$
 (c) $\frac{n^8}{m^6}$ (d) $\frac{27p^{12}}{q^6}$
 (e) $\frac{16m^4n^8}{81p^{16}}$

5.5 Negative Indices

- 1 (a) $\frac{1}{8}$ (b) $\frac{1}{12}$
 (c) $\frac{1}{p}$ (d) $\frac{1}{2^3}$
 (e) $\frac{1}{3^2}$ (f) $\frac{1}{4^5}$
 (g) $\frac{1}{m^2}$ (h) $\frac{1}{g^4}$
 (i) $\frac{1}{p^{12}}$
 2 (a) 13^{-2} (b) 5^{-6}
 (c) a^{-1} (d) k^{-3}
 (e) p^{-12}
 3 $3^{-2} \triangleleft_{as} 2^{-3} \triangleleft_{as} m^{-6} \triangleleft_{as} p^{-5}$
 $\frac{1}{3^2}$ (a) $\frac{1}{2^3}$ (b) $\frac{1}{m^6}$ (c) $\frac{1}{p^5}$

5.6 Fractional Indices

- 1 (a) $\sqrt{8}$ (b) $^3\sqrt{4}$
 (c) $^4\sqrt{9}$
 2 (a) $16^{\frac{1}{2}}$ (b) $29^{\frac{1}{3}}$
 (c) $12^{\frac{1}{4}}$
 3 (a) 4 (b) 3
 (c) 10 (d) 3
 (e) 27 (f) 9
 (g) 32 (h) 8

5.7 Computations Involving Laws of Indices

- 1 (a) 36 (b) $\frac{1}{8}$
 (c) 4 (d) 9
 (e) 32 (f) $\frac{1}{25}$
 (g) 64 (h) $\frac{1}{81}$
 2 (a) p^2 (b) $16p^{13}q^{10}$
 (c) $48a^7b^{-1}$ (d) $9a^4b^7$
 (e) $3p^{13}q^{-8}$ (f) $8p^{-1}q^{16}$
 (g) $128m^3n^{-1}$ (h) $4a^5b^{-1}$

KBAT CORNER

- 1 3 087 2 $x = 9$
 3 $x = \frac{1}{2}$

PISA/TIMSS CORNER

- 1 $3^n - 3^{n+1} + 3^{n+2} = 3^n - 3^n(3) + 3^n(3^2)$
 $= 1(3^n) - 3(3^n) + 9(3^n)$
 $= 7(3^n)$
 $3^n - 3^{n+1} + 3^{n+2}$ mengandungi faktor 7,
 Maka $3^n - 3^{n+1} + 3^{n+2}$ boleh dibahagi
 oleh 7.
 2 $\sqrt{2}$
 $m = \left(\frac{2}{\sqrt{2}}\right)^2 = 2$

PT3 PRACTICE

- 1 (a) (i) C (ii) m^{10}
 (b) 48 (c) 2^{10}
 2 (a) (i) D (ii) 5
 (b) (i) $6p^{11}$ (ii) $63e^8f^7$
 (c) $\frac{7}{5}$

CHAPTER 6 Algebraic Expression III**6.1 Expanding Algebraic Expressions**

- 1 (a) \times (b) \checkmark
 (c) \checkmark
 2 (a) $v^2 - 8v + 16$
 (b) $m^2 - 6mn + 9n^2$
 (c) $4b^2 - 12bc + 9c^2$
 3 (a) $w^2 - 9$ (b) $3g^{2-12}$
 (c) $kx^2 - 25k$

6.2 Factorisation of Algebraic Expressions

- 1 (a) $3(4 - h)$ (b) $x(y - 6)$
 (c) $cd(1 + b + e)$
 2 (a) $(2 + u)(2 - u)$
 (b) $5(3 + u)(3 - u)$
 (c) $2(m + 1)(m - 1)$
 3 (a) $(u + 3)^2$ (b) $2(u - 2)^2$
 (c) $7(u - 1)^2$
 4 (a) $3(x + y)$ (b) $m(n + 4)$
 (c) $(3 + n)(3 - n)$
 5 (a) $(u + 1)(u + 3)$
 (b) $(u - 1)(u + 4)$
 (c) $(2u + 1)(u - 1)$
 (d) $(3u - 2)(u - 1)$
 6 (a) $(d + e)(c + 1)$
 (b) $(a + c)(b + 4)$
 (c) $(n - 6p)(m - 1)$
 (d) $(p - 3q)(n - 2)$

6.3 Addition and Subtraction of Algebraic Fractions

- 1 (a) $\frac{4}{u}$ (b) $\frac{4}{x + 4}$
 (c) $\frac{6k - 5}{2k - 1}$
 2 (a) $\frac{4 - y}{y^2}$ (b) $\frac{3y + 2}{2y^2}$
 (c) $\frac{1 - 3y}{9y}$
 3 (a) $\frac{5u}{12}$ (b) $-\frac{3}{20k}$

- (c) $\frac{2 + n}{mn^2}$ (d) $\frac{n + 4}{6mn}$

6.4 Multiplication and Division of Algebraic Fractions

- 1 (a) $\frac{4hk}{3}$ (b) $\frac{16p}{5u^2}$
 (c) $\frac{2k^2}{3p}$
 2 (a) $8u^2$ (b) $4w$
 (c) $\frac{2}{3p}$
 3 (a) $\frac{p + 1}{2pq}$ (b) $\frac{m - p}{y}$
 (c) $\frac{x - 3}{x + 3}$
 4 (a) $\frac{9}{u}$ (b) $\frac{2}{5p - 5w}$
 (c) $\frac{4t - 12}{t}$
 5 (a) $\frac{3}{y + 2}$ (b) $\frac{4}{m + n}$
 (c) $\frac{p + q}{2}$ (d) $\frac{4}{x - 3}$

KBAT CORNER

- 1 $\frac{5 + 3x}{3 + 2x}$ 2 $\frac{1}{a^2 + c^2}$
 3 $(4x - 1)(2x - 7)$

PISA/TIMSS CORNER

- 1 $\frac{3x^2}{2} - x$
 2 $AB = 2h$

PT3 PRACTICE

- 1 (a) (i) D
 (ii) $\frac{8}{5 - m}$
 (b) (i) $k + 1, k$
 (ii) $\frac{3 - 7e}{1 + 6e}$
 (c) $\frac{m + 4n}{16n}$
 2 (a) (i) B (ii) $\frac{k}{8}$
 (b) (i) $(x + y)(m + 1)$
 (ii) $5(2 + v)(2 - v)$
 (c) $\frac{4w + 3}{6}$
 3 (a) (i) A (ii) $3k$
 (b) $\frac{k(k - 3)}{5}$ (ii) $9 - 9x$
 (c) $\frac{5b - 24}{6ab}$

CHAPTER 7 Algebraic Formula**7.1 Variables and Constants**

- 1 (a) Variable (b) Constant
 (c) Variable (d) Constant
 (e) Variable (f) Constant

7.2 Formulae

- 1 (a) x (b) e
 (c) A (d) T

- 2 (a) $k = h - P$ (b) $u = \frac{A}{2\pi}$

(c) $x = \frac{k}{4G}$

- 3 (a) $x = \frac{3}{y} + 1$ (b) $\sqrt{h^2 - y^2} = x$

(c) $p^2 - 5 = q$

- 4 (a) $m = \frac{8}{v - u}$ (b) $p = \frac{5h}{1 - 2h}$

(c) $\frac{2b}{1 + b} = a$ (d) $x = \frac{k + T}{T - a}$

- 5 (a) $P = 19$ (b) $L = 76$
 (c) $a = 6$ (d) $m = 29$

- 6 (a) (i) 62.354 cm^2
 (ii) $k = 9.118 \text{ cm}$

(b) (i) $p = \frac{26}{x^2}$ (ii) $A = 141$

(c) $r = 5$

KBAT CORNER

- 1 $2\pi x^2 + \frac{70}{x}$
 2 Isi padu air = $\frac{3\pi x^3}{4}$

PISA/TIMSS CORNER

- 1 (a) Ice had disappeared 76 years ago.
 (b) The distance of David's step is 0.6 m.

PT3 PRACTICE

- 1 (a) (i) D (ii) $P = \frac{N^2 + m^2}{8m^2}$
 (b) $2\pi j^2 + 2\pi j p$
 (c) (i) $g = -\frac{7k}{6} + 2$ (ii) $y = \frac{2m}{m - 2}$
 2 (a) (i) B (ii) $y = \frac{(x - w)^2}{2x}$
 (b) $k = \frac{8h}{8 - p}$ (c) $p = \frac{3mn}{4n - 2m}$
 3 (a) (i) B (ii) $k = \frac{3g}{10}$
 (b) $w = \frac{5}{2 + y}$

CHAPTER 8 Solid Geometry III**8.1 Volume of Right Prisms and Right Circular Cylinders**

- 1 (a) 56 cm^3 (b) 729 cm^3
 (c) $2 112 \text{ cm}^3$ (d) $1 100 \text{ cm}^3$
 (e) 462 cm^3
 2 (a) 1 cm (b) 3.5 cm
 (c) 2 cm (d) 6 cm
 (e) 3.5 cm
 3 (a) 100.8 cm^3 (b) 8 cm
 (c) 14.5 cm (d) 16 cm^2
 (e) 168 cm^2
 4 (a) $365 000 \text{ mm}^3$ (b) 0.365 m^3
 (c) 365 m^3 (d) $3.65 \text{ } \ell$
 (e) $365 000 \text{ cm}^3$
 5 (a) $1 540 \text{ cm}^3$ (b) $4 647.5 \text{ cm}^3$
 (c) 242 cm^3

8.2 Volume of Right Pyramids and Right Circular Cones

- 1 (a) $1 322.8 \text{ cm}^3$ (b) 80 m

- (c) 36 cm (d) 20 cm²
 (e) 40 cm²
 2 (a) 176 m³ (b) 28 cm
 (c) 21 cm (d) 12 mm
 (e) 4 cm

8.3 Volume of Spheres

- 1 (a) 4.9 cm³ (b) 2483.7 cm³
 2 (a) 12 mm (b) $\frac{4}{3}$ m
 3 (a) $1072\frac{16}{21}$ cm³ (b) 4.762 cm

8.4 Volume of Composite Solid

- 1 (a) 1150 cm³ (b) 912 cm³
 (c) $2481\frac{1}{3}$ cm³

KBAT CORNER

- 1 $11\frac{11}{48}$ cm³ 2 $29\frac{1}{3}$ cm

PISA/TIMSS CORNER

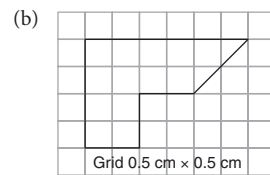
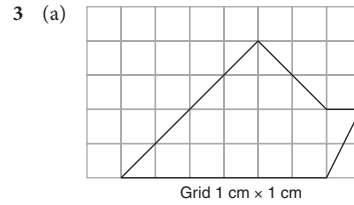
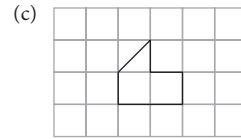
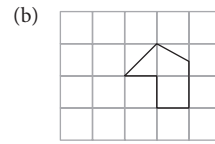
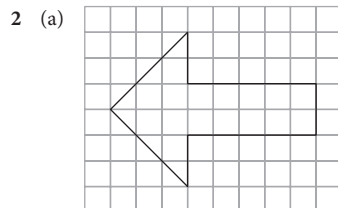
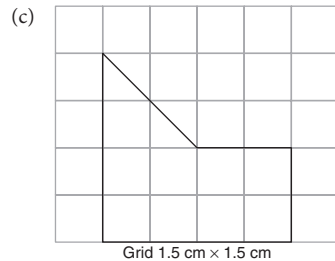
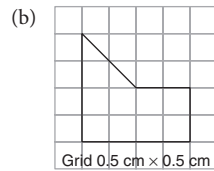
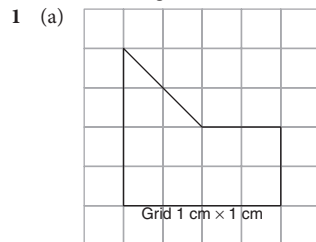
- 1 $179\frac{2}{3}$ cm³ 2 1.5 cm

PT3 PRACTICE

- 1 (a) (i) B (ii) 100 cm³
 (b) 864 cm³ (c) $p = 4$
 2 (a) (i) B (ii) 2 cm
 (b) 30 cm (c) 350π

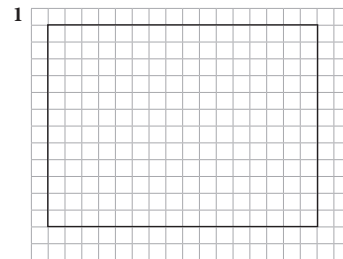
CHAPTER 9 Scale Drawing

9.1 Scale Drawings



- 4 (a) 6 km (b) 5 cm
 (c) 1 : 150 000 (d) 1 : 500

KBAT CORNER



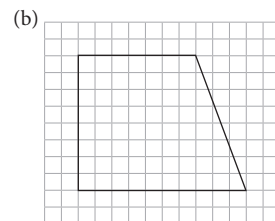
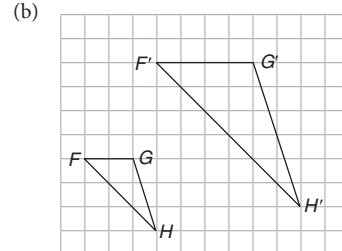
- 2 1 : 800 000

PISA/TIMSS CORNER

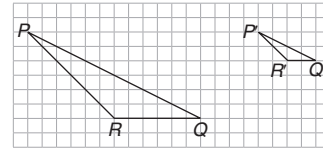
- 1 6369.6 km

PT3 PRACTICE

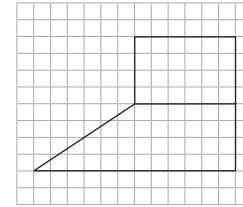
- 1 (a) (i) Scale = 1 : 5
 (ii) 24 m



- 2 (a) 1 : 8
 (b)



- (c) 7.5 cm
 3 (a) 1 : 15 000 (b) 6 km
 (c)



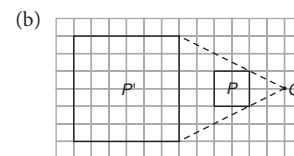
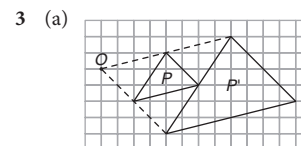
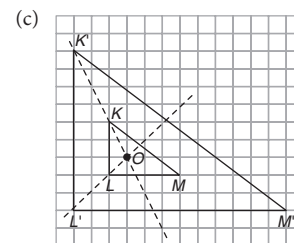
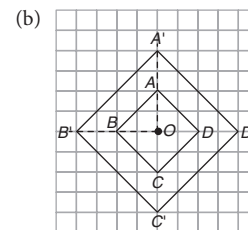
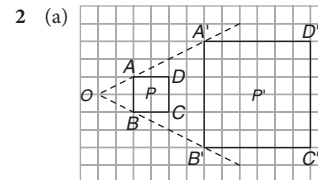
CHAPTER 10 Transformation II

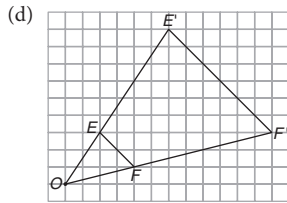
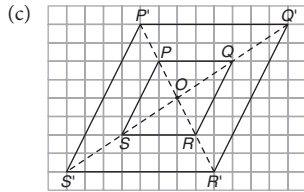
10.1 Similarity

- 1 (a) Similar (b) Not similar
 2 (a) 4 (b) 2
 (c) 8

10.2 Enlargement

- 1 (a) 2 (b) $\frac{1}{2}$





- 4 (a) (i) 3 (ii) 6 cm
 (b) (i) 2 (ii) 6 cm
 5 (a) 12 cm² (b) 3 cm²
 (c) 16 cm² (d) 12 cm²
 (e) 2 (f) 4
 6 (a) 90 cm × 120 cm (b) 23 cm²

KBAT CORNER

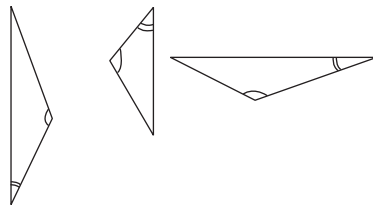
- 1 23 cm²

PISA/TIMSS CORNER

- 1 A
 2 151.5 m

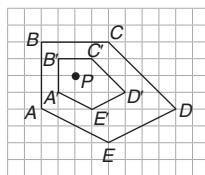
PT3 PRACTICE

- 1 (a) (i)

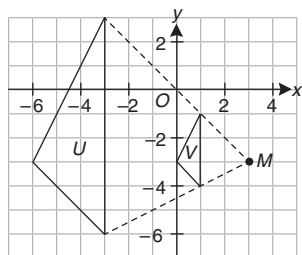


(ii) $PF = 9.6$ cm

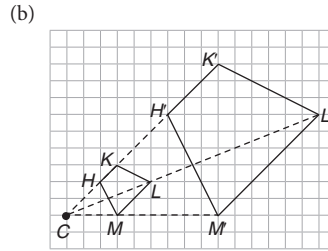
(b)



- (c) 27 cm²
 2 (a) (i) A
 (ii)



$M(3, -3)$



(c) 42 unit²

CHAPTER 11 Linear Equation II

11.1 Linear Equations in Two Variables

- 1 (a) Yes (b) No
 (c) Yes (d) Yes
 (e) No
 2 (a) $2p + 3q = 3$ (b) $2x - 5y = 4$
 3 (a) $y = 5$ (b) $x = -17$
 (c) $x = 3\frac{1}{2}$
 4 (a) $x = 5$ and $y = 1$,
 $x = 5\frac{1}{2}$ and $y = 2$,
 $x = 6$ and $y = 3$
 (b) $x = -2\frac{1}{2}$ and $y = 1$,
 $x = -1$ and $y = 2$,
 $x = \frac{1}{2}$ and $y = 3$

11.2 Simultaneous Linear Equations in Two Variables

- 1 (a) $m = -1, n = 1$ (b) $m = 16, n = 3$
 (c) $m = -5, n = 5$
 2 (a) $m = -2, n = 4$ (b) $w = 10, u = 9$
 (c) $m = 2, n = -3$
 3 (a) $x = 8, y = 5$ (b) $x = 60, y = 20$
 (c) 48 cm²
 (d) 3The price of a packet of fried mee is RM1 and the price of a packet of fried rice is RM1.50.

KBAT CORNER

- 1 3 tables and 12 chairs
 2 20

PISA/TIMSS CORNER

- 1 20 km/hour 2 420

PT3 PRACTICE

- 1 (a) (i) B
 (ii) $x = 8$
 (b) $m + 2n = 19$ (c) $x = 2, y = -1$
 2 (a) (i) D (ii) $3p + 8q = 42$
 (b) $p = 4$
 (c) Ali is 21 years old and Dollah is 15 year old
 3 (a) (i) D (ii) $y = \frac{1}{3}$
 (b) $x = 3$ (c) $3h + k = 270$

CHAPTER 12 Linear Inequalities

12.1 Inequalities

- 1 (a) $p > 100$ (b) $n \leq 40$
 (c) $x \geq 45$

12.2 Linear Inequality in One Variable

- 1 (a) Yes (b) No
 (c) No (d) No
 (e) Yes
 2 (a) 10, 11, 12, 13 (b) 14, 13, 12, 11
 (c) 20, 19, 18, 17 (d) -1, -2, -3, -4
 (e) -13, -14, -15, -16
 3 (a)
 (b)
 (c)
 4 (a) $x > -3$ (b) $x \geq 5$
 (c) $x \leq -2$
 5 (a) If x represents the number of passenger m the lift, $x \leq 8$
 (b) If x represents the ages, in year of the applicants, $x > 30$
 (c) If x represents the number of students, $x \geq 15$

12.3 Operations Involving Linear Inequalities

- 1 (a) $3 < 10$ (b) $11 > 7$
 (c) $x + 9 < 15$
 2 (a) $9 > 5$ (b) $-11 < -4$
 (c) $17 > 13$ (d) $x - 4 < 2$
 3 (a) $-\frac{3}{2} < 1$ (b) $-20 > -30$
 (c) $18 < 24$
 4 (a) $5 > 4$ (b) $-\frac{3}{2} < 1$
 (c) $-4 < -6$ (d) $-3 > -4$
 5 (a) $m > 12$ (b) $m + 3 < 15$
 (c) $m - 6 < 6$

12.4 Solving Linear Inequalities in One Unknown

- 1 (a) $x \leq 6$ (b) $x > 5$
 (c) $x > 12$ (d) $x \geq -9$
 (e) $x > 18$
 2 (a) $d > 45$ (b) $d \geq 12$
 (c) $d > -48$ (d) $d \geq 6$
 (e) $m < -5$
 3 (a) $m < \frac{5}{2}$ (b) $d < \frac{1}{3}$
 (c) $m > 7$ (d) $m < -4$
 (e) $x > 3$

12.5 Simultaneous Linear Inequalities in One Unknown

- 1 (a)
 (b)
 (c)
 2 (a) $-4 \leq x < 12$ (b) $-6 \leq x \leq 3$
 (c) $0 < x < 15$
 3 (a) $-1 \leq x < 3\frac{1}{5}$ (b) $x < \frac{4}{3}$

KBAT CORNER

1 $p - q = 8$ 2 $p + q = 2$

PISA/TIMSS CORNER

1 D 2 B

PT3 PRACTICE

- 1 (a) (i) B (ii) $x < -3$
 (b) $-1 < x < 9$
 (c) $x = -1, 0, 1$
 2 (a) (i) B (ii) $x > -9$
 (b) Nilai x yang terbesar ialah 2
 (c) Nilai integer: $-5, -4, -3, -2, -1, 0, 1$
 3 (a) (i) A (ii) $x > 28$
 (b) $-2 \leq x < 4$
 (c) $-2, -1, 0, 1, 2, 3, 4$

CHAPTER 13 Graph of Function

13.1 Functions

1 (a) $A = 3(2p + 2)$ (b) $y = 10x$

2

	dependent variable	Independent variable
(a)	T	m
(b)	C	r

- 3 (a) (i) 14 (ii) -1
 (b) (i) 3 (ii) 3
 (c) (i) 68 (ii) -23

13.2 Graphs of Functions

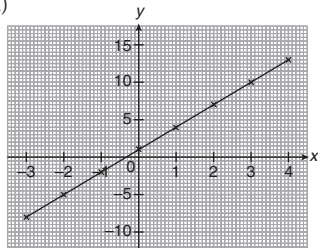
1 (a)

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

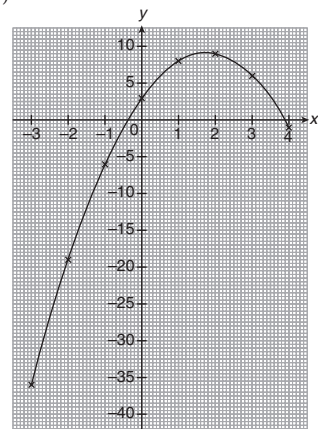
(b)

x	-2	-1	0	1	2
y	9	7	5	3	1

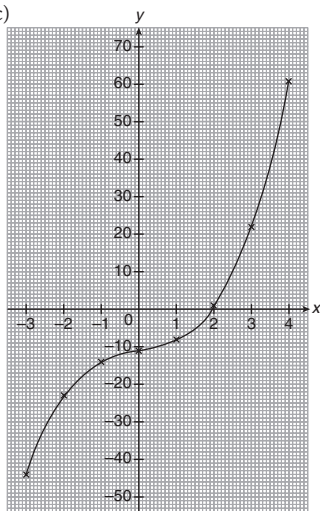
2 (a)



(b)



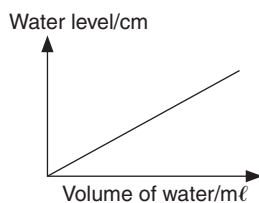
(c)



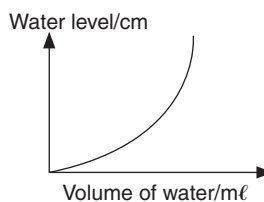
- 3 (a) -7.5
 (b) $x = -1.1$ atau 2.6

4 Suggested answer:

The rate of increase of the water level depends on the shape of container. Container A has a uniform shape, so the water level increases uniformly.



Container B is a cone with different widths. Initially, the water level increases with an increasing rate because the width of cone decreases. In the narrow neck of the cone, the water level will increase uniformly with a larger rate.



KBAT CORNER

1 $k = 5$ 2 $m = 3, c = -5$

PISA/TIMSS CORNER

1 B

2

t	0	1	2	3
h	0	8	8	0

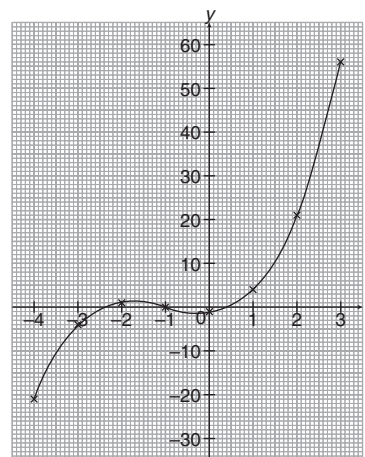
↑
Mula lancar

↑
Tiba semula
di permukaan
tanah

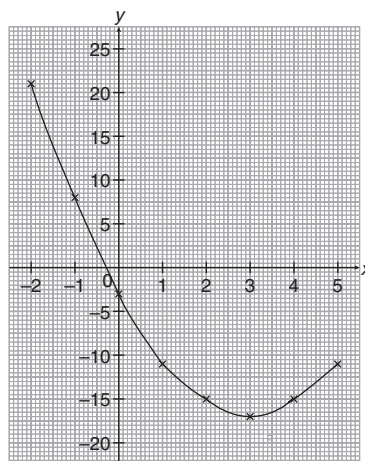
From the table, the object reached the ground level at the 3rd second.

PT3 PRACTICE

- 1 (a) (i) B
 (ii) $m = 7$
 (b) (i) $y = 5$
 (ii) $x = 8$
 (c)



- 2 (a) (i) C
 (ii) a. $y = 7$
 b. $x = \pm 5$
 (b)



CHAPTER 14 Ratios, Rates and Proportion II

14.1 Rate

- 1 (a) Rate:
 15 book each year
 Quantity:
 Number of books and time
 (b) Rate: RM400 a month
 Quantity: House rental and time
 (c) Rate: RM2.40 per kg
 Quantity: Price and mass
 2 (a) RM8 per meter
 (b) 30 words a minute
 (c) 2.5 m² per litre

- 3 (a) RM41.40
 (b) 4 litre
 (c) RM9.60
 4 (a) 20 m s^{-1}
 (b) 64.8 km h^{-1}
 (c) RM450 per kg
 5 (a) Brand B
 (b) 576 Baht

14.2 Speed

- 1 (a) 80 km h^{-1}
 (b) 76 km h^{-1}
 2 (a) 192 km
 (b) 320 km
 3 (a) 5 hours
 (b) 7 second
 4 (a) $11 \frac{2}{3} \text{ m s}^{-1}$
 (b) $4\,000 \text{ cm s}^{-1}$

14.3 Average Speed

- 1 (a) 90 km h^{-1}
 (b) 30 m s^{-1}
 2 (a) 110 km
 (b) 672 m
 3 (a) 1 hour 36 minute
 (b) 4.8 second
 4 (a) 30 km h^{-1}
 (b) 225 km

14.4 Acceleration

- 1 (a) 5 cm s^{-2}
 (b) 7 cm s^{-2}

KBAT CORNER

- 1 $\frac{p}{q} = 3$
 2 20 m s^{-1}

PISA/TIMSS CORNER

- 1 B
 2 B

PT3 PRACTICE

- 1 (a) (i) 24 m s^{-1}
 (ii) 126 m
 (iii) 5.4 hours
 (b) RM22.20
 (c) hour 1316
 2 (a) (i) 60 km h^{-1}
 (ii) 120 km h^{-1}
 (iii) 48 km h^{-1}
 (b) 96 km h^{-1}
 (c) (i) 96 km h^{-2}
 (ii) $26 \frac{2}{3} \text{ m s}^{-2}$

CHAPTER 15 Trigonometry

15.1 Tangent of an Acute Angle

- 1 (a) $\frac{4}{3}$

- (b) $\frac{5}{12}$
 2 (a) 6 cm
 (b) 12 cm

15.2 Sine of an Acute Angle

- 1 (a) $\frac{12}{13}$
 (b) $\frac{5}{13}$
 2 (a) 16 cm
 (b) 35 cm

15.3 Cosine of an Acute Angle

- 1 (a) $\frac{12}{13}$
 (b) $\frac{8}{17}$
 2 (a) 5 cm
 (b) 24 cm

15.4 Values of Tangent, Sine and Cosine

- 1 (a) $\frac{12}{13}$
 (b) $\frac{4}{5}$
 2 (a) $75^\circ 24'$
 (b) $22^\circ 3'$
 3 (a)

Sudut θ	30°	60°
$\sin \theta$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
$\cos \theta$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
$\tan \theta$	$\frac{1}{\sqrt{3}}$	$\sqrt{3}$

(b)

$\sin 45^\circ$	$\cos 45^\circ$	$\tan 45^\circ$
$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	1

- 4 (a) 0.6214
 (b) 0.8722
 (c) 0.4428
 (d) 0.6946
 (e) 3.1178
 5 (a) 31.43°
 (b) 66.32°
 (c) 32.62°
 (d) 35.82°
 (e) 53.03°
 6 (a) $\frac{15}{17}$
 (b) $28^\circ 4'$
 (c) (i) 8 cm
 (ii) $\frac{4}{5}$

KBAT CORNER

- 1 $66^\circ 52'$
 2 $14^\circ 2'$

PISA/TIMSS CORNER

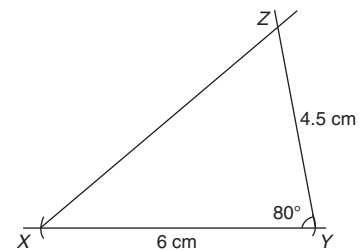
- 1 C
 2 B

PT3 PRACTICE

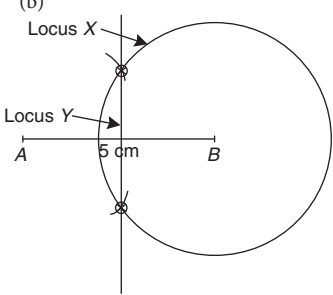
- 1 (a) $\sin \theta = \frac{x}{z}$ (X)
 $\tan \theta = \frac{z}{y}$ (✓)
 $\cos \theta = \frac{y}{x}$ (✓)
 (b) (i) 6 cm
 (ii) $40^\circ 12'$
 (c) (i) $\frac{3}{5}$
 (ii) $\frac{3}{4}$
 2 (a) (i) A
 (ii) $\cos \theta = \frac{3}{4}$
 (b) (i) $\frac{4}{5}$
 (ii) $26^\circ 23'$
 (c) $\frac{5}{2}$
 (b) 30 cm

PT3 Model Paper

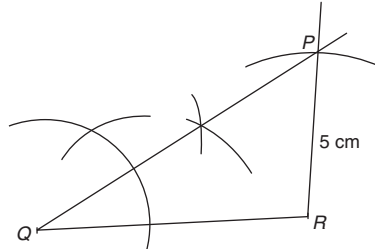
- 1 (a) X: -0.9, Y: -0.1, Z: 0.7
 (b) (i) $42 \frac{1}{20}$
 (ii) a. Saving everyday
 $= (\text{RM}140 - \text{RM}86) \div 3$
 b. RM126
 (c) (i) 180
 (ii) 85%
 2 (a) (i) x° and r°
 (ii) r° and y°
 (iii) y° and p°
 (b) (i)



- (ii) $XZ = 6.8 \text{ cm}$
 (c) RM5 000
 3 (a) 31, 43, 59
 (b) $\sqrt[3]{1 - \frac{91}{125}} - 0.8^2 = \sqrt[3]{\frac{216}{125}} - 0.8^2$
 $= \frac{6}{5} - 0.64$
 $= \frac{6}{5} - \frac{64}{100}$
 $= \frac{120}{100} - \frac{64}{100}$
 $= \frac{56}{100}$
 $= 0.56$
 (c) 1.03 p.m.
 4 (a) (i) ✓
 (ii) X
 (iii) ✓

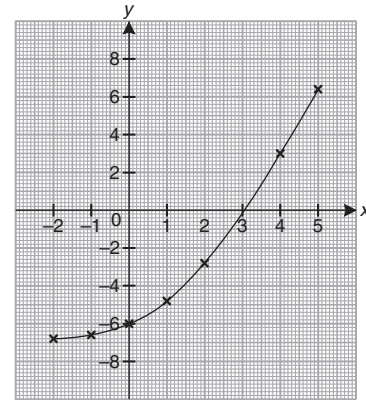
- (b) $282\frac{6}{7}$
 (c) 138 m
- 5 (a) (i) Segi tiga sama kaki
 (ii) Segi tiga sama sisi
 (iii) Segi tiga bersudut tegak
 (b) (i) $x = 26, y = 128$
 (ii) $x = 82, y = 76$
 (c) 1.3 minutes
- 6 (a) (i) $y(y + 2) = 63$
 (ii) $2(8 \text{ cm} + x \text{ cm}) = 24 \text{ cm}$
 (iii) $4p = 56$
 (b)
- 
- (c) (i) 3
 (ii) 1.5 cm
- 7 (a) (i) 1 : 2

- (ii) $1 : \frac{1}{2}$
 (iii) $1 : \frac{1}{3}$
 (b) (i) x^{-5}
 (ii) $\frac{2}{9}$
 (c)



- $\angle QPR = 53^\circ$
- 8 (a) (i) $x > -4$
 (ii) $-2 < x \leq 5$
 (b) $x = 5, y = -1$
 (c) $h = 1, k = 20$ or $h = 4, k = 9$
- 9 (a) (i) $9a + 6 = 3(3a + 2)$
 (ii) a. $2w(q - 6) = 2qw - 12w$
 b. $-3(5 - 2k) = -15 + 6k$

- (b) $\frac{3p}{2a}$
 (c) $x = \frac{3}{2}$
- 10 (a) (i) 48 balls
 (ii) $\otimes \otimes \otimes$
 (b)



- (c) (i) $\frac{4}{3}$
 (ii) 14 cm