

JAWAPAN / ANSWERS

BAB 1

Pola dan Jujukan Pattern and Sequences

BAHAGIAN A

- 1 D 2 C 3 B 4 C
5 B 6 B 7 B 8 B
9 D 10 A

BAHAGIAN B

- 1 (a)  (c) 
(b) -10 (d) 1
- 2 (a) Tolak 50 daripada nombor yang sebelumnya
Subtract 50 from the previous number
(b) Darab 2 dengan nombor yang sebelumnya
Multiply the previous number by 2
(c) Tambah 3 dengan nombor yang sebelumnya
Add 3 to the previous number
(d) Bahagi 10 dengan nombor yang sebelumnya
Divide the previous number by 10

- 3 (a) 5 (c) 5
(b) 2 (d) 33

BAHAGIAN C

- 1 (a) Tambah 4 kepada nombor sebelumnya
Add 4 to the previous number
(b)

4	8	12

(c) $4 + 4n$, di mana / where $n = 0, 1, 2, 3, \dots$
(d) 
- 2 (a) (i) Tambah 4 kepada nombor sebelumnya
Add 4 to the previous number
(ii) Tolak 4 daripada nombor sebelumnya
Subtract 4 from the previous number
(b) $X = 2, Y = 17, Z = 29$
(c) $a = -57, b = -33, c = -9$
 $a - b + c = -57 - (-33) + (-9) = -33$
- 3 (a) 0, 1, 1, 2, 3, 5, 8, 13, 21

- (b) $12 + 11(0) = 12 + 0 = 12$
 $12 + 11(1) = 12 + 11 = 23$
 $12 + 11(2) = 12 + 22 = 34$
 $12 + 11(3) = 12 + 33 = 45$
 $12 + 11n$, di mana / where $n = 0, 1, 2, 3, 4, \dots$
(c) Hari pertama / First day = RM64
Simpanan setiap hari
Savings on each day = RM16
Pola / Pattern:
Tambah / Add 16
 $64 + 16(n - 1)$, di mana / where $n = 1, 2, 3, 4, \dots$
 $64 + 16(n - 1) = 1\ 632$
 $16(n - 1) = 1\ 568$
 $n - 1 = 98$
 $n = 99$
 $\therefore$ Hari ke-99 / 99th day

BAB 2

Pemfaktoran dan Pecahan Algebra Factorisation and Algebraic Fractions

BAHAGIAN A

- 1 C 2 C 3 B 4 A
5 D 6 A 7 C 8 C
9 A 10 A

BAHAGIAN B

- 1 (a) $(2s + t)(s + 1)$
(b) $(3p + 4)(p - 2)$
(c) $(3w - 8)(3w + 8)$
(d) $(3y + 1)(2y + 5)$
- 2
$$\frac{3nk + 5nh}{2pq + 6} - \frac{nh + nk}{pq + 3}$$
$$= \frac{3nk + 5nh}{2pq + 6} - \frac{2nh + 2nk}{2pq + 6}$$
$$= \frac{3nk + 5nh - 2nh - 2nk}{2pq + 6}$$
$$= \frac{nk + 3nh}{2pq + 6}$$
- 3 (a) $(p + 3), (p - 6)$
(b) $b, (2b + 7)$

BAHAGIAN C

- 1 (a) $r^2 - 14r - 32$
- | | |
|------------|--------|
| $r - 16$ | $-16r$ |
| $r + 2$ | $+2r$ |
| $r^2 - 32$ | $-14r$ |
- $\therefore (r - 16)(r + 2)$

- (b) $(2a + b)^2 - 3ab - 5a^2$
 $= 4a^2 + 4ab + b^2 - 3ab - 5a^2$
 $= 4a^2 - 5a^2 + 4ab + b^2 - 3ab$
 $= -a^2 + ab + b^2$
(c) $3(p - q)^2 \times 4(p + q) \div 24(p^2 - q^2)$
 $= \frac{3(p - q)(p - q) \times 4(p + q)}{24(p + q)(p - q)}$
 $= \frac{12(p - q)}{24}$
 $= \frac{p - q}{2}$
- 2 (a) $\frac{3(p + 2)}{4} + \frac{p}{4} = \frac{3p + 6 + p}{4}$
 $= \frac{4p + 6}{4}$
 $= \frac{2p + 3}{2}$

- (b) Faktor bagi 6k
Common factor of 6k
 $= 1, 2, 3, 6, k, 2k, 3k, 6k$
Faktor bagi 18
Common factor of 18
 $= 1, 2, 3, 6, 9, 18$
Faktor sepunya bagi 6k dan 18
Common factor of 6k and 18
 $= 1, 2, 3, 6$
(c) (i) $y^2 - 3y - 4 = (y - 4)(y + 1)$
(ii) $4y^2 + 2xy - 2yz - xz$
 $= 2y(2y + x) - z(2y + x)$
 $= (2y - z)(2y + x)$
- 3 (a) $\left(\frac{w^2 + 1}{w} - \frac{w + 3}{2}\right) \div \frac{w - 2}{w}$
 $= \frac{2w^2 + 2 - w^2 - 3w}{2w} \times \frac{w}{w - 2}$
 $= \frac{w^2 - 3w + 2}{2w} \times \frac{w}{w - 2}$
 $= \frac{(w - 1)(w - 2)}{2w} \times \frac{w}{w - 2}$
 $= \frac{w - 1}{2}$
(b) $(2q + 3)(3q - 7y) + 9qy - 13q$
 $= 6q^2 - 14qy + 9q - 21y + 9qy - 13q$
 $= 6q^2 - 5qy - 4q - 21y$
(c) Luas segi tiga / Area of triangle
 $= \frac{1}{2}(p + 3)(p - 9)$
 $= \frac{1}{2}(p^2 - 9p + 3p - 27)$
 $= \frac{1}{2}(p^2 - 6p - 27)$
 $= \left(\frac{1}{2}p^2 - 3p - \frac{27}{2}\right) \text{ cm}^2$

BAB 3
**Rumus Algebra
Algebraic Formula**
BAHAGIAN A

- 1 B 2 B 3 C 4 C
5 D 6 A 7 D

BAHAGIAN B

- 1 (a) 10 (c) 17
(b) 7 (d) 7
- 2 (a) $a = \frac{m+b}{3}$ (c) $a = \frac{k-5}{4b}$
(b) $\frac{4f}{7}$ (d) $a = 8b$
- 3 (a) -5 (c) 17
(b) -1.5 (d) -16

BAHAGIAN C

- 1 (a) $2a = \sqrt{3b-7c}$
 $(2a)^2 = 3b-7c$
 $4a^2 = 3b-7c$
 $4a^2 + 7c = 3b$
 $b = \frac{4a^2 + 7c}{3}$
- (b) $p = \frac{4q+5}{7}$
 $7 = \frac{4q+5}{7}$
 $49 = 4q+5$
 $4q = 44$
 $q = 11$
- (c) (i) $x + 2x + x + y + y + y = 540^\circ$
 $4x + 3y = 540^\circ$
(ii) $4x + 3y = 540^\circ$
 $4x + 3(36^\circ) = 540^\circ$
 $4x = 540^\circ - 108^\circ$
 $4x = 432^\circ$
 $x = 108^\circ$
- 2 (a) (i) $\sqrt{2g} = 3$ [g]
 $2g = 3^2$
 $2g = 9$
 $g = \frac{9}{2}$
- (ii) $s^2 = t^2 - 8$ [t]
 $t^2 = s^2 + 8$
 $t = \sqrt{s^2 + 8}$
- (b) $x = 3 - 2y + 5z$
 $2y = 3 - x + 5z$
 $y = \frac{3 - x + 5z}{2}$
- (c) (i) $12x + 6 = 2(3x + 5) + 2AB$
 $12x + 6 = 6x + 10 + 2AB$
 $6x - 4 = 2AB$
 $AB = (3x - 2) \text{ cm}$
- (ii) Luas / Area
 $= [3(2) + 5] \times [3(2) - 2]$
 $= 11 \times 4$
 $= 44 \text{ cm}^2$

$$3 (a) V = \frac{1}{3}\pi r^2 h$$

$$r^2 = \frac{3V}{\pi h}$$

$$r = \sqrt{\frac{3V}{\pi h}}$$

$$(b) r = \sqrt{\frac{3 \times 314 \times \frac{2}{7}}{\frac{22}{7} \times 12}} = 5 \text{ cm}$$

$$(c) c^2 = r^2 + h^2$$

$$c = \sqrt{r^2 + h^2}$$

$$(d) c = \sqrt{5^2 + 12^2}$$

$$= \sqrt{169}$$

$$= 13$$

BAB 4
**Poligon
Polygon**
BAHAGIAN A

- 1 D 2 C 3 A 4 A
5 C 6 B 7 C 8 C
9 C 10 C

BAHAGIAN B

- 1 (a) ✓ (c) ✓
(b) ✗ (d) ✓
- 2 (a) 120° (c) 6
(b) 60° (d) 9
- 3 (a) 540° (c) 1080°
(b) 900° (d) 1440°

BAHAGIAN C

- 1 (a) $540^\circ - 120^\circ - 110^\circ - 95^\circ - 105^\circ$
 $= 110^\circ$
 $y = 180^\circ - 110^\circ = 70^\circ$
- (b) Sudut peluaran / Exterior angle
 $= 180^\circ - 135^\circ = 45^\circ$
Bilangan sisi / Number of sides
 $= \frac{360^\circ}{45^\circ}$
 $= 8$
Nama poligon: Oktagon
Name of polygon: Octagon
- (c) $a + 45^\circ + 137^\circ + 90^\circ +$
 $132^\circ + 78^\circ = 540^\circ$
 $a + 482^\circ = 540^\circ$
 $a = 58^\circ$
- 2 (a) $x + x + 112^\circ = 360^\circ$
 $2x = 248^\circ$
 $x = 124^\circ$
- (b) $x = 180^\circ - 102^\circ = 78^\circ$
 $y = 180^\circ - 123^\circ = 57^\circ$
 $x + y = 78^\circ + 57^\circ = 135^\circ$
- (c) Sudut / Angle of ABD
 $= \text{Sudut / Angle of BDE}$
 $= 540^\circ \div 5$
 $= 108^\circ$

$$\text{Sudut / Angle of CDB}$$

$$= \text{Sudut / Angle of CBD}$$

$$= 180^\circ - 108^\circ$$

$$= 72^\circ$$

$$q = 180^\circ - 72^\circ - 72^\circ = 36^\circ$$

- 3 (a) Sudut peluaran / Exterior angle
 $= 180^\circ - 144^\circ = 36^\circ$
Bilangan sisi / Number of sides
 $= \frac{360^\circ}{36^\circ} = 10$
- (b) Sudut / Angle of PMN
 $= 180^\circ - 70^\circ - 70^\circ = 40^\circ$
Sudut / Angle of LMK
 $= 180^\circ - 80^\circ - 40^\circ = 60^\circ$
 $x = 40^\circ + 60^\circ = 100^\circ$
- (c) $y + 3y + 122^\circ + 66^\circ = 360^\circ$
 $4y = 172^\circ$
 $y = 43^\circ$
 $x = 180^\circ - 66^\circ = 114^\circ$

BAB 5
**Bulatan
Circles**
BAHAGIAN A

- 1 B 2 A 3 A 4 D
5 A 6 D 7 C 8 C
9 D 10 C

BAHAGIAN B

- 1 (a) Perentas / Chord
(b) Jejari / Radius
(c) Sektor minor / Minor sector
(d) Lilitan / Circumference
- 2 (a) 10 cm (c) 24.5 mm
(b) 21 cm (d) 49 mm
- 3 (a) 17.11 cm^2 (c) 14.85 cm^2
(b) 75.43 cm^2 (d) 89.39 cm^2

BAHAGIAN C

- 1 (a) (i) Lilitan / Circumference
 $= 2 \times \frac{22}{7} \times 12 \text{ cm}$
 $= 75.408 \text{ cm}$
- (ii) Lilitan / Circumference
 $= \frac{22}{7} \times 21 \text{ cm}$
 $= 66 \text{ cm}$
- (b) Panjang lengkok = 55
Length of arc
 $\frac{\theta}{360} \times 2 \times \frac{22}{7} \times 21 = 55$
 $\theta = 150^\circ$
- (c) Luas bulatan = 154 cm^2
Area of circle
 $\frac{22}{7} \times j^2 = 154$
 $j^2 = 49$
 $j = 7 \text{ cm}$
Lilitan bulatan
Circumference of circle
 $= 2 \times \frac{22}{7} \times 7 \text{ cm}$
 $= 44 \text{ cm}$

- 2 (a) Luas sektor = 227.87 cm²
Area of sector

$$\frac{70}{360} \times 3.142 \times j^2 = 227.87$$

$$j^2 = 372.98$$

$$j = 19.31 \text{ cm}$$

- (b) Lilitan bulatan = 132 cm
Circumference of circle

$$2 \times \frac{22}{7} \times j = 132$$

$$j = 21 \text{ cm}$$

Luas bulatan / Area of circle

$$= \frac{22}{7} \times 21^2$$

$$= 1\,386 \text{ cm}^2$$

- (c) Luas kawasan berlorek

Area of shaded region

$$= \frac{150}{360} \times \frac{22}{7} \times 30^2 - \frac{150}{360} \times \frac{22}{7} \times 14^2$$

$$= 1\,178 \frac{4}{7} - 256 \frac{2}{3}$$

$$= 921 \frac{19}{21} \text{ cm}^2$$

- 3 (a) $\sqrt{13^2 - 5^2} = \sqrt{144} = 12 \text{ cm}$

$$KM = 2 \times 12 \text{ cm} = 24 \text{ cm}$$

- (b) $\frac{120}{360} \times 2 \times \frac{22}{7} \times OA = 44$

$$OA = 21 \text{ cm}$$

- (c) Luas semi bulatan = 115.5

Area of semi circle

$$\frac{1}{2} \times \frac{22}{7} \times j^2 = 115.5$$

$$j^2 = 73.5$$

$$j = 8.57$$

$$\text{Perimeter} = (8.57 \times 2) \times 4 = 68.56 \text{ cm}$$

BAB 6

Bentuk Geometri Tiga Dimensi Three-Dimensional Geometrical Shapes

BAHAGIAN A

- 1 D 2 C 3 D 4 D
5 A 6 B 7 B 8 B
9 B 10 B

BAHAGIAN B

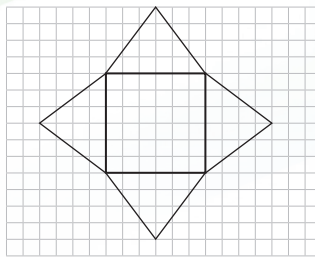
- 1 (a) ✓ (c) ✓
(b) ✗ (d) ✗

- 2 (a) Kon / Cone
(b) Piramid / Pyramid
(c) Kuboid / Cuboid
(d) Silinder / Cylinder

- 3 (a) 49 (c) 924
(b) 147 (d) 1 232

BAHAGIAN C

- 1 (a)



- (b) (i) (iii) (ii)

- (c) Isi padu yang tinggal
Remaining volume

$$= \frac{1}{3} \times \frac{22}{7} \times 11^2 \times 14 - \frac{22}{7} \times 3^2 \times 7$$

$$= 1\,774 \frac{2}{3} - 198$$

$$= 1\,576 \frac{2}{3} \text{ cm}^3$$

- 2 (a) Luas permukaan prisma
Surface area of prism

$$= 2 \left[\frac{1}{2} \times (6 + 12) \times 5 \right] + (5 \times 4) + (12 \times 4) + (6 \times 4)$$

$$= 182 \text{ cm}^2$$

- (b) Luas permukaan / Surface area

$$= \frac{1}{4} \left[\left(2 \times \frac{22}{7} + 10.5^2 \right) + \left(2 \times \frac{22}{7} \times 10.5 \times 12 \right) \right]$$

$$= 371.25 \text{ mm}^2$$

- (c) Isi padu kon / Volume of cone

$$= \frac{1}{3} \times \frac{22}{7} \times 14^2 \times 15$$

$$= 3\,080 \text{ cm}^3$$

Isi padu kuboid

Volume of cuboid

$$= 4 \text{ cm} \times 3 \text{ cm} \times 7 \text{ cm}$$

$$= 84 \text{ cm}^3$$

Isi padu keseluruhan

Total volume

$$= 3\,080 \text{ cm}^3 + 84 \text{ cm}^3$$

$$= 3\,164 \text{ cm}^3$$

- 3 (a) Isi padu / Volume = 1 925 cm³

$$\frac{1}{3} \times \frac{22}{7} \times 7^2 \times t + \frac{22}{7} \times 7^2 \times$$

$$11 = 1\,925$$

$$\frac{154}{3} t + 1\,694 = 1\,925$$

$$\frac{154}{3} t = 231$$

$$t = 4.5$$

- (b) Isi padu sfera = 2 036 cm³

Volume of sphere

$$\frac{4}{3} \times \frac{22}{7} \times j^3 = 2\,036$$

$$j^3 = 485.86$$

$$j = 7.86 \text{ cm}$$

- (c) Isi padu silinder
Volume of cylinder

$$= \frac{22}{7} \times 10^2 \times 35$$

$$= 11\,000 \text{ cm}^3$$

Isi padu yang tidak diisi dengan air

Volume not filled with water

$$= \frac{1}{3} \times 11\,000$$

$$= 3\,666.67 \text{ cm}^3$$

BAB 7

Koordinat Coordinates

BAHAGIAN A

- 1 D 2 C 3 B 4 B
5 C 6 C 7 B

BAHAGIAN B

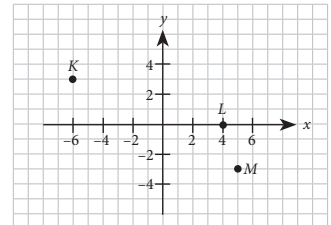
- 1 (5, 0), (7, 10), (11, 3), (-8, 0)

- 2 (a) P(-4, 1) (c) R(3, 4)
(b) Q(-2, 5) (d) S(1, 2)

- 3 (a) ✓ (c) ✓
(b) ✗ (d) ✗

BAHAGIAN C

- 1 (a)



- (b) Jarak / Distance of HJ

$$= \sqrt{12^2 + 5^2}$$

$$= \sqrt{169}$$

$$= 13 \text{ unit / units}$$

- (c) $\left(\frac{-4 + 8}{2}, \frac{y + 1}{2} \right) = (x, 4)$

$$x = \frac{-4 + 8}{2} = 2$$

$$\frac{y + 1}{2} = 4$$

$$y + 1 = 8$$

$$y = 7$$

$$2 \text{ (a) } \left(\frac{x+7}{2}, \frac{y+5}{2} \right) = (10, 3)$$

$$\frac{x+7}{2} = 10, \quad \frac{y+5}{2} = 3$$

$$x+7=20 \quad y+5=6$$

$$x=13 \quad y=1$$

$$\therefore S(13, 1)$$

(b) Jarak $KL = 8$ unit
Distance of $KL = 8$ units
Jarak $LM = 6$ unit
Distance of $LM = 6$ units
Jarak / Distance of KM

$$= \sqrt{6^2 + 8^2}$$

$$= 10 \text{ unit / units}$$

$$\text{Perimeter } KLM = 6 + 8 + 10$$

$$= 24 \text{ unit / units}$$

(c) (i) Koordinat / Coordinates of B
 $= (5, 3)$

Koordinat / Coordinates of D
 $= (-2, -1)$

(ii) Jarak / Distance of AC
 $= \sqrt{(-2-5)^2 + [3-(-1)]^2}$
 $= 8.062 \text{ unit / units}$

3 (a) Koordinat / Coordinates of S :

$$\left(\frac{x+18}{2}, \frac{y+8}{2} \right) = (12, 6)$$

$$\frac{x+18}{2} = 12, \quad \frac{y+8}{2} = 6$$

$$x+18=24 \quad y+8=12$$

$$x=6 \quad y=4$$

$\therefore S(6, 4)$

(b) Koordinat / Coordinates of R :

$$\left(\frac{x+12}{2}, \frac{y+6}{2} \right) = (6, 4)$$

$$\frac{x+12}{2} = 6, \quad \frac{y+6}{2} = 4$$

$$x+12=12 \quad y+6=8$$

$$x=0 \quad y=2$$

$\therefore R(0, 2)$

(c) Jarak / Distance of RV

$$= \sqrt{(0-18)^2 + (2-8)^2}$$

$$= 18.97 \text{ unit / units}$$

(d) Koordinat / Coordinates of U

$= (2, 14)$

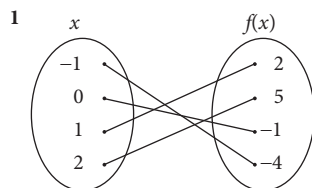
BAB 8

Graf Fungsi Graph of Functions

BAHAGIAN A

- 1 B 2 B 3 B 4 C
5 C 6 A 7 C 8 A
9 B 10 A

BAHAGIAN B



- 2 (a) $\{1, 2, 3\}$
(b) $\{4, 5, 6, 7, 8\}$

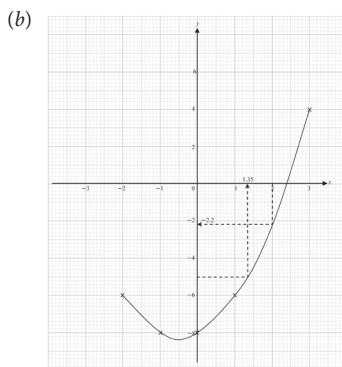
- (c) $\{1, 2, 3\}$
(d) $\{4, 5, 7\}$

- 3 (a) (i) Luas segi empat tepat
Area of rectangle
(ii) Panjang dan lebar segi empat tepat
Length and width of rectangle
(b) (i) Jumlah jualan buah oren
Total sale of orange
(ii) Bilangan buah oren yang dijual
Number of oranges sold

BAHAGIAN C

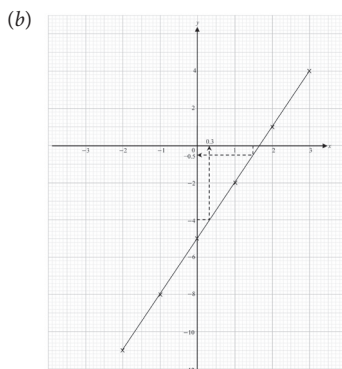
1 (a)

x	-2	-1	0	1	3
y	-6	-8	-8	-6	4



- (c) (i) $y = -2.2$
(ii) $x = 1.35$

2 (a) $a = -11, b = -2, c = 4$



- (c) (i) $x = 0.3$
(ii) $y = -0.5$

BAB 9

Laju dan Pecutan Speed and Acceleration

BAHAGIAN A

- 1 C 2 B 3 C 4 B
5 D 6 B 7 D 8 C
9 D 10 A

BAHAGIAN B

- 1 (a) 80 km, 48 minit / minutes
(b) 35 km, $\frac{1}{4}$ jam / hour

- 2 (a) 1 000 (c) 1 620
(b) 3 600 (d) 0.45

- 3 (a) Pecutan / Acceleration
(b) Nyahpecutan / Deceleration
(c) Pecutan / Acceleration
(d) Nyahpecutan / Deceleration

BAHAGIAN C

1 (a) $\frac{(95-25) \text{ km/j}}{\frac{25}{60} \text{ j}} = 168 \text{ km/j}^2$

$$\frac{(95-25) \text{ km/h}}{\frac{25}{60} \text{ h}} = 168 \text{ km/h}^2$$

(b) $\frac{45 \text{ km}}{1 \text{ jam / hour}} = \frac{45 \times 1\,000 \text{ m}}{1 \times 3\,600 \text{ s}}$
 $= \frac{45\,000 \text{ m}}{3\,600 \text{ s}}$
 $= 12.5 \text{ m/s}$

(c) Objek / Object P:

$$16 = \frac{x}{10}$$

$$x = 160$$

Objek / Object Q:

$$48 = \frac{160}{y}$$

$$y = 3.33$$

2 (a) Jarak yang dilalui

$$\text{Distance travelled}$$

$$= 72 \text{ km/j} \times 2.5 \text{ jam}$$

$$72 \text{ km/h} \times 2.5 \text{ hours}$$

$$= 180 \text{ km}$$

(b) $\frac{(45-0) \text{ km/j}}{25 \text{ minit}} = 1.8 \text{ km/j per minit}$
 $\frac{(45-0) \text{ km/h}}{25 \text{ minutes}} = 1.8 \text{ km/h per minutes}$

(c) Purata laju / Average speed

$$\frac{2.5 + 1.3}{20 + 10}$$

$$= \frac{60}{60}$$

$$= 7.6 \text{ km/j / km/h}$$

3 (a) $\frac{(145 \div 1\,000) \text{ km}}{(1 \div 3\,600) \text{ j}} = 522 \text{ km/j}$
 $\frac{(145 \div 1\,000) \text{ km}}{(1 \div 3\,600) \text{ h}} = 522 \text{ km/h}$

(b) (i) $\frac{80-T}{7} = 5$
 $80-T = 35$
 $T = 45$

(ii) Pecutan / Acceleration

$$= \frac{60-20}{5}$$

$$= 8 \text{ km/j per minit}$$

$$8 \text{ km/h per minute}$$

(iii) Nyahpecutan / Deceleration

$$= \frac{45-60}{10}$$

$$= -1.5 \text{ km/j per minit}$$

$$-1.5 \text{ km/h per minute}$$

$$= 1.5 \text{ km/j per minit}$$

$$1.5 \text{ km/h per minute}$$

BAB 10

Kecerunan Garis Lurus Gradient of a Straight Line

BAHAGIAN A

- 1 B 2 B 3 D 4 A
5 A 6 C 7 D 8 A
9 B 10 A

BAHAGIAN B

- 1 (a) Kecerunan tidak tertakrif
Undefined gradient
(b) Kecerunan sifar
Zero gradient
(c) Kecerunan positif
Positive gradient
(d) Kecerunan negatif
Negative gradient

- 2 (a) ✗ (c) ✗
(b) ✓ (d) ✓

- 3 (a) 8 (c) -3
(b) $\frac{1}{7}$ (d) 4

BAHAGIAN C

- 1 (a) Kecerunan / Gradient
 $= \frac{7-2}{5-3} = \frac{5}{2}$

$$(b) \frac{0-(-8)}{x-0} = -4$$

$$-4x = 8$$

$$x = -2$$

(c) Panjang / Length of OA
 $= 2(4) = 8$ unit / units

$$-\frac{4}{3} = -\frac{8}{x}$$

$$4x = 24$$

$$x = 6$$

Maka, koordinat B ialah (6, 0).
Hence, the coordinates of B is (6, 0).

- 2 (a) Kecerunan / Gradient
 $= \frac{7-(-5)}{-9-4} = \frac{12}{13}$

(b) (i) $\frac{10-n}{0-8} = -\frac{3}{4}$

$$10-n = 6$$

$$n = 4$$

- (ii) Koordinat / Coordinates of C
 $= (0, 4)$

(c) (i) Kecerunan / Gradient
 $= \frac{16-0}{12-4} = \frac{16}{8} = 2$

(ii) Kecerunan / Gradient
 $= -\frac{16}{4} = -4$

- 3 (a) $-\frac{y}{12} = -\frac{5}{6}$
- $$6y = 60$$
- $$y = 10$$
- Pintasan-y / y-intercept = 10

(b) $-\frac{10}{x} = 5$

$$x = -2$$

Pintasan-x / x-intercept = -2

$$(c) \frac{b-0}{3-12} = -\frac{5}{6}$$

$$b = -\frac{5}{6} \times (-9)$$

$$= 7\frac{1}{2}$$

- (d) K(0, 10), M(-2, 0)

BAB 11

Transformasi Isometri Isometric Transformation

BAHAGIAN A

- 1 C 2 A 3 C 4 C
5 C 6 C 7 A 8 C
9 B 10 B

BAHAGIAN B

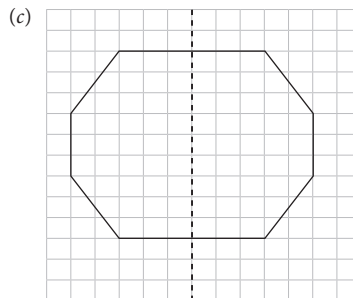
- 1 (a) Putaran / Rotation
(b) Pantulan / Reflection
(c) Translasi / Translation
(d) Pantulan / Reflection

- 2 (a) P'(-2, 4) (c) $\begin{pmatrix} -4 \\ 7 \end{pmatrix}$
(b) Q(8, 1) (d) (6, 3)

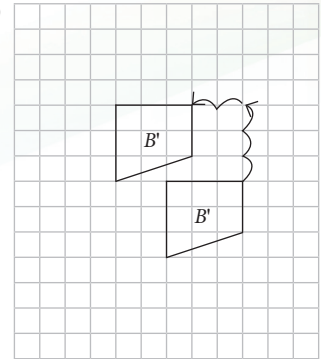
- 3 (a) Transformasi
Transformation
(b) Transformasi
Transformation
(c) Bukan transformasi
Not a transformation
(d) Transformasi
Transformation

BAHAGIAN C

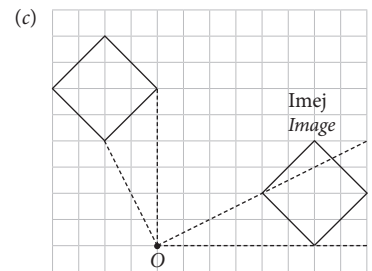
- 1 (a) (i) (7, 0)
(ii) (10, -10)
(b) (i) $\begin{pmatrix} 0-6 \\ 0-8 \end{pmatrix} = \begin{pmatrix} -6 \\ -8 \end{pmatrix}$
(ii) $\begin{pmatrix} 4-7 \\ -2-5 \end{pmatrix} = \begin{pmatrix} -3 \\ -7 \end{pmatrix}$



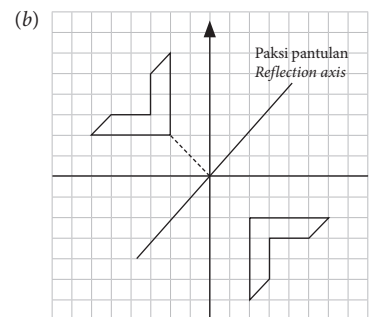
- 2 (a)



- (b) (i) $(5 + (-3), 1 + 2) = (2, 3)$
(ii) (1, 5)



- 3 (a) $\begin{pmatrix} 0+7 \\ p+5 \end{pmatrix} = \begin{pmatrix} x \\ 10 \end{pmatrix}$
- $$0+7=x, \quad p+5=10$$
- $$x=7, \quad p=5$$



- (c) (i) $R(-5 - (-4), 7 - 5)$
 $= R(-1, 2)$
(ii) $S'(4 + (-4), -1 + 5)$
 $= S'(0, 4)$

BAB 12

Sukatan Kecenderungan Memusat Measures of Central Tendencies

BAHAGIAN A

- 1 B 2 D 3 C 4 B
5 B 6 B 7 D 8 B
9 B 10 C

BAHAGIAN B

- 1 (a) ✓ (c) ✓
(b) ✓ (d) ✗

- 2 (a) 6 (c) 5.75
(b) 114.5 (d) 10

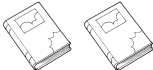
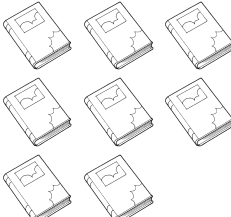
3

RM7	
RM8	

BAHAGIAN C

- 1 (a) (i) Mod / Mode = 5
(ii) Median = $\frac{5+5}{2} = 5$
(iii) Min / Mean
$$= \frac{1+4+5+5+7+15}{6} = 6.17$$
- (b) Set baru / New set
= 3, 12, 15, 15, 21, 45
Mod / Mode = 15
Median = 15
Min / Mean
$$= \frac{3+12+15+15+21+45}{6} = 18.5$$

- 2 (a) Jumlah buku / Total books
= $250 \times 4 = 1\,000$
Bilangan buku untuk bulan
Februari dan Mac / Number of
books in February and March
= $1\,000 - 200 - 300 = 500$
Bilangan buku
Number of books
Februari : Februari + Mac
February : February + March
 $1 : 1 + 4$
 $1 : 5$
 $100 : 500$
Februari / February
= 100 buah buku / books
Mac / March = $500 - 100$
= 400 buah buku
400 books

Februari February	
Mac March	

$$(b) \frac{14.5 + 17.5 + x + y + 19.5}{5} = 16.0$$

$$51.5 + x + y = 80$$

$$x + y = 28.5$$

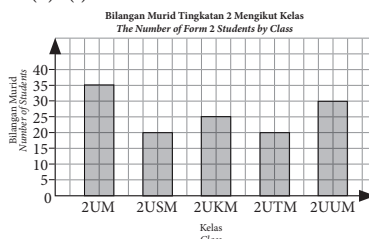
- (c) 2, 2, 3, 3, 4, 4, 6, 6, 6, 6
Median = 4
Mod / Mode = 6
Beza / Difference = $6 - 4 = 2$

3 (a) (i)

Jisim (g) Mass (g)	Gundalan Tally	Kekerapan Frequency
100 – 149		1
150 – 199		6
200 – 249		2
250 – 299		3
300 – 349		5
350 – 399		3

(ii) Kelas mod / Class of mode
= 150 – 199

(b) (i)



(ii) Mod / Mode = 2 UM

(iii) Min / Mean
$$= \frac{35 + 20 + 25 + 20 + 30}{5} = 26$$

BAB 13

Kebarangkalian Mudah Simple Probability

BAHAGIAN A

- 1 C 2 C 3 A 4 C
5 C 6 C 7 B 8 D
9 A 10 B

BAHAGIAN B

- 1 (a) $\frac{1}{4}$ (c) $\frac{2}{5}$
(b) 0.2 (d) 0.76

- 2 (a) $P(A') = \{G, K\}$
(b) $P(A') = \{1, 3, 7\}$
(c) $P(A') = \{1, 3, 4, 5, 7, 8, 9\}$
(d) $P(A') = \{2, 3, 15, 17\}$

BAHAGIAN C

- 1 (a) (i) $S = \{1, 2, 3, 4, 5, 6\}$
(ii) $P(A) = \frac{1}{2}$
(b) Bilangan tembakan yang tidak kena sasaran
The number of shots that did not hit the target
$$= 150 \times \left(1 - \frac{2}{3}\right) = 50$$

- (c) Jumlah bilangan pen = X
Total number of pens
 $\frac{1}{5} \times X = 20$
 $X = 100$
Bilangan pen ungu
Number of purple pens
$$= \left(1 - \frac{1}{5} - \frac{2}{5}\right) \times 100 = 40$$

- 2 (a) (i) A (Kuasa dua sempurna)
A (Perfect square)
= $\{1, 4, 9, 16, 25, 36, 49\}$
 $P(A) = \frac{7}{50}$
(ii) $B = \{4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48\}$
 $P(B) = \frac{12}{50} = \frac{6}{25}$
(iii) $C = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49\}$
 $P(C) = \frac{25}{50} = \frac{1}{2}$
(b) Kebarangkalian murid perempuan
Probability of female students
$$= 1 - \frac{2}{3} = \frac{1}{3}$$

Jumlah murid / Total students = Z
 $\frac{2}{3} \times Z = 30$
 $Z = 45$
Nilai y / Value of y
 $= 45 - 30 = 15$

- 3 (a) (i) $S = \{18, 27, 36, 45, 54, 63, 72, 81, 90\}$
 $n(S) = 9$
(ii) $P(\text{nombor genap}) = \frac{5}{9}$
 $P(\text{even number})$
(b) (i) $K = \{1, 8, 27, 64\}$
(ii) $L = \{1, 4, 9, 16, 25, 36, 49, 64, 81\}$
 $P(\text{nombor ganjil}) = \frac{5}{9}$
 $P(\text{odd number})$

UJIAN PERTENGAHAN SESI AKADEMIK

BAHAGIAN A

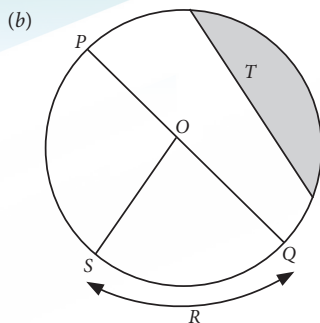
- 1 B 2 A 3 B 4 A
5 D 6 C 7 D 8 D
9 A 10 D 11 A 12 C
13 A 14 A 15 B 16 C
17 D 18 C 19 C 20 A

BAHAGIAN B

- 1 (a) $x = 15, y = 19$
(b) $x = 108, y = 12$
2 (a) ✓ (c) ✓
(b) ✗ (d) ✗

- 3 (a) 540° (c) $1\,080^\circ$
(b) 900° (d) $1\,440^\circ$

- 4 (a) (i) Diameter
(ii) Jejari / Radius
(iii) Panjang lengkok minor
Length of minor arc



- 5 (a) Prisma / Prism
(b) Kon / Cone
(c) Piramid / Pyramid
(d) Sfera / Sphere

BAHAGIAN C

- 1 (a) 1, 3, 13
(b) Nombor genap / Even numbers:
18, 28, 38, 48, 58, 68
Pola / Pattern:
Tambah 10 kepada nombor yang sebelumnya
Add 10 to the previous number
Nombor ganjil / Odd numbers:
7, 17, 27, 37, 47, 57, 67
Pola / Pattern:
Tambah 10 kepada nombor yang sebelumnya
Add 10 to the previous number
- (c) (i) 26, 32, 38, 44, 50, 56
Pola / Pattern:
Tambah 6 kepada nombor yang sebelumnya
Add 6 to the previous number
(ii) Sebutan ke-10 / 10th term
= $56 + 6 + 6 + 6 + 6 + 6 = 80$
- 2 (a) $(x - 4p)^2 + 5xp$
= $x^2 - 8xp + 16p^2 + 5xp$
= $x^2 - 3xp + 16p^2$
- (b) $\frac{21g}{3f + 12h} \times \frac{f^2 - 16h^2}{7fh}$
= $\frac{21g}{3(f + 4h)} \times \frac{(f + 4h)(f - 4h)}{7fh}$
= $\frac{g(f - 4h)}{fh}$
- (c) (i) $3x^2 - 48 = 3(x^2 - 16)$
= $3(x^2 - 4^2)$
= $3(x + 4)(x - 4)$
(ii) $9x^2 + 9x - 10$
= $(3x - 2)(3x + 5)$

- 3 (a) $V = \frac{4}{3}\pi r^3$
 $3V = 4\pi r^3$
 $r = \sqrt[3]{\frac{3V}{4\pi}}$
- (b) $2t - 7 = \frac{13 - 4r}{5}$
 $2(6) - 7 = \frac{13 - 4r}{5}$
 $5 = \frac{13 - 4r}{5}$
 $25 = 13 - 4r$
 $4r = -12$
 $r = -3$
- (c) (i) $v^2 = u^2 + 2as$
 $v^2 - u^2 = 2as$
 $a = \frac{v^2 - u^2}{2s}$
(ii) $a = \frac{9^2 - 5^2}{2(7)} = 4$
- 4 (a) $a + 45^\circ + 130^\circ + 135^\circ + 90^\circ + 75^\circ = 540^\circ$
 $a + 475^\circ = 540^\circ$
 $a = 65^\circ$

- (b) Saiz sudut pedalaman pentagon
Size of the interior angles of pentagon
= $\frac{3 \times 180^\circ}{5}$

= 108°
Saiz sudut pedalaman oktagon
Size of the interior angles of octagon

$$= \frac{6 \times 180^\circ}{8} = 135^\circ$$

$$y = 360^\circ - 108^\circ - 135^\circ = 117^\circ$$

- (c) $x = \frac{180^\circ - 108^\circ}{2} = 36^\circ$
 $y = \frac{3 \times 180^\circ}{5} = 108^\circ$

- 5 (a) Luas kawasan berllorek
Area of shaded region

$$= \frac{130^\circ}{360^\circ} \times \frac{22}{7} \times 7.5^2$$

$$= 63.84 \text{ cm}^2$$

- (b) Panjang / Length of OT

$$= 2OQ$$

$$\text{Panjang / Length of } OQ = \frac{14 \text{ cm}}{2} = 7 \text{ cm}$$

$$\text{Panjang lengkok RT} = \frac{35^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14$$

$$= 8.56 \text{ cm}$$

$$\text{Panjang lengkok PQ} = \frac{35^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 7$$

$$= 4.28 \text{ cm}$$

$$\text{Perimeter} = 8.56 + 4.28 + 7 + 7 + 14 + 14$$

$$= 54.84 \text{ cm}$$

- (c) Luas kawasan berllorek
Area of shaded region
= Luas segi empat / Area of rectangle -
Luas semi bulatan / Area of semi circle
= $(16 \times 9) - 2 \left(\frac{1}{2} \times \frac{22}{7} \times 4^2 \right)$
= $144 - 50.29$
= 93.71 cm^2

- 6 (a) (i) $h = \sqrt{10^2 - 6^2}$
= $\sqrt{64}$
= 8 cm
(ii) Jumlah luas permukaan
Total surface area
= $2 \left(\frac{1}{2} \times 8 \times 12 \right) + (20 \times 12) + 2(20 \times 10)$
= $96 + 240 + 400$
= 736 cm^2
- (b) (i) Jumlah isi padu = $102\,000\pi$
Total volume
 $\left(\frac{1}{3} \times \pi \times r^2 \times 40 \right) + (\pi \times r^2 \times 100) = 102\,000\pi$
 $\frac{40}{3} \pi r^2 + 100\pi r^2 = 102\,000\pi$
 $\frac{340}{3} \pi r^2 = 102\,000\pi$
 $r = 30 \text{ cm}$
(ii) $s = \sqrt{30^2 + 40^2}$
= $\sqrt{2\,500}$
= 50 cm

UJIAN AKHIR SESI AKADEMIK

BAHAGIAN A

- | | | | |
|------|------|------|------|
| 1 D | 2 D | 3 A | 4 B |
| 5 A | 6 A | 7 C | 8 C |
| 9 B | 10 D | 11 C | 12 D |
| 13 B | 14 B | 15 C | 16 A |
| 17 C | 18 C | 19 B | 20 A |

BAHAGIAN B

- 1 (a) (i) $4(x + 5)$ (ii) $16m(m - 5)$
(b) $r - 5, \frac{(r - 5)^3}{q}$
- 2 (a) M (c) (M, T)
(b) N (d) (N, T)
- 3 Luas sektor / Area of sector
= $\frac{285^\circ}{360^\circ} \times \frac{22}{7} \times \frac{10.5^2}{2}$
= $247 \frac{5}{16} \text{ cm}^2$
- 4 (a) Benar / True
(b) Benar / True
(c) Palsu / False
(d) Benar / True
- 5 (a) (i) $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ (ii) $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$
(b) (i) ✗ (ii) ✓

BAHAGIAN C

- 1 (a) $x = 8 - 3 = 5$
 $y = 8 + 12 = 20$
 $z = 20 + 28 = 48$
 $x + y + z = 5 + 20 + 48 = 73$
- (b) (i) $2x(2 - 3xy)$
(ii) $5^2m^2 - 6^2n^2$
 $= (5m + 6n)(5m - 6n)$
- (c) $\frac{5h}{3} - \frac{4h}{9k} = \frac{5h(9k) - 4h(3)}{3 \times 9k}$
 $= \frac{45hk - 12h}{27k}$
 $= \frac{3h(15k - 4)}{27k}$
 $= \frac{h(15k - 4)}{9k}$
- 2 (a) $\frac{3(r-2)}{4} = 2r - 3$
 $3r - 6 = 4(2r - 3)$
 $3r - 6 = 8r - 12$
 $5r = 6$
 $r = \frac{6}{5}$
 $= 1\frac{1}{5}$
- (b) $2pq = 3r^3 - \frac{q^2}{2}$
 $3r^3 = 2pq + \frac{q^2}{2}$
 $r^3 = \frac{\left(2pq + \frac{q^2}{2}\right)}{3}$
 $r^3 = \frac{4pq + q^2}{6}$
 $r = \sqrt[3]{\frac{4pq + q^2}{6}}$
- (c) Jumlah pembelian
Purchased amount
 $= \text{RM}(8x + y)$
Baki / Balance
 $= \text{RM}(130 - 8x - 13y)$
- 3 (a) $p = 360^\circ - 108^\circ - 120^\circ = 132^\circ$
 $r = 360^\circ - 120^\circ = 240^\circ$
 $\frac{2(240) + 3(132)}{5} = 175.2^\circ$
- (b) Perimeter $= 9.75 \text{ cm}$
 $j + j + \left(\frac{45^\circ}{360^\circ} \times 2 \times 3.142 \times j\right) = 9.75$
 $2j + 0.7855j = 9.75$
 $j = 3.5 \text{ cm}$
- (c) $x = 65^\circ$
 $y = 900^\circ - 10^\circ - 128^\circ - 81^\circ - 179^\circ - 160^\circ - 157^\circ$
 $= 185^\circ$
 $3x + y = 3(65^\circ) + 185^\circ$
 $= 380^\circ$

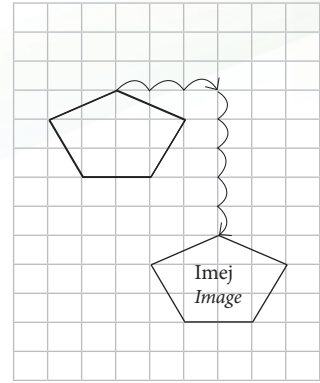
- 4 (a) (i) Katakan jejari / Let radius
 $= r \text{ cm}$
Panjang lengkok MN
Length of arc MN
 $= 3r \text{ cm}$
 $\frac{\theta}{360^\circ} \times 2 \times 3.142 \times r = 3r$
 $\theta = \frac{3r \times 360}{r \times 2 \times 3.142}$
 $= 171.9^\circ$
- (ii) Luas / Area
 $= \frac{171.9}{360} \times 3.142 \times 12^2$
 $= 216.04 \text{ cm}^2$
- (b) (i) Jarak / Distance of AB
 $= \sqrt{(10-1)^2 + (-4-8)^2}$
 $= \sqrt{81 + 144}$
 $= 15 \text{ unit / units}$
- (ii) Titik tengah / Midpoint of AB
 $= \left(\frac{-4+8}{2}, \frac{10+1}{2}\right)$
 $= (2, 5.5)$
- 5 (a) Isi padu / Volume $= 1\,810.28$
 $\frac{1}{3} \times 3.142 \times j^2 \times 4j + \frac{4}{3} \times$
 $3.142 \times j^3 = 1\,810.28$
 $4.19j^3 + 4.19j^3 = 1\,810.28$
 $8.38j^3 = 1\,810.28$
 $j^3 = 216$
 $j = 6 \text{ cm}$

(b)

x	0	1	2	3	4
L	1	5	12	21	32

- (b) Kecerunan / Gradient $= -\frac{5}{4}$
 $\frac{3-m}{-3-5} = -\frac{5}{4}$
 $\frac{3-m}{-8} = -\frac{5}{4}$
 $3-m = -\frac{5}{4}(-8)$
 $m = -7$

6 (a)



- (b) $\frac{35 + 28 + M + 47 + 36}{5} = 42$
 $146 + M = 210$
 $M = 64$
- (c) (i) $\frac{26}{140} = \frac{13}{70}$
(ii) $\frac{55}{140} = \frac{11}{28}$
(iii) $\frac{35}{140} = \frac{1}{4}$