Jawapan

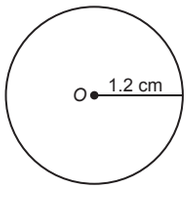
Bab 5

1.

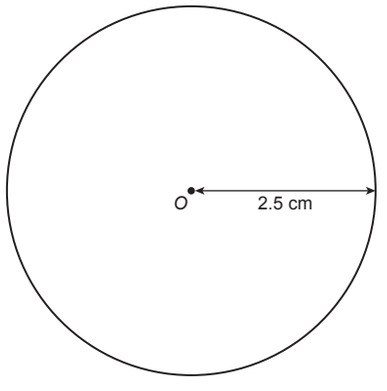
a	Diameter *Diameter*	Jarak di antara pusat bulatan dengan sebarang titik pada lilitan. *Distance between the centre of a circle and any point on the circumference.*
b	Perentas *Chord*	Suatu garis lurus yang menyambungkan dua titik pada lilitan. *A straight line which joins two points on the circumference.*
c	Pusat bulatan *Centre of circle*	Perimeter bagi suatu bulatan. *Perimeter of a circle.*
d	Jejari *Radius*	Suatu titik tetap dalam bulatan yang sama jarak dari semua titik pada lilitan. *A fixed point that is equidistant from all points on the circumference.*
O	Lilitan *Circumference*	Suatu garis lurus yang melalui pusat bulatan dan kedua-dua hujung garis itu berada pada lilitan. *A line which passes through the centre of a circle and both ends of the line are on the circumference.*

2. (a) Sektor minor / *Minor sector*
(b) Tembereng minor / *Minor segment*
(c) Lengkok minor / *Minor arc*
(d) Sektor major / *Major sector*
(e) Lilitan / *Circumference*
(f) Tembereng major / *Major segment*

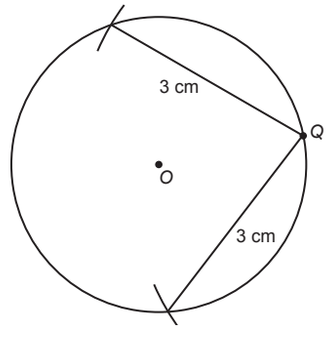
3. (a)



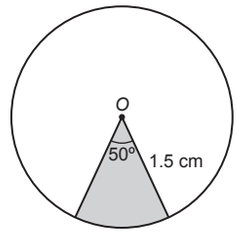
(b)



(c)



(d)



4. (a) (i) diameter; paksi simetri
diameter; axis of symmetry

(ii) tidak terhingga
infinite

(iii) diameter
diameter

(b) (i) *OS; PR; PQ = QR;* pembahagi dua sama serenjang
OS; PR; PQ = QR, perpendicular bisector

(ii) berserenjang
perpendicular

(c) (i) *AB; XW*

(ii) *CD; YZ*

(iii) pusat bulatan, *O*
centre of the circle, O

(d) (i) sama panjang
same length

(ii) lengkok *RXS;* lengkok *PYQ*
arc RXS; arc PYQ

(e) (i) *AO; BO*

(ii) sama panjang
same length

5. $\frac{DE}{CD} = \frac{9}{4}$

$DE = \frac{9}{4}(1.6)$

$= 3.6$ cm

$OB = OE = \frac{CD + DE}{2}$

$= \frac{1.6 + 3.6}{2}$

$= 2.6$ cm

$DB = \sqrt{OB^2 - OD^2}$

$= \sqrt{2.6^2 - (2.6 - 1.6)^2}$

$= \sqrt{5.76}$

$= 2.4$ cm

$AB = 2 \times 2.4$

$= 4.8$ cm

6. Jejari / *Radius*, $OQ = OS = 13$ mm

$PT = TQ = \frac{10}{2} = 5$ mm

$RU = US = \frac{24}{2} = 12$ mm

$OT = \sqrt{OQ^2 - TQ^2}$

$= \sqrt{13^2 - 5^2}$

$= 12$ mm

$OU = \sqrt{OS^2 - US^2}$

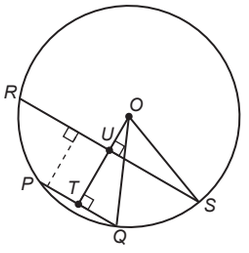
$= \sqrt{13^2 - 12^2}$

$= 5$ mm

$x = OT - OU$

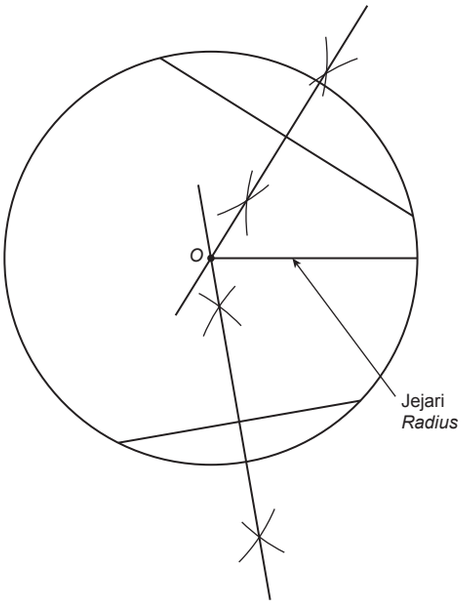
$= 12 - 5$

$= 7$



- *OT* membahagi dua sama serenjang *PQ*.
OT divides PQ into two parts of equal length.
- *OU* membahagi dua sama serenjang *RS*.
OU divides RS into two parts of equal length.

7.



Jejari/ *Radius* = 2.8 cm

8. (a) Lebar / *Width* = diameter
$= 2 \times 20$ cm
$= 40$ cm

Panjang / *Length* = $5 \times$ diameter
$= 5 \times 40$ cm
$= 200$ cm

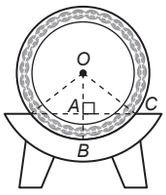
Luas / *Area* = 200×40
$= 8\,000$ cm^2

(b) Diameter $X = 2 \times 15 = 30$ cm
Diameter $Y = 2 \times 17 = 34$ cm
Diameter $Z = 2 \times 19 = 38$ cm

Bola *X* dan *Y*. Diameter kedua-dua bola ini lebih kecil daripada diameter jaring.
Balls X and Y. The diameter of both balls are smaller than the diameter of the netted hoop.

(c) Andaikan piring *P* muat dengan sempurna pada pemegang itu.
Assume plate P fits perfectly on the holder.

Jejari piring *P*/ *Radius of plate P* = 5 cm



$AC = 8 \div 2 = 4$ cm

$OA = \sqrt{OC^2 - AC^2}$

$= \sqrt{5^2 - 4^2}$

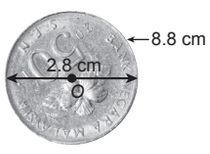
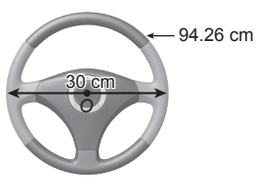
$= 3$ cm

$AB = 5 - 3$

$= 2$ cm

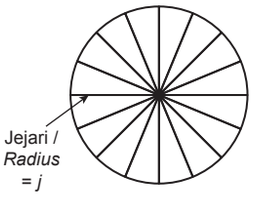
Maka, piring *P* dapat muat dengan sempurna.
Thus, plate P can fit perfectly on the holder.

9.

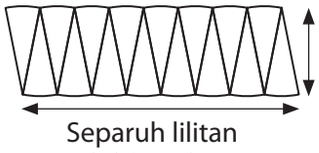
Objek *Object*	**Lilitan** *Circumference*	**Diameter** *Diameter*	**Lilitan/ *Circumference*** / **Diameter/ *Diameter***
(a) 	8.8 cm	2.8 cm	$\frac{8.8}{2.8} = 3.142$
(b) 	94.26 cm	30 cm	$\frac{94.26}{30} = 3.142$

- Nisbah lilitan kepada diameter sebuah bulatan dikenali sebagai π, dengan sebutan 'pi' dan mempunyai nilai 3.142 atau $\frac{22}{7}$.
  The ratio of circumference to diameter of a circle is known as π, pronounce as 'pi' and has the value of 3.142 *or* $\frac{22}{7}$.

10.



Susun sektor-sektor bulatan menjadi segi empat selari
Arrange the sectors to form a parallelogram



Jejari
Radius

Separuh lilitan
Half of circumference

$= \frac{1}{2} \times$ Lilitan *Circumference*

Maka, luas bulatan = Luas segi empat selari
Thus, area of circle *Area of parallelogram*

= Tapak × Tinggi
Base *Height*

$= \frac{1}{2} \times$ Lilitan *Circumference* × Jejari *Radius*

$= \frac{1}{2} \times 2\pi j \times j$

$= \pi j^2$

11. (a) Lilitan/ *Circumference*
$= \pi d$
$= \frac{22}{7} \times 100.1$
$= 314.6$ cm

(b) Lilitan/ *Circumference*
$= \pi d$
$= 3.142 \times 70$
$= 219.94$ cm

(c) Lilitan/ *Circumference*
$= 2\pi j$
$= 2 \times \frac{22}{7} \times 28$
$= 176$ cm

(d) Lilitan/ *Circumference*
$= 2\pi j$
$= 2 \times 3.142 \times 50$
$= 314.2$ cm

(e) $\pi d = 171.2$
$3.142 \times d = 171.2$
$d = \frac{171.2}{3.142}$
$= 54.5$ cm

(f) $\pi d = \frac{33}{14}$
$\frac{22}{7} \times d = \frac{33}{14}$
$d = \frac{33}{14} \times \frac{7}{22}$
$= 0.75$ cm

(g) $2\pi j = 47.13$
$2 \times 3.142 \times j = 47.13$
$j = \frac{47.13}{2 \times 3.142}$
$= 7.5$ cm

(h) $2\pi j = 46\frac{1}{5}$
$2 \times \frac{22}{7} \times j = \frac{231}{5}$
$j = \frac{231}{5} \times \frac{7}{44}$
$= 7.35$ cm

12. (a) Luas / *Area* $= \pi j^2$
$= 3.142 \times 4^2$
$= 50.27$ m^2

(b) Luas / *Area* $= \pi j^2$
$= \frac{22}{7} \times \left(\frac{10.5}{2}\right)^2$
$= 86.63$ cm^2

(c) Luas / *Area* $= \pi j^2$
$= 3.142 \times 6.5^2$
$= 132.75$ cm^2

(d) Luas / *Area* $= \pi j^2$
$3\,850 = \frac{22}{7} \times j^2$
$j = \sqrt{3\,850 \times \frac{7}{22}}$
$= 35$ cm
$d = 2 \times 35$
$= 70$ cm

(e) Luas / *Area* $= \pi j^2$
$706.95 = 3.142 \times j^2$
$j = \sqrt{706.95 \div 3.142}$
$= 15$ cm

(f) Luas / *Area* $= \pi j^2$
$452\frac{4}{7} = \frac{22}{7} \times j^2$
$j = \sqrt{\frac{3\,168}{7} \times \frac{7}{22}}$
$= 12$ cm

13. (a) $2\pi j = 13.2$
$2 \times \frac{22}{7} \times j = 13.2$
$j = 13.2 \times \frac{7}{44}$
$= 2.1$ cm

Luas bulatan/ *Area of circle*
$= \pi j^2$
$= \frac{22}{7} \times 2.1^2$
$= 13.86$ cm^2

(b) $2\pi j = 92.46$
$2 \times \frac{22}{7} \times j = 92.46$
$j = 92.46 \times \frac{7}{44}$
$=14.7$ cm

Luas bulatan/ *Area of circle*
$= \pi j^2$
$= \frac{22}{7} \times 14.7^2$
$= 679.14$ cm^2

(c) $2\pi j = 62.84$
$2 \times \frac{22}{7} \times j = 62.84$
$j = 62.84 \times \frac{7}{44}$
$= 10$ cm

Luas bulatan/ *Area of circle*
$= \pi j^2$
$= \frac{22}{7} \times 10^2$
$= 314.29$ cm^2

14. (a) $\pi j^2 = 706.95$

$\frac{22}{7} \times j^2 = 706.95$

$j = \sqrt{706.95 \times \frac{7}{22}}$

$= 15$ cm

Lilitan bulatan/ *Circumference of circle*

$= 2\pi j$

$= 2 \times \frac{22}{7} \times 15$

$= 94.29$ cm

(b) $\pi j^2 = 154$

$\frac{22}{7} \times j^2 = 154$

$j = \sqrt{154 \times \frac{7}{22}}$

$= 7$ cm

Lilitan bulatan/ *Circumference of circle*

$= 2\pi j$

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

$= 44$ cm

(c) $\pi j^2 = 17\frac{1}{9}$

$\frac{22}{7} \times j^2 = \frac{154}{9}$

$j = \sqrt{\frac{154}{9} \times \frac{7}{22}}$

$= 2.33$ cm

Lilitan bulatan/ *Circumference of circle*

$= 2\pi j$

$= 2 \times \frac{22}{7} \times 2.33$

$= 14.65$ cm

15. (a) $x = \frac{280°}{360°} \times 2 \times \frac{22}{7} \times 8$

$= 39.11$

(b) $x = \frac{160°}{360°} \times 2 \times \frac{22}{7} \times 18$

$= 50.29$

(c) $\theta = 360° - 60°$

$= 300°$

$x = \frac{300°}{360°} \times 2 \times \frac{22}{7} \times 7$

$= 36.67$

(d) $\theta = 360° - 210°$

$= 150°$

$x = \frac{150°}{360°} \times 2 \times \frac{22}{7} \times 6$

$= 15.71$

16. (a) $\frac{\theta}{360°} = \frac{11}{2 \times \frac{22}{7} \times 9}$

$= \frac{7}{36}$

$\theta = \frac{7}{36} \times 360°$

$= 70°$

(b) $\frac{\theta}{360°} = \frac{16.5}{2 \times \frac{22}{7} \times 4.5}$

$= \frac{7}{12}$

$\theta = \frac{7}{12} \times 360°$

$= 210°$

17. (a) $16.5 = \frac{90°}{360°} \times 2 \times \frac{22}{7} \times j$

$= \frac{11}{7} \times j$

$j = 16.5 \times \frac{7}{11}$

$= 10.5$

(b) $27.5 = \frac{225°}{360°} \times 2 \times \frac{22}{7} \times j$

$= \frac{55}{14} \times j$

$j = 27.5 \times \frac{14}{55}$

$= 7$

18. (a) Luas sektor berlorek

Area of the shaded sector

$= \frac{230°}{360°} \times \frac{22}{7} \times 7^2$

$= 98.39$ cm^2

(b) Luas sektor berlorek

Area of the shaded sector

$= \frac{220°}{360°} \times \frac{22}{7} \times 3^2$

$= 17.29$ cm^2

(c) $\theta = 360° - 80°$

$= 280°$

Luas sektor berlorek

Area of the shaded sector

$= \frac{280°}{360°} \times \frac{22}{7} \times 5^2$

$= 61.11$ cm^2

(d) $\theta = 360° - 240°$

$= 120°$

Luas sektor berlorek

Area of the shaded sector

$= \frac{120°}{360°} \times \frac{22}{7} \times 6^2$

$= 37.71$ cm^2

19. (a) $9\frac{3}{7} = \frac{\theta}{360°} \times \frac{22}{7} \times 6^2$

$\theta = \frac{66}{7} \times 360° \times \frac{7}{22} \times \frac{1}{36}$

$= 30°$

(b) $16\frac{1}{2} = \frac{\theta}{360°} \times \frac{22}{7} \times 3^2$

$\theta = \frac{33}{2} \times 360° \times \frac{7}{22} \times \frac{1}{9}$

$= 210°$

20. (a) $49.5 = \frac{70°}{360°} \times \frac{22}{7} \times j^2$

$= \frac{11}{18} \times j^2$

$j^2 = 49.5 \times \frac{18}{11}$

$= 81$

$j = \sqrt{81}$

$= 9$

(b) $66 = \frac{210°}{360°} \times \frac{22}{7} \times j^2$

$= \frac{11}{6} \times j^2$

$j^2 = 66 \times \frac{6}{11}$

$= 36$

$j = \sqrt{36}$

$= 6$

21. (a) Jejari = *ON*
Radius = ON

Oleh sebab *MP* = *PN*,
Since MP = PN,

$PN = \frac{MN}{2}$

$= \frac{7}{2}$

$= 3.5$ cm

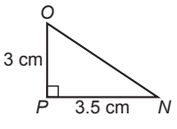
$ON^2 = OP^2 + PN^2$

$= 3^2 + 3.5^2$

$= 21.25$

$ON = \sqrt{21.25}$

$= 4.61$ cm



Lilitan
Circumference
$= 2\pi j$
$= 2 \times 3.142 \times 4.61$
$= 28.97$ cm

(b) Diameter bulatan *P* = 20 cm
Diameter of circle P = 20 cm

Jejari bulatan $P = \frac{20}{2} = 10$ cm
Radius of circle P $= \frac{20}{2} = 10$ cm

Diameter bulatan *Q* = Jejari bulatan *P*
Diameter of circle Q *Radius of circle P*
= 10 cm

Jejari bulatan $Q = \frac{10}{2} = 5$ cm
Radius of circle Q $= \frac{10}{2} = 5$ cm

Maka, diameter bulatan *R* = 5 cm
Thus, diameter of circle R = 5 cm

(i) Nisbah diameter bulatan *R* kepada bulatan *P*
Ratio of the diameter of circle R to circle P
= 5 : 20
= 1 : 4

(ii) Luas bulatan $Q = \frac{22}{7} \times \left(\frac{10}{2}\right)^2 = 78.57$ cm^2
Area of circle Q

Luas bulatan $R = \frac{22}{7} \times \left(\frac{5}{2}\right)^2 = 19.64$ cm^2
Area of circle R

Beza / *Difference* = 78.57 cm^2 – 19.64 cm^2
= 58.93 cm^2

(c) (i) Nilai sudut tercangkum/ *Angle subtended*
$= \frac{2.4}{6} \times 360°$
$= 144°$

Luas sektor/ *Area of sector*
$= \frac{144°}{360°} \times \frac{22}{7} \times 5^2$
$= 31.43$ cm^2

(ii) Jisim satu botol/ *Mass of a bottle*
$= 2.4 \div 3$
$= 0.8$ kg

Jisim lima botol/ *Mass of five bottles*
$= 0.8 \times 5$
$= 4$ kg

Nilai sudut yang terbentuk/ *Angle formed*
$= \frac{4}{6} \times 360°$
$= 240°$

Panjang lengkok minor/ *Length of minor arc*
$= \frac{360° - 240°}{360°} \times 2 \times \frac{22}{7} \times 5$
$= 10.48$ cm

(d) (i) Perimeter tasik/ *Perimeter of the lake*

$= OK + KL + LM + MN + NO$

$= 7.5 + \left[\frac{(35° + 90°)}{360°} \times 2 \times \frac{22}{7} \times 7.5\right]$

$+ \frac{7.5}{2} + \left[\frac{90°}{360°} \times 2 \times \frac{22}{7} \times \frac{7.5}{2}\right] + \frac{7.5}{2}$

$= 7.5 + 16.37 + 3.75 + 5.89 + 3.75$

$= 37.26$ m

(ii) Luas tasik/ *Area of the lake*

= Luas sektor *KLO* – Luas sukuan bulatan *MNO*

Area of sector KLO – Area of quadrant MNO

$= \left[\frac{(90° + 35°)}{360°} \times \frac{22}{7} \times 7.5^2\right] - \left[\frac{90°}{360°} \times \frac{22}{7} \times \left(\frac{7.5}{2}\right)^2\right]$

$= 61.38 - 11.05$

$= 50.33$ m^2

Praktis Masteri 5

BAHAGIAN A

1. Jawapan / *Answer*: **C**

2. Lilitan / *Circumference* $= \pi d$

$(3.142)d = 78.55$

$d = 25$ m

Jawapan / *Answer*: **C**

3. Panjang lengkok / *length of the arc*

$= \frac{\theta}{360°} \times 2\pi j$

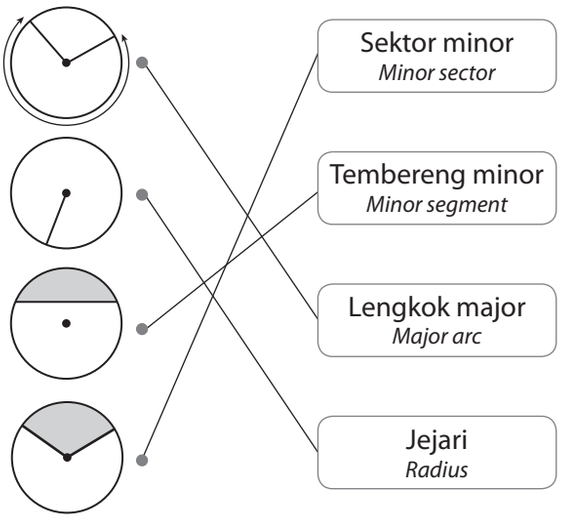
$= \frac{256°}{360°} \times 2 \times \frac{22}{7} \times 7$

$= 31\frac{13}{45}$ cm

Jawapan / *Answer*: **C**

BAHAGIAN B

4.



5. (a)

Jejari *Radius* **(cm)**	**Lilitan** *Circumference* **(cm)**	**Luas bulatan** *Area of circle* **(cm^2)**	**Lilitan $\times$ $\frac{\text{Jejari}}{2}$** *Circumference* $\times$ $\frac{\textit{Radius}}{2}$
5	31.42	78.55	$31.42 \times \frac{5}{2}$ $= 78.55$
12	75.408	452.45	$75.408 \times \frac{12}{2}$ $= 452.45$
35	219.94	3 848.95	$219.94 \times \frac{35}{2}$ $= 3\,848.95$

(b) Lilitan $\times \frac{\text{Jejari}}{2}$ = Luas Bulatan

Circumference $\times \frac{\textit{Radius}}{2}$ = *Area of circle*

BAHAGIAN C

6. (a) $AO = 17 - 9 = 8$ cm

$AO^2 + AC^2 = CO^2$

$8^2 + AC^2 = 17^2$

$AC = 15$ cm

$CE = AC = 15$ cm

(b) Sudut kawasan berlorek

Angle of the shaded region

$= \frac{60°}{3}$

$= 20°$

Luas kawasan berlorek

Area of the shaded region

$= \frac{20°}{360°} \times \frac{22}{7} \times 28^2$

$= 136.89$ cm^2

(c) (i) Luas bulatan *C*

Area of circle C

$= \frac{22}{7} \times 3.5^2$

$= 38.5$ m^2

Luas semibulatan *A*

Area of semicircle A

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

$= 77$ m^2

Luas semibulatan *B*

Area of semicircle B

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

$= 308$ m^2

(ii) Luas kawasan selebihnya
Area of the rest of space

$= \left(\frac{22}{7} \times 17.5^2\right) - 38.5 - 77 - 308$

$= 539 \text{ m}^2$

Kos menanam rumput
Cost of planting the grass

$= 539 \times \text{RM}32.00 = \text{RM}17\,248.00$

Fokus KBAT

(a) Luas semibulatan besar
Area of the large semicircle

$= \frac{1}{2} \times \frac{22}{7} \times 14^2 = 308 \text{ cm}^2$

Luas semibulatan kecil
Area of the small semicircle

$= \frac{1}{2} \times \frac{22}{7} \times 7^2 = 77 \text{ cm}^2$

Luas bulatan / *Area of circle*

$= \frac{22}{7} \times 0.5^2 = \frac{11}{14} \text{ cm}^2$

Luas mahkota / *Area of the crown*

$= 308 - 2(77) + 3\left(\frac{11}{14}\right)$

$= 156.36 \text{ cm}^2$

(b) Lilitan semibulatan besar
The circumference of large semicircle

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

$= 44 \text{ cm}$

Lilitan semibulatan kecil
The circumference of small semicircle

$= \frac{1}{2} \times 2 \times \frac{22}{7} \times 7$

$= 22 \text{ cm}$

Lilitan bulatan / *The circumference of the circle*

$= 2 \times \frac{22}{7} \times 0.5$

$= \frac{22}{7} \text{ cm}$

Jumlah panjang lampu LED yang diperlukan
Total length of LED light needed

$= 44 + 2(22) + 3\left(\frac{22}{7}\right)$

$= 97.43 \text{ cm}$