



**Level: Form 2**

**Subject: Mathematics**

**Chapter 4: Polygon**

**Subtopics:**



# BAB 4: Poligon

## Polygons

### PBD 4.1 Poligon Sekata

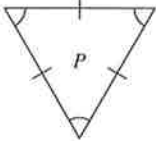
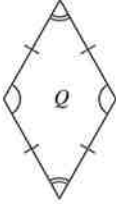
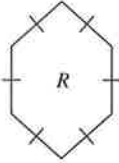
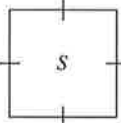
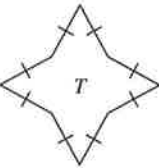
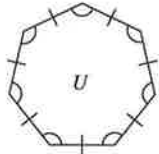
Buku Teks: m.s. 56 – 58

**NOTA**

Poligon sekata mempunyai semua sisi yang sama panjang dan semua sudut pedalaman yang sama besar.  
*A regular polygon has all sides of equal length and all interior angles of equal size.*

A. Kelaskan poligon yang berikut kepada poligon sekata dan poligon tak sekata.

*Classify the following polygons into regular polygons and irregular polygons. SP4.1.1 TP1*

Poligon sekata  
*Regular polygon*

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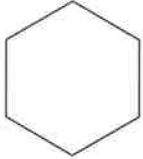
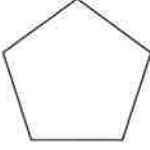
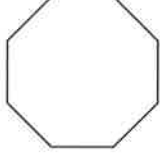
}

Poligon tak sekata  
*Irregular polygon*

---

B. Lengkapkan jadual di bawah.

*Complete the table. SP4.1.1 TP1*

Poligon sekata <i>Regular polygon</i>	<b>CONTOH</b> 	1. 	2. 
Nama poligon <i>Name of polygon</i>	Heksagon <i>Hexagon</i>		
Bilangan sisi <i>Number of sides</i>	6		
Bilangan bucu <i>Number of vertices</i>	6		
Bilangan paksi simetri <i>Number of axes of symmetry</i>	6		

# BAB 4: Poligon

## Polygons



Pautan Digital

### **PBD** 4.1 Poligon Sekata

**A.** Bina poligon sekata yang berikut dengan menggunakan jangka lukis dan pembaris sahaja.

*Construct the following regular polygons by using only a pair of compasses and a ruler. SP4.1.2 TP2*

1. Segi empat sama sisi dengan sisi 5 cm  
*A square with sides of 5 cm*
2. Heksagon sekata dengan sisi 2.5 cm  
*A regular hexagon with sides of 2.5 cm*

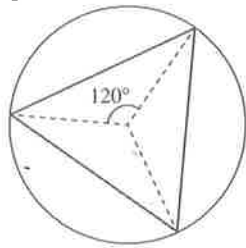
**B.** Lukis poligon sekata yang berikut dengan membahagi sama rata sudut pada pusat bulatan.

*Draw the following regular polygons by dividing equally the angles at the centres of the circles. SP4.1.2 TP2*

**CONTOH**

Segi tiga sama sisi  
*Equilateral triangle*

$$\frac{360^\circ}{3} = 120^\circ$$



2. Oktagon sekata  
*Regular octagon*

1. Segi empat sama  
*Square*

3. Heksagon sekata  
*Regular hexagon*

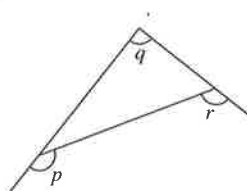
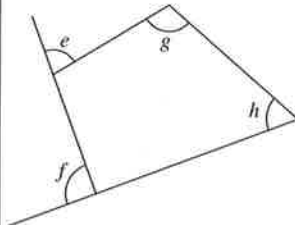
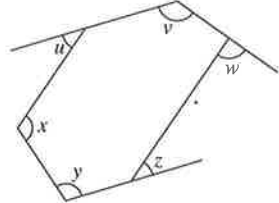
# BAB 4: Poligon

## Polygons

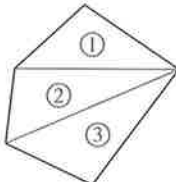
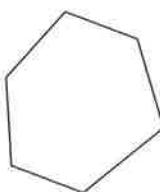

### PBD 4.2 Sudut Pedalaman dan Sudut Peluaran Poligon

Buku Teks: m.s. 62 – 64

A. Nyatakan semua sudut pedalaman dan sudut peluaran bagi setiap poligon yang berikut.  
 State all the interior angles and exterior angles of each of the following polygons. **SP4.2.1 TP3**

Poligon Polygon	<b>CONTOH</b> 	<b>1.</b> 	<b>2.</b> 	
	Sudut pedalaman Interior angle	q		
	Sudut peluaran Exterior angle	p, r		

B. Lengkapkan jadual di bawah.  
 Complete the table. **SP4.2.1 TP3**

Poligon Polygon	<b>CONTOH</b> 	<b>1.</b> 	<b>2.</b> 	
	Bilangan sisi Number of sides	5		
	Bilangan segi tiga Number of triangles	3		
	Hasil tambah sudut pedalaman Sum of interior angles	$3 \times 180^\circ = 540^\circ$		

# BAB 4: Poligon

## Polygons

### PBD 4.2 Sudut Pedalaman dan Sudut Peluaran Poligon

Buku Teks: m.s. 62 – 64

**NOTA**

- Hasil tambah sudut pedalaman poligon dengan  $n$  sisi =  $(n - 2) \times 180^\circ$   
*Sum of interior angles of a polygon with  $n$  sides =  $(n - 2) \times 180^\circ$*

A. Cari hasil tambah sudut pedalaman bagi setiap poligon yang berikut.  
*Find the sum of interior angles of each of the following polygons. SP4.2.1 TP3*

**CONTOH**

Pentagon/Pentagon

$$(5 - 2) \times 180^\circ = 3 \times 180^\circ$$

$$= 540^\circ$$

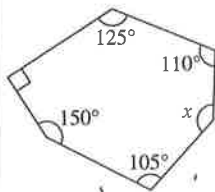
1. Segi empat selari/Parallelogram

2. Heptagon/Heptagon

3. Nonagon/Nonagon

B. Cari nilai  $x$  dalam setiap poligon yang berikut.  
*Find the value of  $x$  in each of the following polygons. SP4.2.3 TP3*

**CONTOH**



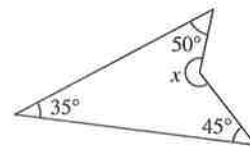
Hasil tambah sudut pedalaman  
*Sum of interior angles*  
 $= (6 - 2) \times 180^\circ$   
 $= 720^\circ$

$$x + 110^\circ + 125^\circ + 90^\circ + 150^\circ + 105^\circ = 720^\circ$$

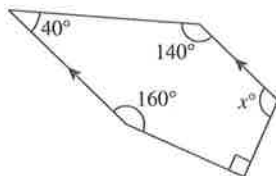
$$x + 580^\circ = 720^\circ$$

$$x = 140^\circ$$

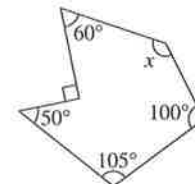
1.



2.



3.



# BAB 4: Poligon

## Polygons

### PBD 4.2 Sudut Pedalaman dan Sudut Peluaran Poligon

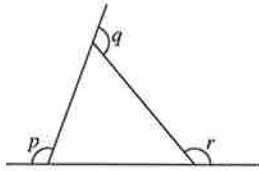
Buku Teks: m.s. 64 – 65

**NOTA**

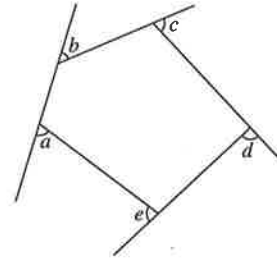
- Hasil tambah sudut peluaran sebuah poligon =  $360^\circ$   
Sum of exterior angles of a polygon =  $360^\circ$

A. Ukur sudut-sudut peluaran bagi setiap poligon yang berikut dengan protractor. Seterusnya, cari hasil tambah sudut peluaran poligon itu.  
Using a protractor, measure the exterior angles of each of the following polygons. Hence, find the sum of exterior angles of the polygon. **SP4.2.2 TP3**

1.



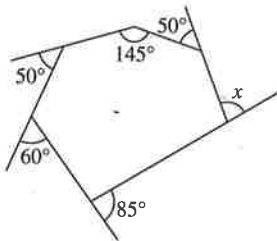
2.



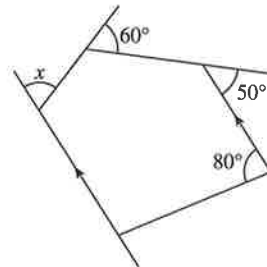
B. Cari nilai  $x$  dalam setiap poligon yang berikut.

Find the value of  $x$  in each of the following polygons. **SP4.2.3 TP3**

1.



2.



# BAB 4: Poligon

## Polygons

### PBD 4.2 Sudut Pedalaman dan Sudut Peluaran Poligon

Buku Teks: m.s. 65 – 66

**NOTA**

• Sudut pedalaman poligon sekata dengan  $n$  sisi =  $\frac{(n-2) \times 180^\circ}{n}$

• Sudut peluaran poligon sekata dengan  $n$  sisi =  $\frac{360^\circ}{n}$

*Interior angle of a  $n$ -sided regular polygon =  $\frac{(n-2) \times 180^\circ}{n}$*

*Exterior angle of a  $n$ -sided regular polygon =  $\frac{360^\circ}{n}$*

A. Cari sudut pedalaman dan sudut peluaran bagi setiap poligon sekata yang berikut.

*Find the interior angle and the exterior angle of each of the following regular polygons. SP4.2.3 TP3*

Poligon <i>Polygon</i>	Sudut pedalaman <i>Interior angle</i>	Sudut peluaran <i>Exterior angle</i>
1. Nonagon sekata <i>Regular nonagon</i>		
2. Heksagon sekata <i>Regular hexagon</i>		
3. Oktagon sekata <i>Regular octagon</i>		
4. Dekagon sekata <i>Regular decagon</i>		

B. Cari bilangan sisi bagi setiap poligon yang berikut.

*Find the number of sides of each of the following polygons. SP4.2.3 TP3*

**CONTOH**

Hasil tambah sudut pedalaman

*Sum of interior angles*

=  $540^\circ$

$$(n - 2) \times 180^\circ = 540^\circ$$

$$n - 2 = \frac{540^\circ}{180^\circ}$$

$$= 3$$

$$n = 5$$

1. Hasil tambah sudut pedalaman

*Sum of interior angles*

=  $900^\circ$

2. Hasil tambah sudut pedalaman

*Sum of interior angles*

=  $1\,980^\circ$

3. Hasil tambah sudut pedalaman

*Sum of interior angles*

=  $2\,700^\circ$

# BAB 4: Poligon

## Polygons

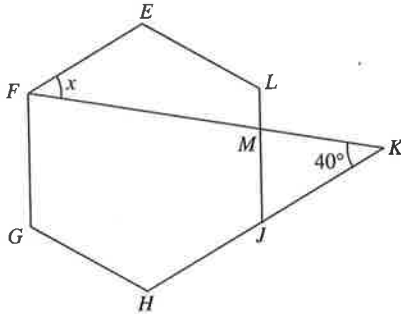
### PBD 4.2 Sudut Pedalaman dan Sudut Peluaran Poligon

Buku Teks: m.s. 66 - 68

Selesaikan masalah yang berikut.

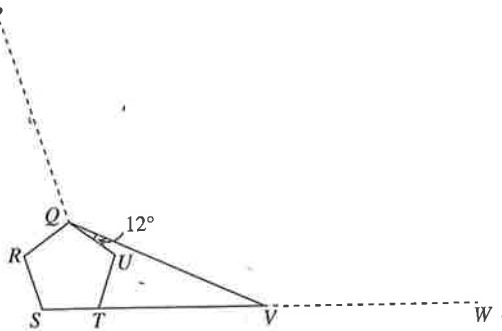
Solve the following problems. SP4.2.4 TP4 TP5

1.



Dalam rajah di sebelah,  $EFGHJL$  ialah heksagon sekata.  $FMK$  dan  $HJK$  ialah garis lurus. Cari nilai  $x$ .  
 In the diagram,  $EFGHJL$  is a regular hexagon.  $FMK$  and  $HJK$  are straight lines. Find the value of  $x$ .

2.



Dalam rajah di sebelah,  $QRSTU$  ialah pentagon sekata dan  $STVW$  ialah garis lurus.  $PQVW$  ialah sebahagian daripada sebuah poligon sekata. Cari bilangan sisi poligon sekata itu.

In the diagram,  $QRSTU$  is a regular pentagon and  $STVW$  is a straight line.  $PQVW$  is part of a regular polygon. Find the number of sides of the regular polygon.

**KBAT** Menganalisis

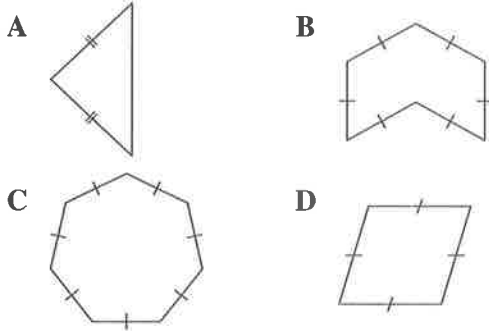


## PRAKTIS KE ARAH PT3 (4)

### PT3 Bahagian A

1. Antara berikut, yang manakah merupakan poligon sekata?

*Which of the following is a regular polygon?*

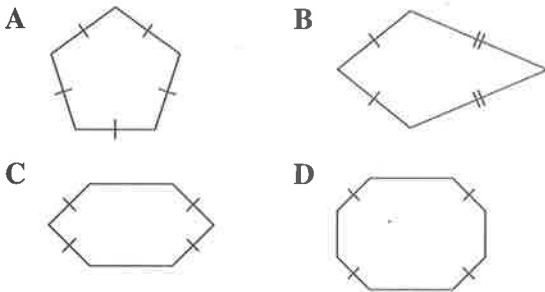


<b>Bilangan bucu</b> <i>Number of vertices</i>	<b>Bilangan paksi simetri</b> <i>Number of axes of symmetry</i>
8	8

Jadual di atas menunjukkan ciri-ciri poligon *P*. Apakah poligon *P*?

*The table shows the properties of a polygon P. What is polygon P?*

- A Heksagon  
*Hexagon*
- B Nonagon  
*Nonagon*
- C Oktagon  
*Octagon*
- D Pentagon  
*Pentagon*
3. Antara berikut, poligon yang manakah mempunyai bilangan paksi simetri yang paling banyak?  
*Which of the following polygons has the most number of axes of symmetry?*



4. Berapakah bilangan segi tiga yang terbentuk dalam sebuah dekaon?

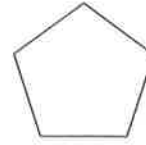
*How many triangles are formed in a decagon?*

- A 6                      B 8  
C 10                     D 12

### PT3 Bahagian B

5. (a) Rajah di bawah menunjukkan sebuah pentagon sekata.

*The diagram shows a regular pentagon.*



Berdasarkan rajah di atas, lengkapkan jadual yang berikut.

*Based on the diagram, complete the following table.*

[2 markah/2 marks]

(i)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><b>Bilangan bucu</b> <i>Number of vertices</i></td> <td style="width: 20%;"></td> </tr> </table>	<b>Bilangan bucu</b> <i>Number of vertices</i>	
<b>Bilangan bucu</b> <i>Number of vertices</i>			
(ii)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><b>Bilangan pepenjuru</b> <i>Number of diagonals</i></td> <td style="width: 20%;"></td> </tr> </table>	<b>Bilangan pepenjuru</b> <i>Number of diagonals</i>	
<b>Bilangan pepenjuru</b> <i>Number of diagonals</i>			

- (b) Nyatakan bilangan segi tiga yang terbentuk dalam poligon yang berikut.

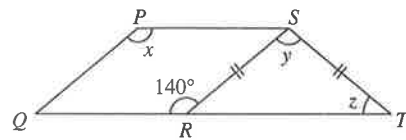
*State the number of triangles formed in the following polygons.*

[2 markah/2 marks]

- (i) Rombus                      (ii) Nonagon  
*Rhombus*                      *Nonagon*

6. (a) Dalam rajah di bawah, *PQRS* ialah segi empat selari. *QRT* ialah satu garis lurus.

*In the diagram, PQRS is a parallelogram. QRT is a straight line.*

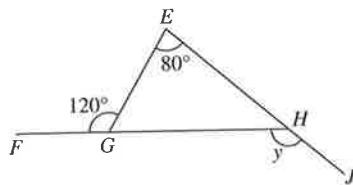


Berdasarkan rajah di atas, nyatakan nilai *x*, *y* dan *z*.

*Based on the diagram, state the values of x, y and z.*

[3 markah/3 marks]

- (b) Dalam rajah di bawah,  $EHI$  dan  $FHI$  ialah garis lurus.  
*In the diagram,  $EHI$  and  $FHI$  are straight lines.*



Tandakan  pada langkah pengiraan yang betul untuk menentukan nilai  $y$ .  
 Mark  at the correct step to determine the value of  $y$ .

[1 markah/1 mark]

$y = 80^\circ + 60^\circ$	<input type="checkbox"/>
$y = 180^\circ - 80^\circ$	<input type="checkbox"/>
$y = 180^\circ - 120^\circ$	<input type="checkbox"/>

**PT3 Bahagian C**

7. (a) Rajah di bawah menunjukkan poligon 7 sisi yang tidak lengkap.  
*The diagram shows an incomplete polygon with 7 sides.*



- (i) Lukis poligon itu.  
*Draw the polygon.*

[1 markah/1 mark]



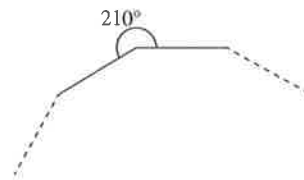
- (ii) Namakan poligon itu.  
*Name the polygon.*

[1 markah/1 mark]

- (iii) Nyatakan bilangan pepenjuru bagi poligon itu.  
*State the number of diagonals of the polygon.*

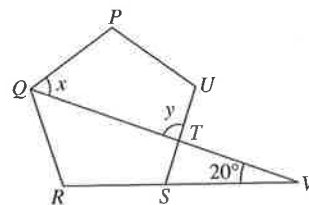
[1 markah/1 mark]

- (b) Rajah di bawah menunjukkan sebahagian daripada sebuah poligon sekata.  
*The diagram shows part of a regular polygon.*



Cari bilangan sisi bagi poligon itu.  
*Find the number of sides of the polygon.*  
 [3 markah/3 marks]

- (c) Dalam rajah di bawah,  $PQRSU$  ialah pentagon sekata.  $QTV$  dan  $RSV$  ialah garis lurus.  
*In the diagram,  $PQRSU$  is a regular pentagon.  $QTV$  and  $RSV$  are straight lines.*



Hitung nilai  $x$  dan  $y$ .  
*Calculate the values of  $x$  and  $y$ .*

[4 markah/4 marks]

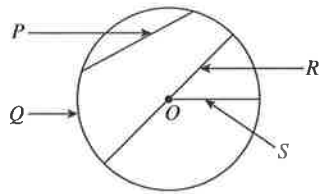
# BAB 5: Bulatan

## Circles

### PBD 5.1 Sifat Bulatan

Buku Teks: m.s. 76 – 77

A. Dalam rajah di bawah, *O* ialah pusat bulatan. Padankan setiap bahagian bulatan dengan namanya.  
*In the diagram, *O* is the centre of the circle. Match each part of the circle with its name. SP5.1.1 TP1*



1. P •

• Lilitan/Circumference

2. Q •

• Jejari/Radius

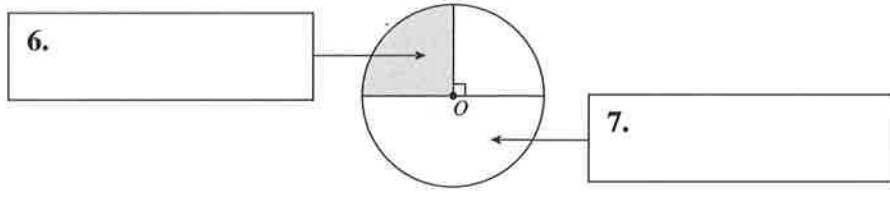
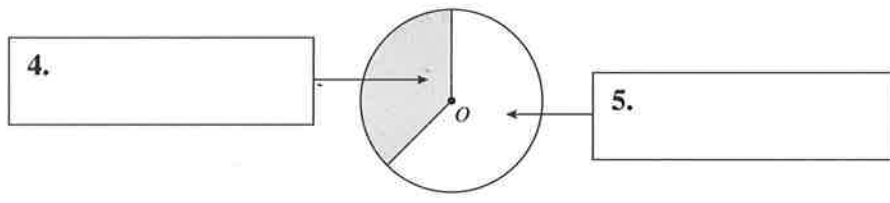
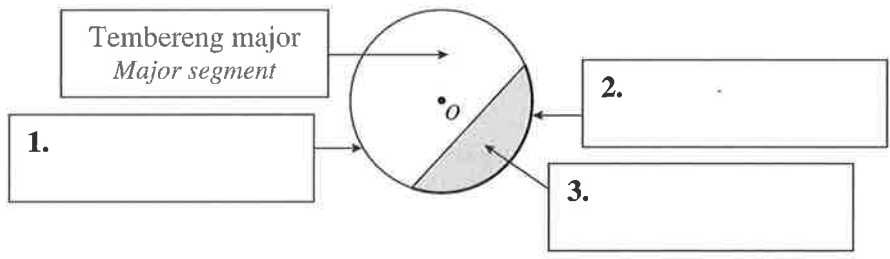
3. R •

• Perentas/Chord

4. S •

• Diameter/Diameter

B. *O* ialah pusat bulatan. Isi tempat kosong dengan menggunakan perkataan yang diberikan.  
**O* is the centre of the circle. Fill in the blanks using the given words. SP5.1.1 TP1*



- Lengkuk major  
*Major arc*
- Lengkuk minor  
*Minor arc*
- Sektor major  
*Major sector*
- Sektor minor  
*Minor sector*
- Semibulatan  
*Semicircle*
- Sukuan bulatan  
*Quadrant*
- Tembereng minor  
*Minor segment*

# BAB 5: Bulatan

## Circles

### PBD 5.1 Sifat Bulatan

Buku Teks: m.s. 78 – 80

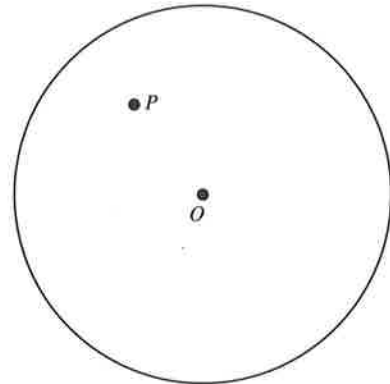
Bina setiap yang berikut.

Construct each of the following. **SP5.1.2 TP2**

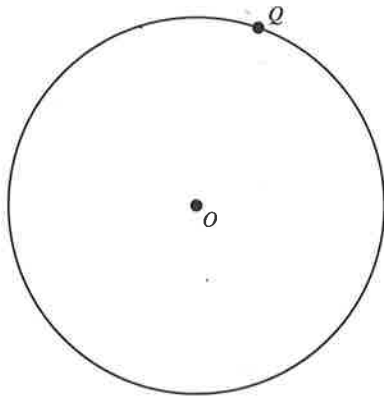
1. Bina bulatan berdasarkan diameter di bawah.  
Construct a circle based on the diameter.



2. Bina diameter yang melalui titik  $P$  dan pusat bulatan  $O$ .  
Construct a circle that passing through point  $P$  and centre  $O$ .



3. Bina perentas dengan panjang 4 cm dan melalui titik  $Q$ .  
Construct a chord with a length of 4 cm and passing through point  $Q$ .



4. Bina sektor bagi satu bulatan dengan jejari 3 cm dan sudut sektor  $60^\circ$ .  
Construct a sector of a circle with a radius of 3 cm and an angle of  $60^\circ$ .

# BAB 5: Bulatan

## Circles



### PBD 5.2 Sifat Simetri Perentas

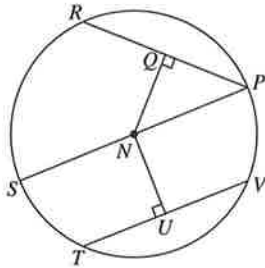
Buku Teks: m.s. 81 – 84

Pautan Digital

A. Selesaikan setiap yang berikut.

*Solve each of the following. SP5.2.1 TP2*

1.

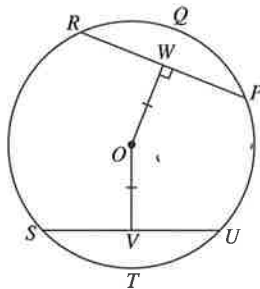


Dalam rajah di sebelah,  $PQR$ ,  $PNS$  dan  $VUT$  ialah garis lurus.  
*In the diagram,  $PQR$ ,  $PNS$  and  $VUT$  are straight lines.*

- (a) Adakah titik  $N$  ialah pusat bulatan? Jelaskan.  
*Is point  $N$  the centre of the circle? Explain.*
- (b) Adakah  $PNS$  paksi simetri bagi bulatan? Jelaskan.  
*Is  $PNS$  the axis of symmetry of the circle? Explain.*

2. Dalam rajah di bawah,  $O$  ialah pusat bulatan,  $PWR$  dan  $SVU$  ialah garis lurus. Diberi  $PWR = 16$  cm dan  $OW = 6$  cm.

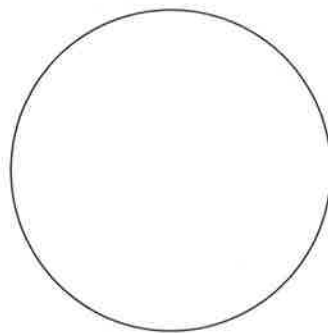
*In the diagram,  $O$  is the centre of the circle,  $PWR$  and  $SVU$  are straight lines. Given  $PWR = 16$  cm and  $OW = 6$  cm.*



- (a) Cari panjang  $PW$  dan  $SVU$ .  
*Find the lengths of  $PW$  and  $SVU$*
- (b) Adakah panjang lengkok  $PQR$  sama dengan panjang lengkok  $STU$ ? Jelaskan.  
*Is the length of arc  $PQR$  equal to the length of arc  $STU$ ? Explain.*

B. Tentukan pusat dan panjang jejari bagi bulatan yang diberikan.

*Determine the centre and the length of radius of the given circle. SP5.2.2 TP2*



# BAB 5: Bulatan

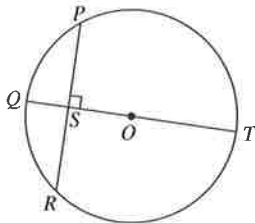
## Circles

### PBD 5.2 Sifat Simetri Perentas

Selesaikan setiap yang berikut.

Solve each of the following. SP5.2.3 TP4 TP5

1.



Dalam rajah di sebelah,  $O$  ialah pusat bulatan dengan jejari 10 cm.  $PSR$  dan  $QSOT$  ialah garis lurus. Diberi panjang perentas  $PR$  ialah 16 cm. Cari panjang  $ST$ .

In the diagram,  $O$  is the centre of the circle with radius 10 cm.  $PSR$  and  $QSOT$  are straight lines. Given the length of chord  $PR$  is 16 cm. Find the length of  $ST$ .

$$SO = \sqrt{OR^2 - \boxed{\phantom{0000}}}$$

$$= \sqrt{10^2 - \boxed{\phantom{0000}}}$$

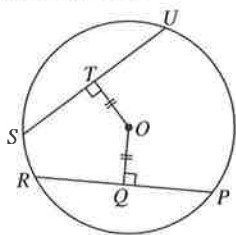
$$= \boxed{\phantom{0000}} \text{ cm}$$

$$ST = \boxed{\phantom{0000}} + OT$$

$$= \boxed{\phantom{0000}} + \boxed{\phantom{0000}}$$

$$= \boxed{\phantom{0000}} \text{ cm}$$

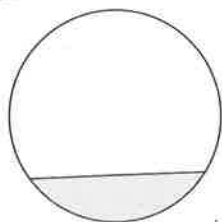
2.



Dalam rajah di sebelah,  $O$  ialah pusat bulatan.  $PQR$  dan  $STU$  ialah garis lurus. Diberi panjang  $OT$  dan  $PR$  masing-masing ialah 5 cm dan 24 cm. Cari diameter bulatan itu.

In the diagram,  $O$  is the centre of the circle.  $PQR$  and  $STU$  are straight lines. Given the lengths of  $OT$  and  $PR$  are 5 cm and 24 cm respectively. Find the diameter of the circle.

3.



Sebuah bekas berbentuk sfera dengan jejari 17 cm diisi dengan air. Pandangan depan bekas itu adalah seperti yang ditunjukkan dalam rajah di sebelah. Diberi lebar permukaan air ialah 30 cm. Hitung tinggi paras air di dalam bekas itu.

A spherical container with a radius of 17 cm is filled with water. The front view of the container is as shown in the diagram. Given the width of the surface area of water is 30 cm. Calculate the height of the water level in the container.

**KBAT** Mengaplikasi

# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

Buku Teks: m.s. 86 - 92

#### NOTA

• Lilitan =  $2\pi j$  ←  $j$  = jejari  
 =  $\pi d$  ←  $d$  = diameter

Circumference =  $2\pi r$  ←  $r$  = radius  
 =  $\pi d$  ←  $d$  = diameter

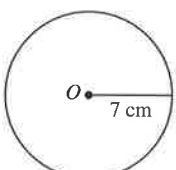
• Luas bulatan =  $\pi j^2$

Area of a circle =  $\pi r^2$

A.  $O$  ialah pusat bagi setiap bulatan. Cari lilitan bulatan yang berikut.

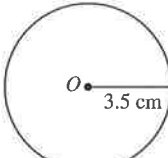
$O$  is the centre of each circle. Find the circumference of the following circles. **SP5.3.3 TP3**

**CONTOH**

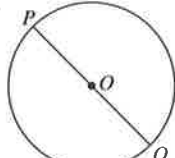


$\left[ \pi = \frac{22}{7} \right]$

Lilitan/circumference  
 =  $2 \times \frac{22}{7} \times 7 = 44$  cm

1. 

$\left[ \pi = \frac{22}{7} \right]$

2. 

$POQ = 20$  cm  
 $[\pi = 3.142]$

B. Cari jejari bulatan apabila lilitan bulatan diberikan.

Find the radius of the circle when the circumference of the circle is given. **SP5.3.3 TP3**

**CONTOH**

Lilitan/Circumference = 88 cm  
 $\left[ \pi = \frac{22}{7} \right]$   
 $88 = 2 \times \frac{22}{7} \times j$   
 $j = 88 \times \frac{7}{22} \times \frac{1}{2}$   
 = 14 cm

1. Lilitan/Circumference = 132 cm  
 $\left[ \pi = \frac{22}{7} \right]$

2. Lilitan/Circumference = 31.42 cm  
 $[\pi = 3.142]$

C. Hitung luas bulatan apabila jejari atau diameter bulatan diberikan.

Calculate the area of the circle when the radius or diameter of the circle is given. **SP5.3.3 TP3**

**CONTOH**

Jejari/Radius = 10.5 cm  
 $\left[ \pi = \frac{22}{7} \right]$   
 Luas/Area =  $\frac{22}{7} \times 10.5^2 = 346.5$  cm<sup>2</sup>

1. Jejari/Radius = 14 cm  
 $\left[ \pi = \frac{22}{7} \right]$

2. Jejari/Radius = 6 cm  
 $[\pi = 3.142]$

3. Diameter/Diameter = 18 cm  
 $[\pi = 3.142]$

# BAB 5: Bulatan

## Circles



### PBD 5.3 Lilitan dan Luas Bulatan

A. Cari jejari bulatan apabila luas bulatan diberikan.

*Find the radius of the circle when the area of the circle is given. SP5.3.3 TP3*

**CONTOH**

$$\text{Luas/Area} = 78.55 \text{ cm}^2 \quad [\pi = 3.142]$$

$$78.55 = 3.142 \times j^2$$

$$j^2 = \frac{78.55}{3.142}$$

$$= 25$$

$$j = 5 \text{ cm}$$

1. Luas/Area = 154 cm<sup>2</sup>

$$\left[ \pi = \frac{22}{7} \right]$$

2. Luas/Area = 38.5 cm<sup>2</sup>

$$\left[ \pi = \frac{22}{7} \right]$$

3. Luas/Area = 314.2 cm<sup>2</sup>

$$[\pi = 3.142]$$

B. Cari luas bulatan apabila lilitan bulatan diberikan.

*Find the area of the circle when the circumference of the circle is given. SP5.3.3 TP3*

1. Lilitan/Circumference = 52.8 cm

$$\left[ \pi = \frac{22}{7} \right]$$

2. Lilitan/Circumference = 188.52 cm

$$[\pi = 3.142]$$

C. Cari lilitan bulatan apabila luas bulatan diberikan.

*Find the circumference of the circle when the area of the circle is given. SP5.3.3 TP3*

1. Luas/Area = 616 cm<sup>2</sup>

$$\left[ \pi = \frac{22}{7} \right]$$

2. Luas/Area = 38.5 cm<sup>2</sup>

$$\left[ \pi = \frac{22}{7} \right]$$



# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

Buku Teks: m.s. 86 – 92

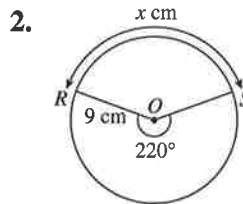
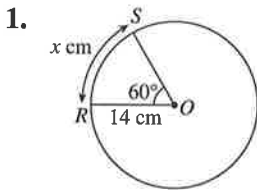
**NOTA**

$$\frac{\text{Panjang lengkok}}{\text{Lilitan}} = \frac{\text{Sudut pada pusat}}{360^\circ}$$

$$\frac{\text{Length of an arc}}{\text{Circumference}} = \frac{\text{Angle at the centre}}{360^\circ}$$

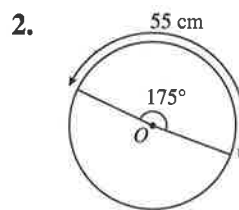
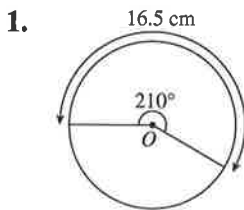
A. Hitung nilai  $x$ .  
Calculate the value of  $x$ .

$\left[ \pi = \frac{22}{7} \right]$  **SP5.3.3 TP3**



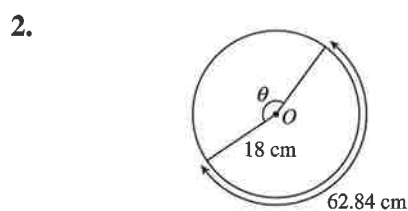
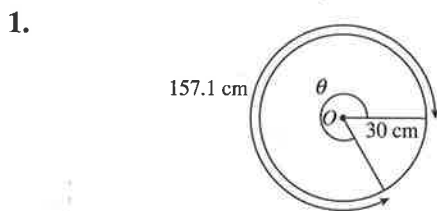
B. Hitung jejari bagi setiap bulatan yang berikut.  
Calculate the radius of each of the following circles.

$\left[ \pi = \frac{22}{7} \right]$  **SP5.3.3 TP3**



C. Cari nilai  $\theta$  bagi setiap yang berikut.

Find the value of  $\theta$  of each of the following.  $[\pi = 3.142]$  **SP5.3.3 TP3**



# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

Buku Teks: m.s. 86 – 92

**NOTA**

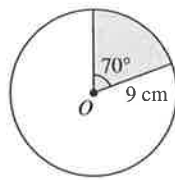
•  $\frac{\text{Luas sektor}}{\text{Luas bulatan}} = \frac{\text{Sudut pada pusat}}{360^\circ}$

$\frac{\text{Area of a sector}}{\text{Area of a circle}} = \frac{\text{Angle at the centre}}{360^\circ}$

A. Hitung luas sektor yang berlorek.

Calculate the area of the shaded sector. **SP5.3.3 TP3**

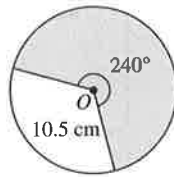
**CONTOH**



$\left[ \pi = \frac{22}{7} \right]$

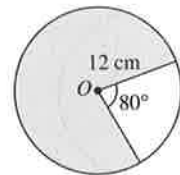
$$\frac{70^\circ}{360^\circ} \times \frac{22}{7} \times 9^2 = 49.5 \text{ cm}^2$$

1.



$\left[ \pi = \frac{22}{7} \right]$

2.



$[\pi = 3.142]$

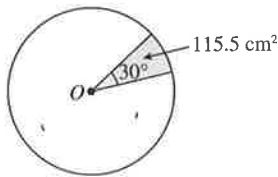
B. Hitung jejari bagi setiap bulatan yang berikut.

Calculate the radius of each of the following circles.

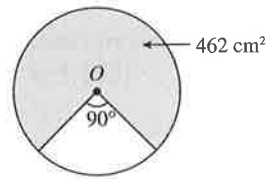
$\left[ \pi = \frac{22}{7} \right]$

**SP5.3.3 TP3**

1.



2.



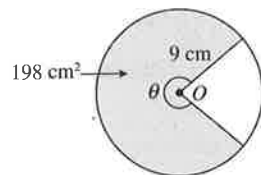
C. Hitung nilai  $\theta$  bagi setiap yang berikut.

Calculate the value of  $\theta$  of each of the following.

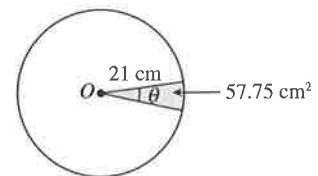
$\left[ \pi = \frac{22}{7} \right]$

**SP5.3.3 TP3**

1.



2.



# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

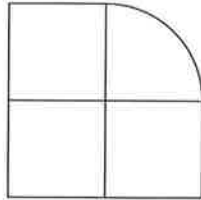
Buku Teks: m.s. 92 – 94

Selesaikan setiap yang berikut.

Solve each of the following. **SP5.3.4 TP4 TP5**

1. Rajah di bawah terdiri daripada tiga buah segi empat sama yang sama saiz dan sebuah sukuan bulatan.

The diagram consists of three squares of equal size and a quadrant.



Diberi perimeter seluruh rajah itu ialah 53 cm.

Hitung

Given the perimeter of the whole diagram is 53 cm. Calculate

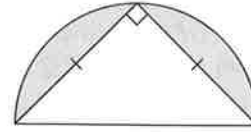
- (a) jejari sukuan bulatan itu,  
the radius of the quadrant,
- (b) luas seluruh rajah itu.  
the area of the whole diagram.

[Guna/Use  $\pi = \frac{22}{7}$ ]

**KBAT** Mengaplikasi

2. Rajah di bawah menunjukkan sebuah semibulatan.

The diagram shows a semicircle.



Diberi luas kawasan yang berlorek ialah 112 cm<sup>2</sup>.

Hitung

Given the area of the shaded region is 112 cm<sup>2</sup>. Calculate

- (a) diameter semibulatan itu,  
the diameter of the semicircle,
- (b) perimeter semibulatan itu.  
the perimeter of the semicircle.

[Guna/Use  $\pi = \frac{22}{7}$ ]

# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

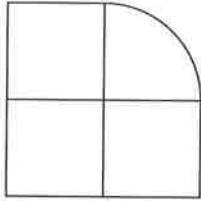
Buku Teks: m.s. 92 – 94

Selesaikan setiap yang berikut.

Solve each of the following. SP5.3.4 TP4 TP5

1. Rajah di bawah terdiri daripada tiga buah segi empat sama yang sama saiz dan sebuah sukuan bulatan.

The diagram consists of three squares of equal size and a quadrant.



Diberi perimeter seluruh rajah itu ialah 53 cm.

Hitung

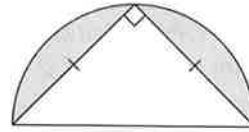
Given the perimeter of the whole diagram is 53 cm. Calculate

- jejari sukuan bulatan itu,  
the radius of the quadrant,
- luas seluruh rajah itu.  
the area of the whole diagram.

$$\left[ \text{Guna/Use } \pi = \frac{22}{7} \right]$$

**KBAT** Mengaplikasi

2. Rajah di bawah menunjukkan sebuah semibulatan.  
The diagram shows a semicircle.



Diberi luas kawasan yang berlorek ialah 112 cm<sup>2</sup>.

Hitung

Given the area of the shaded region is 112 cm<sup>2</sup>. Calculate

- diameter semibulatan itu,  
the diameter of the semicircle,
- perimeter semibulatan itu.  
the perimeter of the semicircle.

$$\left[ \text{Guna/Use } \pi = \frac{22}{7} \right]$$

# BAB 5: Bulatan

## Circles

### PBD 5.3 Lilitan dan Luas Bulatan

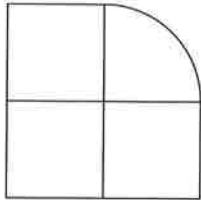
Buku Teks: m.s. 92 – 94

Selesaikan setiap yang berikut.

Solve each of the following. SP5.3.4 TP4 TP5

1. Rajah di bawah terdiri daripada tiga buah segi empat sama yang sama saiz dan sebuah sukuan bulatan.

The diagram consists of three squares of equal size and a quadrant.



Diberi perimeter seluruh rajah itu ialah 53 cm.

Hitung

Given the perimeter of the whole diagram is 53 cm. Calculate

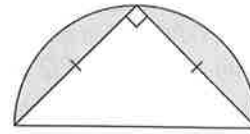
- (a) jejari sukuan bulatan itu,  
the radius of the quadrant,
- (b) luas seluruh rajah itu.  
the area of the whole diagram.

[Guna/Use  $\pi = \frac{22}{7}$ ]

**KBAT** Mengaplikasi

2. Rajah di bawah menunjukkan sebuah semibulatan.

The diagram shows a semicircle.



Diberi luas kawasan yang berlorek ialah 112 cm<sup>2</sup>.

Hitung

Given the area of the shaded region is 112 cm<sup>2</sup>. Calculate

- (a) diameter semibulatan itu,  
the diameter of the semicircle,
- (b) perimeter semibulatan itu.  
the perimeter of the semicircle.

[Guna/Use  $\pi = \frac{22}{7}$ ]

# BAB 5: Bulatan

## Circles

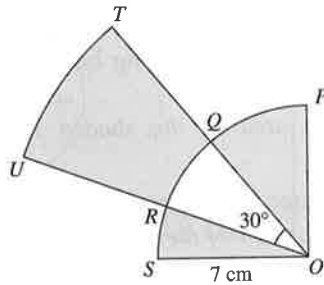
### PBD 5.3 Lilitan dan Luas Bulatan

Buku Teks: m.s. 92 – 94

Selesaikan setiap yang berikut.

Solve each of the following. **SP5.3.4 TP4 TP5**

1. Dalam rajah di bawah,  $OPQRS$  ialah sukuan bulatan,  $OTU$  ialah sektor bagi sebuah bulatan berpusat  $O$  dan  $Q$  ialah titik tengah  $OT$ .  
*In the diagram,  $OPQRS$  is a quadrant,  $OTU$  is a sector of a circle with centre  $O$  and  $Q$  is the midpoint of  $OT$ .*

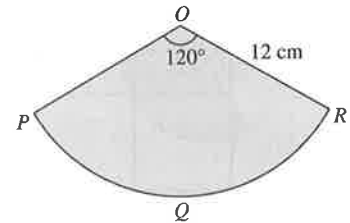


Hitung  
 Calculate

- (a) perimeter seluruh rajah,  
*the perimeter of the whole diagram,*  
 (b) luas kawasan yang berlorek.  
*the area of the shaded region.*

[Guna/Use  $\pi = \frac{22}{7}$ ]

2. Amin menggunakan sektor bulatan yang ditunjukkan dalam rajah di bawah untuk membuat sebuah kon terbuka.  
*Amin uses the sector of a circle shown in the diagram to make an open cone.*



- (a) Hitung panjang lengkok  $PQR$ .  
*Calculate the length of arc  $PQR$ .*  
 (b) Amin kemudian menggantung sebuah bulatan untuk menjadi penutup bagi konnya. Hitung jejari bulatan itu.  
*Amin then cut a circle to form a lid of his cone. Calculate the radius of the circle.*  
 (c) Seterusnya, hitung jumlah luas permukaan kon dengan penutup itu.  
*Hence, calculate the total surface area of the cone with the lid.*

**KBAT** Mengaplikasi

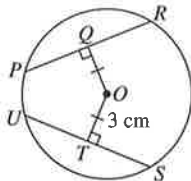
[Guna/Use  $\pi = 3.142$ ]

## PRAKTIS KE ARAH PT3 (5)

### PT3 Bahagian A

1. Dalam rajah di bawah,  $O$  ialah pusat bulatan,  $PQR$  dan  $UTS$  ialah garis lurus.

*In the diagram,  $O$  is the centre of the circle.  $PQR$  and  $UTS$  are straight lines.*



Diberi  $PR = 8$  cm, hitung diameter, dalam cm, bulatan itu.

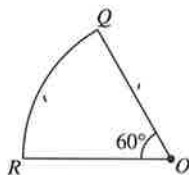
*Given  $PR = 8$  cm, calculate the diameter, in cm, of the circle.*

[Guna/Use  $\pi = \frac{22}{7}$ ]

- A 5                                      B 6  
C 10                                      D 15

2. Rajah di bawah menunjukkan sektor bagi sebuah bulatan berpusat  $O$ .

*The diagram shows a sector of a circle with centre  $O$ .*



Panjang lengkok  $QR$  ialah 22 cm. Hitung perimeter, dalam cm, sektor  $OQR$ .

*The length of arc  $QR$  is 22 cm. Calculate the perimeter, in cm, of sector  $OQR$ .*

[Guna/Use  $\pi = \frac{22}{7}$ ]

- A 43                                      B 46  
C 50                                      D 64

3. Hitung panjang lengkok, dalam cm, bagi sebuah sukuan bulatan dengan jejari 21 cm.

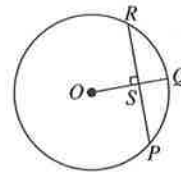
*Calculate the length of arc, in cm, of a quadrant with a radius of 21 cm.*

[Guna/Use  $\pi = \frac{22}{7}$ ]

- A 11                                      B 22  
C 33                                      D 44

4. Rajah di bawah menunjukkan sebuah bulatan berpusat  $O$ .

*The diagram shows a circle with centre  $O$ .*



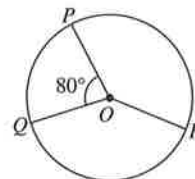
Diberi panjang garis lurus  $OSQ$  dan  $PSR$  masing-masing ialah 10 cm dan 12 cm. Hitung panjang, dalam cm,  $OS$ .

*Given the lengths of the straight lines  $OSQ$  and  $PSR$  are 10 cm and 12 cm respectively. Calculate the length, in cm, of  $OS$ .*

- A 5    B 6  
C 8    D 12

5. Rajah di bawah menunjukkan sebuah bulatan berpusat  $O$  dan berjejari 21 cm.

*The diagram shows a circle with centre  $O$  and a radius of 21 cm.*



Diberi lengkok  $PR$  dan lengkok  $QR$  adalah sama panjang. Hitung panjang, dalam cm, lengkok major  $QPR$ .

*Given the length of arcs  $PR$  and  $QR$  are the same. Calculate the length, in cm, of major arc  $QPR$ .*

[Guna/Use  $\pi = \frac{22}{7}$ ]

- A  $51\frac{1}{3}$                                       B  $60\frac{1}{3}$   
C  $80\frac{2}{3}$                                       D  $85\frac{2}{3}$

6. Diameter sebuah semibulatan ialah 14 cm. Hitung perimeter, dalam cm, semibulatan itu.

*The diameter of a semicircle is 14 cm. Calculate the perimeter, in cm, of the semicircle.*

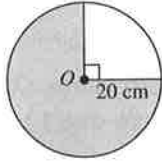
[Guna/Use  $\pi = \frac{22}{7}$ ]

- A 22    B 36  
C 44    D 72

7. Diberi luas sebuah bulatan ialah  $98.56 \text{ cm}^2$ .  
 Hitung lilitan, dalam cm, bulatan itu.  
 Given the area of a circle is  $98.56 \text{ cm}^2$ . Calculate the circumference, in cm, of the circle.  
 [Guna/Use  $\pi = 3.142$ ]

- A 11.2                                      B 15.68  
 C 31.36                                      D 35.2

8. Rajah di bawah menunjukkan sebuah bulatan berpusat  $O$ .  
 The diagram shows a circle with centre  $O$ .



Hitung luas, dalam  $\text{cm}^2$ , sektor yang berlorek.  
 Calculate the area, in  $\text{cm}^2$ , of the shaded sector.  
 [Guna/Use  $\pi = 3.142$ ]

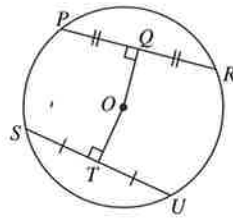
- A 942.6                                      B 314.2  
 C 94.26                                      D 31.42

**PT3 Bahagian B**

9. (a) Tandakan (✓) pada jawapan yang betul.  
 Mark (✓) for the correct answers.

[2 markah/2 marks]

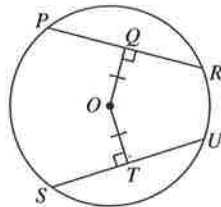
(i)



$OQ = OT$

- Benar                               Tidak benar   
 True    Not true

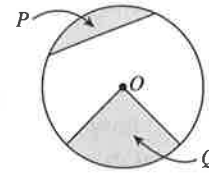
(ii)



$PQ = TU$

- Benar                               Tidak benar   
 True    Not true

(b) Rajah di bawah menunjukkan sebuah bulatan berpusat  $O$ .  
 The diagram shows a circle with centre  $O$ .

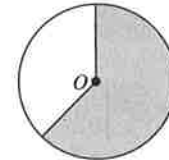


Namakan bahagian  $P$  dan  $Q$ .  
 Name parts  $P$  and  $Q$ .

[2 markah/2 marks]

$P$ : .....                               $Q$ : .....

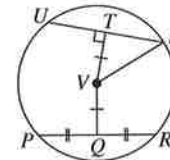
10. (a) Rajah di bawah menunjukkan sebuah bulatan berpusat  $O$ .  
 The diagram shows a circle with centre  $O$ .



Namakan kawasan yang berlorek.  
 Name the shaded region.

[1 markah/1 mark]

(b) Dalam rajah di bawah,  $PQR$  dan  $STU$  ialah garis lurus.  
 In the diagram,  $PQR$  and  $STU$  are straight lines.



Tandakan (✓) pada pernyataan benar dan (✗) pada pernyataan palsu.  
 Mark (✓) for the correct statement and (✗) for the false statement.

[3 markah/3 marks]

- (i)  $ST = TV$    
 (ii)  $V$  ialah pusat bulatan itu.  
 $V$  is the centre of the circle.   
 (iii)  $QV$  ialah pembahagi dua sama serenjang bagi  $PR$ .  
 $QV$  is the perpendicular bisector of  $PR$ .



**PT3** Bahagian C

11. (a) Rajah di bawah menunjukkan sebuah basikal.  
The diagram shows a bicycle.

KLON  
PT3  
KBAT

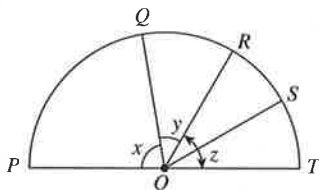


Jejari roda depan basikal itu ialah 30 cm. Panjang lengkok roda belakang yang dicangkum oleh sudut  $45^\circ$  ialah 13.75 cm. Jika roda depan basikal itu melakukan 42 putaran lengkap, cari bilangan putaran lengkap yang dilakukan oleh roda belakang.  
The radius of the front wheel of the bicycle is 30 cm. The length of arc of the rear wheel which is subtended by an angle of  $45^\circ$  is 13.75 cm. If the front wheel of the bicycle makes 42 complete rotations, find the number of complete rotations made by the rear wheel.

[Guna/Use  $\pi = \frac{22}{7}$ ]

[4 markah/4 marks]

(b) Rajah di bawah menunjukkan sebuah semibulatan dengan diameter 14 cm.  
The diagram shows a semicircle with a diameter of 14 cm.



Diberi  $x : y : z = 4 : 2 : 3$ . Lengkuk  $RS$  dan  $ST$  adalah sama panjang. Hitung panjang, dalam cm, lengkok  $ST$ .

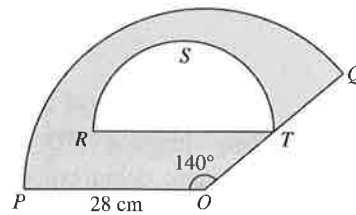
Given  $x : y : z = 4 : 2 : 3$ . The arcs of  $RS$  and  $ST$  are of equal length. Calculate the length, in cm, of arc  $ST$ .

[Guna/Use  $\pi = \frac{22}{7}$ ]

[3 markah/3 marks]

(c) Dalam rajah di bawah,  $POQ$  ialah sektor bagi sebuah bulatan berpusat  $O$ .  $RST$  ialah semibulatan dengan diameter 28 cm.  
In the diagram,  $POQ$  is a sector of a circle with centre  $O$ .  $RST$  is a semicircle with a diameter of 28 cm.

HEBAT MODUL 29



Dengan menggunakan  $\pi = \frac{22}{7}$ , hitung luas, dalam  $\text{cm}^2$ , kawasan yang berlorek.

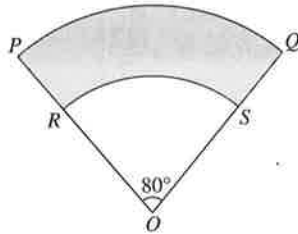
Using  $\pi = \frac{22}{7}$ , calculate the area, in  $\text{cm}^2$ , of the shaded part.

[3 markah/3 marks]

12. (a) Sektor bulatan yang ditunjukkan dalam rajah di bawah ialah bentangan bagi satu pembalut kon ais krim.



The sector of a circle shown in the diagram is the net of an ice cream cone wrapper.



$PQ$  dan  $RS$  ialah lengkok bagi bulatan yang berpusat  $O$ . Jejari bagi lengkok  $RS$  ialah 6 cm.

$PQ$  and  $RS$  are the arcs of the circles with centre  $O$ . The radius of the arc  $RS$  is 6 cm.

- (i) Hitung panjang, dalam cm, lengkok  $RS$ . Bundarkan jawapan kepada dua tempat perpuluhan. [Guna  $\pi = 3.142$ ]  
Calculate the length, in cm, of the arc  $RS$ . Round off the answer to two decimal places. [Use  $\pi = 3.142$ ]

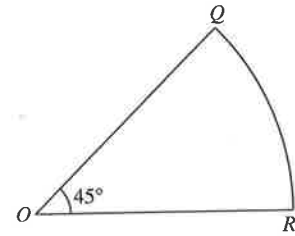
[2 markah/2 marks]

- (ii) Panjang lengkok  $PQ$  ialah 12.65 cm. Hitung jarak, dalam cm, antara lengkok  $PQ$  dengan  $RS$ . Bundarkan jawapan kepada dua tempat perpuluhan. [Guna  $\pi = 3.142$ ]  
The length of arc  $PQ$  is 12.65 cm. Calculate the distance, in cm, between the arcs  $PQ$  and  $RS$ . Round off the answer to two decimal places. [Use  $\pi = 3.142$ ]

[3 markah/3 marks]

- (b) Rajah di bawah menunjukkan satu sektor bagi sebuah bulatan berpusat  $O$ .

The diagram shows a sector of a circle with centre  $O$ .



- (i) Panjang lengkok  $QR$  ialah 11 cm. Hitung jejari, dalam cm, bagi sektor  $QOR$ .  
The length of arc  $QR$  is 11 cm. Calculate the radius, in cm, of sector  $QOR$ .

[2 markah/2 marks]

- (ii) Sektor bulatan di (b)(i) digunakan untuk membentuk sebuah kon terbuka. Cari tinggi, dalam cm, kon itu. Beri jawapan betul kepada dua tempat perpuluhan.  
The sector of a circle in (b)(i) is used to form an open cone. Find the height, in cm, of the cone. Give the answer correct to two decimal places.

[3 markah/3 marks]

**BAB 4: Poligon**

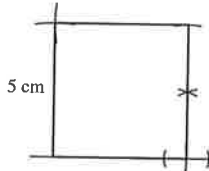
**Muka Surat 25**

- A. Poligon sekata/Regular polygon = P, S, U  
 Poligon tak sekata/Irregular polygon = Q, R, T

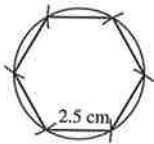
- B. 1. Pentagon/Pentagon, 5, 5, 5  
 2. Oktagon/Octagon, 8, 8, 8

**Muka Surat 26**

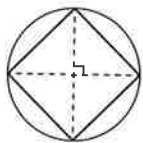
A. 1.



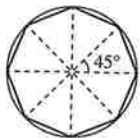
2.



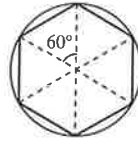
B. 1.



2.



3.



**Muka Surat 27**

- A. 1. Sudut pedalaman/Interior angle: g, h  
 Sudut peluaran/Exterior angle: e, f  
 2. Sudut pedalaman/Interior angle: v, x, y  
 Sudut peluaran/Exterior angle: u, w, z
- B. 1. 6, 4, 720°  
 2. 8, 6, 1 080°

**Muka Surat 28**

- A. 1. 360°                      2. 900°                      3. 1 260°  
 B. 1. 230°                      2. 110°                      3. 135°

**Muka Surat 29**

- A. 1. 360°  
 2. 360°
- B. 1. 80°  
 2. 70°

**Muka Surat 30**

- A. 1. 140°, 40°  
 2. 120°, 60°  
 3. 135°, 45°  
 4. 144°, 36°
- B. 1. 7  
 2. 13  
 3. 17

**Muka Surat 31**

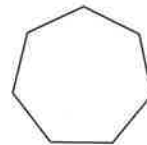
1. 8                                  2. 15                                  3. 10  
 4. 12                                  5. 9                                      6. 20

**Muka Surat 32**

1. 40°  
 2. 15

**Praktis ke Arah PT3 (4)**

1. C                      2. C                      3. A                      4. B
5. (a) (i) 5  
 (ii) 5  
 (b) (i) 2  
 (ii) 7
6. (a)  $x = 140^\circ, y = 100^\circ, z = 40^\circ$   
 (b)  $y = 80^\circ + 60^\circ$
7. (a) (i)



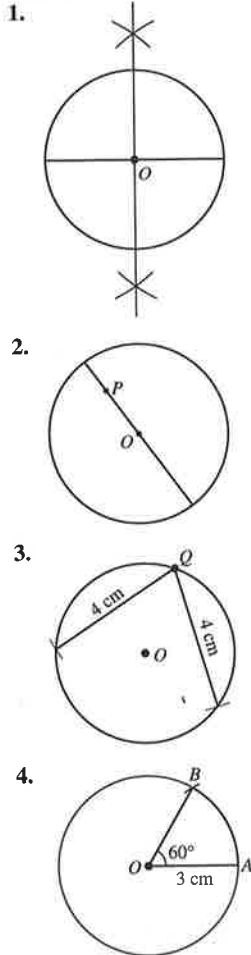
- (ii) Heptagon/Heptagon  
 (iii) 14  
 (b) 12  
 (c)  $x = 56^\circ, y = 88^\circ$

## BAB 5: Bulatan

### Muka Surat 35

- A. 1. Perentas/Chord  
 2. Lilitan/Circumference  
 3. Diameter/Diameter  
 4. Jejari/Radius
- B. 1. Lengkuk major/Major arc  
 2. Lengkuk minor/Minor arc  
 3. Tembereng minor/Minor segment  
 4. Sektor minor/Minor sector  
 5. Sektor major/Major sector  
 6. Sukuan bulatan/Quadrant  
 7. Semibulatan/Semicircle

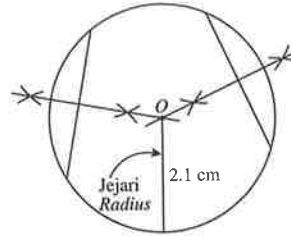
### Muka Surat 36



### Muka Surat 37

- A. 1. (a)  $N$  ialah pusat bulatan sebab  $N$  ialah titik persilangan pembahagi dua sama serenjang bagi perentas.  
 *$N$  is the centre of the circle because  $N$  is the point of intersection of the two perpendicular bisectors of the chords.*  
 (b)  $PNS$  ialah paksi simetri bulatan sebab  $PNS$  ialah diameter bulatan itu.  
 *$PNS$  is the axis of symmetry of the circle because  $PNS$  is the diameter of the circle.*
2. (a)  $PW = 8$  cm,  $SVU = 16$  cm  
 (b) Panjang lengkok  $PQR$  dan lengkok  $STU$  adalah sama kerana panjang perentas  $PWR$  dan perentas  $SVU$  adalah sama.  
*The lengths of arc  $PQR$  and arc  $STU$  are equal because the lengths of chord  $PWR$  and chord  $SVU$  are equal.*

B.



### Muka Surat 38

$$1. SO = \sqrt{OR^2 - RS^2}$$

$$= \sqrt{10^2 - 8^2}$$

$$= 6 \text{ cm}$$

$$ST = SO + OT$$

$$= 6 + 10$$

$$= 16 \text{ cm}$$

2. 26 cm

3. 9 cm

### Muka Surat 39

A. 1. 22 cm

2. 62.84 cm

B. 1. 21 cm

2. 5 cm

C. 1. 616 cm<sup>2</sup>

2. 113.112 cm<sup>2</sup>

3. 254.502 cm<sup>2</sup>

### Muka Surat 40

A. 1. 7 cm

2. 3.5 cm

3. 10 cm

B. 1. 221.76 cm<sup>2</sup>

2. 2 827.8 cm<sup>2</sup>

C. 1. 88 cm

2. 22 cm

### Muka Surat 41

A. 1.  $14\frac{2}{3}$

2. 22

B. 1. 4.5

2. 18

C. 1. 300°

2. 160°

### Muka Surat 42

A. 1. 231 cm<sup>2</sup>

2. 351.904 cm<sup>2</sup>

B. 1. 21 cm

2. 14 cm

C. 1. 280°

2. 15°

### Muka Surat 43

1. (a) 7 cm

(b) 185.5 cm<sup>2</sup>

2. (a) 28 cm

(b) 72 cm

### Muka Surat 44

1. (a)  $42\frac{2}{3}$  cm

(b)  $64\frac{1}{6}$  cm<sup>2</sup>

2. (a) 25.136 cm

(b) 4 cm

(c) 201.088 cm<sup>2</sup>