Jawapan

Bab 4

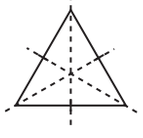
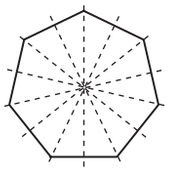
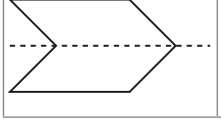
1.

(a)	sama panjang *equal in length*	tidak sama panjang *not equal in length*
	Poligon sekata *Regular polygon*	Poligon tak sekata *Irregular polygon*

(b)	sama saiz *same size*	tidak sama saiz *not the same size*
	Poligon sekata *Regular polygon*	Poligon tak sekata *Irregular polygon*

(c)	tidak sama dengan bilangan sisi *not the same as the number of sides*	sama dengan bilangan sisi *the same as the number of sides*
	Poligon tak sekata *Irregular polygon*	Poligon sekata *Regular polygon*

2.

Poligon ***Polygon***	**Bilangan sisi** ***Number of sides***	**Nama poligon** ***Name of polygon***	**Bilangan paksi simetri** ***Number of axis of symmetry***
(a) 	3	Segi tiga sama sisi *Equilateral triangle*	3
(b) 	7	Heptagon sekata *Regular heptagon*	7
(c) 	6	Heksagon tak sekata *Irregular hexagon*	1

3.

Bina sebuah bulatan dengan jejari 3 cm.
Construct a circle with radius of 3 cm.

Lukis diameter bulatan dengan menggunakan pembaris. Diameter bulatan melalui pusat bulatan.
Draw the diameter of the circle by using a ruler. The diameter passes through the centre of the circle.

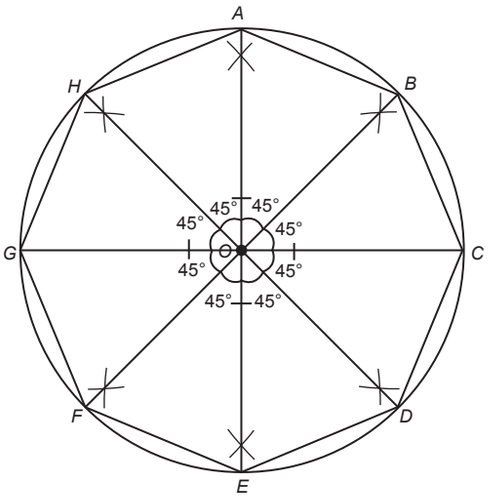
Bina pembahagi dua serenjang untuk diameter bulatan. Panjang pembahagi dua serenjang ialah 6 cm.
Construct the perpendicular bisector of the diameter of the circle. The length of the perpendicular bisector is 6 cm.

Bina pembahagi dua sama sudut bagi setiap sukuan bulatan.
Construct the perpendicular angle bisector of each quadrant of the circle.

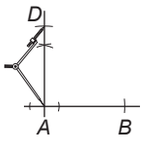
Ukuran setiap sudut pada pusat bulatan ialah 45°.
The measure of each angle at the centre of the circle is 45°.

Tandakan titik-titik persilangan bulatan dengan garis-garis pembahagi dengan *A*, *B*, *C*, *D*, *E*, *F*, *G* dan *H*.
Mark the point of intersection of the circle and the bisectors with A, B, C, D, E, F, G and H.

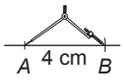
Sambungkan titik *A*, *B*, *C*, *D*, *E*, *F*, *G* dan *H* untuk membentuk sebuah oktagon sekata.
Connect the points A, B, C, D, E, F, G and H to form a regular octagon.



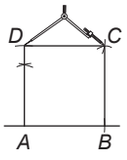
4.



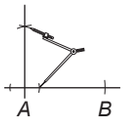
3



1

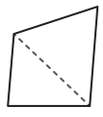
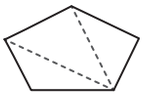
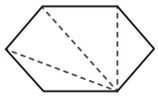
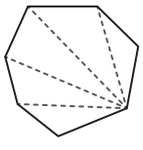


4

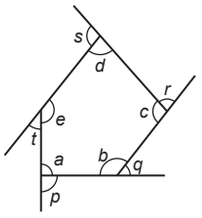


2

5.

Poligon ***Polygon***	**Bilangan sisi** ***Number of sides***	**Bilangan segi tiga yang dibentuk** ***Number of triangles formed***	**Hasil tambah sudut pedalaman** ***Sum of interior angles***
	4	2	$2 \times 180° = 360°$ $(4 - 2) \times 180° = 360°$
	5	3	$3 \times 180° = 540°$ $(5 - 2) \times 180° = 540°$
	6	4	$4 \times 180° = 720°$ $(6 - 2) \times 180° = 720°$
	7	5	$5 \times 180° = 900°$ $(7 - 2) \times 180° = 900°$
Poligon dengan *n* sisi *Polygon with n sides*	*n*	$n - 2$	$(n - 2) \times 180°$

6.



Pentagon
Pentagon

Hasil tambah sudut pedalaman = $a + b + c + d + e$
Sum of interior angles

$= 540°$

Hasil tambah sudut peluaran = $p + q + r + s + t$
Sum of exterior angles

$= (180° - a) + (180° - b) + (180° - c) + (180° - d) + (180° - e)$

$= 900° - (a + b + c + d + e)$

$= 900° - 540°$

$= 360°$

7. (a) Hasil tambah sudut pedalaman
Sum of interior angles

$= (6 - 2) \times 180°$

$= 4 \times 180°$

$= 720°$

Maka / *Hence*,

$x + 115° + 98° + 164° + 90° + 107° = 720°$

$x + 574° = 720°$

$x = 720° - 574°$

$= 146°$

(b) Hasil tambah sudut pedalaman
Sum of interior angles

$= (5 - 2) \times 180°$

$= 3 \times 180°$

$= 540°$

Maka / *Hence*,

$x + x + 90° + 90° + 50° = 540°$

$2x + 230° = 540°$

$2x = 540° - 230°$

$x = \frac{310°}{2}$

$= 155°$

(c) Hasil tambah sudut pedalaman
Sum of interior angles

$= (6 - 2) \times 180°$

$= 4 \times 180°$

$= 720°$

Maka / *Hence*,

$x + x + 3x + 79° + 116° + 130° = 720°$

$5x + 325° = 720°$

$5x = 720° - 325°$

$x = \frac{395°}{5}$

$= 79°$

8. (a) Hasil tambah sudut pedalaman
Sum of interior angles

$= (8 - 2) \times 180°$

$= 6 \times 180°$

$= 1\,080°$

Sudut pedalaman
Interior angle

$= \frac{1\,080°}{8}$

$= 135°$

(b) Hasil tambah sudut pedalaman
Sum of interior angles

$= (9 - 2) \times 180°$

$= 7 \times 180°$

$= 1\,260°$

Sudut pedalaman
Interior angle

$= \frac{1\,260°}{9}$

$= 140°$

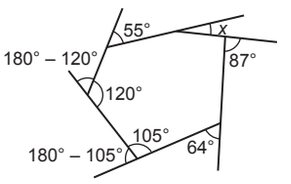
9. (a) $x + 90° + 90° + 60° + 85° = 360°$

$x + 325° = 360°$

$x = 360° - 325°$

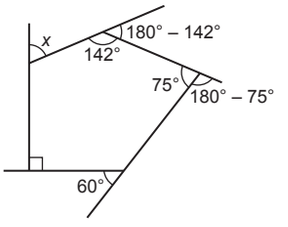
$= 35°$

(b)



$$\begin{aligned} x + 55° + (180° - 120°) + (180° - 105°) + 64° + 87° &= 360° \\ x + 55° + 60° + 75° + 64° + 87° &= 360° \\ x + 341° &= 360° \\ x &= 360° - 341° \\ &= 19° \end{aligned}$$

(c)



$$\begin{aligned} x + (180° - 142°) + (180° - 75°) + 60° + 90° &= 360° \\ x + 38° + 105° + 60° + 90° &= 360° \\ x + 293° &= 360° \\ x &= 360° - 293° \\ &= 67° \end{aligned}$$

10.

Poligon sekata ***Regular polygon***	**Bilangan sisi, *n*** ***Number of sides, n***	**Nilai sudut peluaran** ***Value of an exterior angle***
(a) Oktagon *Octagon*	8	$= \frac{360°}{8} = 45°$
(b) Nonagon *Nonagon*	9	$= \frac{360°}{9} = 40°$
(c) Dekagon *Decagon*	10	$= \frac{360°}{10} = 36°$
(d) Heksagon *Hexagon*	6	$= \frac{360°}{6} = 60°$

11. (a) Sudut peluaran / *Exterior angle*
$= 180° - 150°$
$= 30°$

Bilangan sisi / *Number of sides*
$n = \frac{360°}{30°}$
$= 12$

(b) Sudut peluaran / *Exterior angle*
$= 180° - 156°$
$= 24°$

Bilangan sisi / *Number of sides*
$n = \frac{360°}{24°}$
$= 15$

(c) Sudut peluaran/ *Exterior angle*
$= 180° - 135°$
$= 45°$

Bilangan sisi, *n*
Number of sides, n
$= \frac{360°}{45°}$
$= 8$

(d) Sudut peluaran/ *Exterior angle*
$= 180° - 162°$
$= 18°$

Bilangan sisi, *n* / *Number of sides, n*
$= \frac{360°}{18°}$
$= 20$

12. (a) Bilangan sisi / *Number of sides*
$= \frac{360°}{40°}$
$= 9$

Nonagon/ *Nonagon*

(b) Bilangan sisi / *Number of sides*
$= \frac{360°}{36°}$
$= 10$

Dekagon/ *Decagon*

(c) Bilangan sisi, *n*
Number of sides, n
$= \frac{360°}{60°}$
$= 6$

Heksagon/ *Hexagon*

(d) Bilangan sisi, n
Number of sides, n

$= \frac{360°}{30°}$

$= 12$

Dodekagon/ *Dodecagon*

13. (a) Sudut peluaran / *Exterior angle*

$= \frac{360°}{12}$

$= 30°$

Sudut pedalaman / *Interior angle*

$= 180° - 30°$

$= 150°$

Poligon dengan 12 sisi boleh dibahagikan kepada 10 segi tiga.
A 12-sided polygon can be divided into 10 triangles.

Maka / *Therefore*,

$x = \frac{150°}{10} \times 4$

$= 60°$

(b) Sudut pedalaman segi tiga sama sisi
Interior angle of the equilateral triangle

$= 180° \div 3 = 60°$

Sudut pedalaman segi empat sama
Interior angle of the square

$= 360° \div 4 = 90°$

$p = 360° - 2(60°) - 90°$

$= 150°$

p ialah sudut pedalaman bagi poligon sekata yang akan terbentuk.
p is the interior angle of the regular polygon that will be formed.

$\frac{(n-2) \times 180°}{n} = 150°$

$180°n - 360° = 150°n$

$30°n = 360°$

$n = 12$

Maka, poligon dengan 12 sisi akan terbentuk.
Thus, polygon with 12 sides will be formed.

(c) Sudut pedalaman poligon sekata
Interior angle of the regular polygon

$= 90° + 45° = 135°$

Bilangan sisi poligon sekata
Number of sides of the regular polygon

$\frac{(n-2) \times 180°}{n} = 135°$

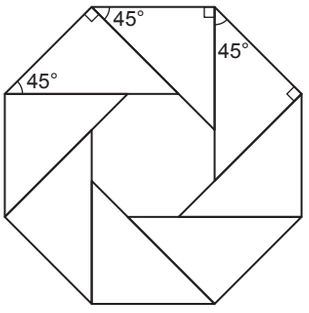
$180°n - 360° = 135°n$

$45°n = 360°$

$n = \frac{360°}{45°}$

$= 8$

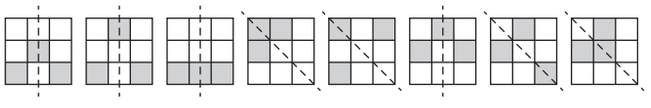
Pereka grafik itu memerlukan 8 buah segi tiga bersudut tegak supaya membentuk sebuah oktagon sekata. Maka, bentuk poligon yang terbentuk di tengah-tengah susunan itu juga adalah oktagon sekata.
The graphic designer needs 8 right-angled triangles to form a regular octagon. Thus, the polygon formed in the middle of the arrangement is also a regular octagon.



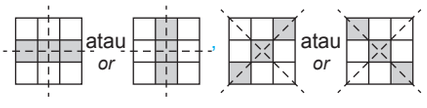
14. Aktiviti PAK-21

(a) 32

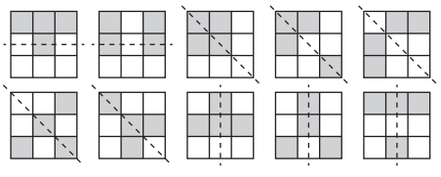
Setiap daripada bentuk berikut boleh dipusingkan untuk menghasilkan 4 segi empat sama yang berlainan dengan hanya mempunyai satu paksi simetri.
Each of the following patterns can be rotated to give 4 different squares with only one axis of symmetry.



(b) 4 kemungkinan/ 4 *possibilities*:



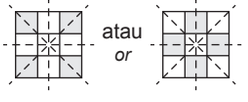
(c) (i) 10 kemungkinan/ 10 *possibilities*:



(ii) tiada/ *none*

(iii) tiada/ *none*

(iv) 2 kemungkinan/ 2 *possibilities*:



Praktis Masteri 4

BAHAGIAN A

1. Bilangan sisi
Number of sides
= 9

Jawapan / *Answer*: **C**

2. Sudut pedalaman pentagon = 108°
Interior angle of a pentagon
Sudut pedalaman heksagon = 120°
Interior angle of a hexagon
Sudut pedalaman heptagon = 128.57°
Interior angle of a heptagon
Sudut pedalaman oktagon = 135°
Interior angle of an octagon

Jawapan / *Answer*: **B**

3. Hasil tambah sudut pedalaman oktagon
Sum of interior angles of octagon
$= (8 - 2) \times 180°$
$= 6 \times 180°$
$= 1\,080°$

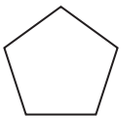
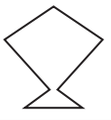
Jawapan / *Answer*: **C**

4. Hasil tambah sudut pedalaman
Sum of interior angles
$= (6 - 2) \times 180°$
$= 720°$
Maka / *Thus*,
$50° + y + 250° + x + y + x + 200° = 720°$
$2y + 2x + 500° = 720°$
$2(x + y) = 220°$
$x + y = 110°$

Jawapan / *Answer*: **A**

BAHAGIAN B

5.

Poligon *Polygon*	**Nama** *Name*	**Bilangan paksi simetri** *Number of axis of symmetry*
	Pentagon *Pentagon*	5
	Heptagon *Heptagon*	1

6. (a)

Poligon *Polygon*	**Bilangan sisi** *Number of sides*	**Bilangan segi tiga yang dibentuk** *Number of triangles formed*	**Jumlah sudut dalam segi tiga** *Total of angles in the triangles*
Heksagon *Hexagon*	6	4	$4 \times 180° = 720°$
Nonagon *Nonagon*	9	7	$7 \times 180° = 1\,260°$
Dekagon *Decagon*	10	8	$8 \times 180° = 1\,440°$

(b) Jumlah sudut pedalaman = $(n - 2) \times 180°$
= Jumlah sudut dalam segi tiga
Total of interior angles = $(n - 2) \times 180°$ = *Total of angles in the triangles*

7.

Sudut peluaran *Exterior angle*	**Poligon sekata** *Regular polygon*
36°	Segi tiga sama sisi *Equilateral triangle*
60°	Dekagon *Decagon*
90°	Heksagon *Hexagon*
120°	Segi empat sama *Square*

Bilangan sisi / *Number of sides*
$= \frac{360°}{36°}$
= 10 (Dekagon / *Decagon*)

Bilangan sisi / *Number of sides*
$= \frac{360°}{60°}$
= 6 (Heksagon / *Hexagon*)

Bilangan sisi / *Number of sides*
$= \frac{360°}{90°}$
= 4 (Segi empat sama / *Square*)

Bilangan sisi / *Number of sides*
$= \frac{360°}{120°}$
= 3 (Segi tiga sama sisi / *Equilateral triangle*)

BAHAGIAN C

8. (a) Bilangan sisi / *Number of sides* = 6

Nilai sudut peluaran / *The value of the exterior angle*

$= \frac{360°}{6}$

$= 60°$

Bilangan segi tiga yang terbentuk
The number of triangles formed

$= 6 - 2$

$= 4$

(b) $70° + 4(180° - p) + 20° + 30° + 40° = 360°$

$160° + 720° - 4p = 360°$

$4p = 520°$

$p = 130°$

(c) Sudut pedalaman *RSUVW*
Interior angle of RSUVW

$= \frac{(5 - 2) \times 180°}{5}$

$= 108°$

$\angle QRW = 180° - (2 \times 39°)$

$= 102°$

Sudut pedalaman poligon tidak lengkap
Interior angle of the incomplete polygon

$= 360° - 108° - 102°$

$= 150°$

Bilangan sisi poligon
Number of sides of the polygon

$= \frac{360°}{180° - 150°}$

$= \frac{360°}{30°}$

$= 12$

Fokus KBAT

(a) Pentagon, heksagon, oktagon, nonagon, dekagon
Pentagon, hexagon, octagon, nonagon, decagon

(b) Bilangan kad *A* yang tinggal
= 0 (10 keping kad *A* dapat membentuk 2 buah pentagon)
The number of card A left
= 0 (10 *cards A can form* 2 *pentagons*)

Bilangan kad *B* yang tinggal
= 4 (6 keping kad *B* dapat membentuk sebuah heksagon)
The number of card B left
= 4 (6 *cards B can form a hexagon*)

Bilangan kad *C* yang tinggal
= 2 (8 keping kad *C* dapat membentuk sebuah oktagon)
The number of card C left
= 2 (8 *cards C can form an octagon*)

Bilangan kad *D* yang tinggal
= 1 (9 keping kad *D* dapat membentuk sebuah nonagon)
The number of card D left
= 1 (9 *cards D can form a nonagon*)

Bilangan kad *E* yang tinggal
= 0 (10 keping kad *E* dapat membentuk sebuah dekagon)
The number of card E left
= 0 (10 *cards E can form a decagon*)

Jumlah kad yang tinggal
The total number of cards left
$= 4 + 2 + 1$
$= 7$