SULIT

NAMA : _____ KELAS : _____

NO KAD PENGENALAN :_____

ANGKA GILIRAN :-_____

SEKOLAH MENENGAH KEBANGSAAN KAPIT

PERCUBAAN KEDUA
PENILAIAN MENENGAH RENDAH 2012

MATHEMATICS
KERTAS 2
OGOS 2012

1 JAM 45 MINIT

Satu jam empat puluh lima minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1 *Tulis* **nama, tingkatan, nombor kad pengenalan** *dan* **angka giliran** *anda pada ruang yang disediakan.*

2 *Kertas soalan ini adalah dalam Bahasa Inggeris dan Bahasa Melayu.*

3 *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

4 *Penggunaan kalulator adalah tidak dibenarkan sepanjang ujian dijalankan.*

Untuk Kegunaan Pemeriksa		
Soalan	Markah Penuh	Markah Diperoleh
1	2	
2	2	
3	3	
4	3	
5	3	
6	3	
7	2	
8	3	
9	3	
10	2	
11	2	
12	3	
13	3	
14	2	
15	3	
16	5	
17	5	
18	4	
19	3	
20	4	
Jumlah		

MATHEMATICAL FORMULAE
RUMUS MATEMATIK

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.
Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

RELATIONS
PERKAITAN

1 $a^m \times a^n = a^{m+n}$

2 $a^m \div a^n = a^{m-n}$

3 $(a^m)^n = a^{mn}$

4 Distance / *jarak* = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

5 Mid Point / *Titik Tengah*

$$(x , y) = \left(\frac{x_1 + x_2}{2} , \frac{y_1 + y_2}{2} \right)$$

6 Average Speed = $\frac{\text{distance travelled}}{\text{time taken}}$

Purata laju = $\frac{\textit{jarak yang dilalui masa}}{\textit{masa yang diambil}}$

7 Mean = $\frac{\text{sum of data}}{\text{number of data}}$

Min = $\frac{\textit{hasil tambah nilai data}}{\textit{bilangan data}}$

8 Pythagoras Theorem / Teorem Pithagoras

$$c^2 = a^2 + b^2$$

SHAPES AND SPACE
BENTUK DAN RUANG

1 Area of rectangle = length × width
Luas segiempat tepat = *panjang* × *lebar*

2 Area of triangle = $\frac{1}{2}$ × base × height
Luas segitiga = $\frac{1}{2}$ × *tapak* × *tinggi*

3 Area of parallelogram = base × height
Luas segiempat selari = *tapak* × *tinggi*

4 Area of trapezium = $\frac{1}{2}$ × sum of parallel side × height
Luas trapezium = $\frac{1}{2}$ × *hasil tambah dus sisi selari* × *tinggi*

5 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi j$

6 Area of circle = πr^2
Luas bulatan = πj^2

7 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi jt$

8 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$

9 Volume of right prism = cross sectional area × length
Isipadu prisma tegak = *luas keratan rentas* × *panjang*

10 Volume of cuboid = length × width × height
Isipadu kuboid = *panjang* × *lebar* × *tinggi*

11 Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi j^2 t$

12 Volume of cone = $\frac{1}{3}\pi r^2 h$
Isipadu kon = $\frac{1}{3}\pi j^2 t$

13 Volume of sphere $= \frac{4}{3}\pi r^3$

Isipadu sfera $= \frac{4}{3}\pi j^3$

14 Volume of right pyramid $= \frac{1}{3} \times$ base area $\times$ height

Isipadu pyramid tegak $= \frac{1}{3} \times$ *luas* tapak $\times$ *tinggi*

15 Sum of interior angles of a polygon $= (n - 2) \times 180°$
Hasil tambah sudut pedalaman poligon $= (n - 2) \times 180°$

16 $\frac{\text{Arc length}}{\text{Circumference}} = \frac{\text{Angle subtended at centre}}{360°}$

$\frac{\textit{Panjang lengkok}}{\textit{Lilitan bulatan}} = \frac{\textit{Sudut pusat}}{360°}$

17. $\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle subtended at centre}}{360°}$

$\frac{\text{Luas sektor}}{\textit{Luas bulatan}} = \frac{\textit{Sudut pusat}}{360°}$

18. Scale factor / Faktor skala, $k = \frac{PA'}{PA}$

19. Area of image $= k^2 \times$ area of object
Luas imej $= k^2 \times$ *luas objek*

Answer **all** questions.
*Jawab **semua** soalan*

For Examiner's Use

1 Calculate the value of $100 - 33 \div (-3) + 5$
Hitung nilai bagi $100 - 33 \div (-3) + 5$

[2 *marks*]
[2 *markah*]

Answer / *Jawapan:*

1

2

---

2 Calculate the value of $\left(\frac{1}{4} - \frac{6}{7}\right) \div (-1\frac{3}{14})$ and express the answer in lowest term

Hitung nilai bagi $\left(\frac{1}{4} - \frac{6}{7}\right) \div (-1\frac{3}{14})$ *dan ungkapkan jawapan dalam sebutan terendah*

[2 *marks*]
[2 *markah*]

Answer / *Jawapan:*

2

2

For Examiner's Use

3 Evaluate
Nilaikan

(a) $3\sqrt{-64}$

(b) $(\sqrt{\frac{49}{25}}-1)^3$

[3 *marks*]
[3 *markah*]

Answer / *Jawapan:*

3

3

4 Solve the equation

(a) $3m + 7 = -6 + 2m$

(b) $\frac{2n-5}{3} = n+2$

[3 *marks*]
[3 *markah*]

Answer / *Jawapan:*

4

3

5 Diagram 9 shows a polygon.
Rajah 9 *menunjukkan sebuah poligon.*

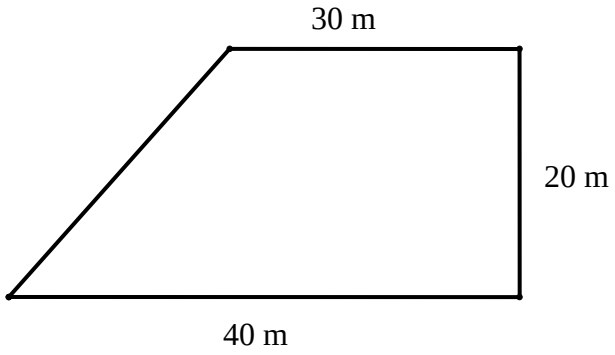
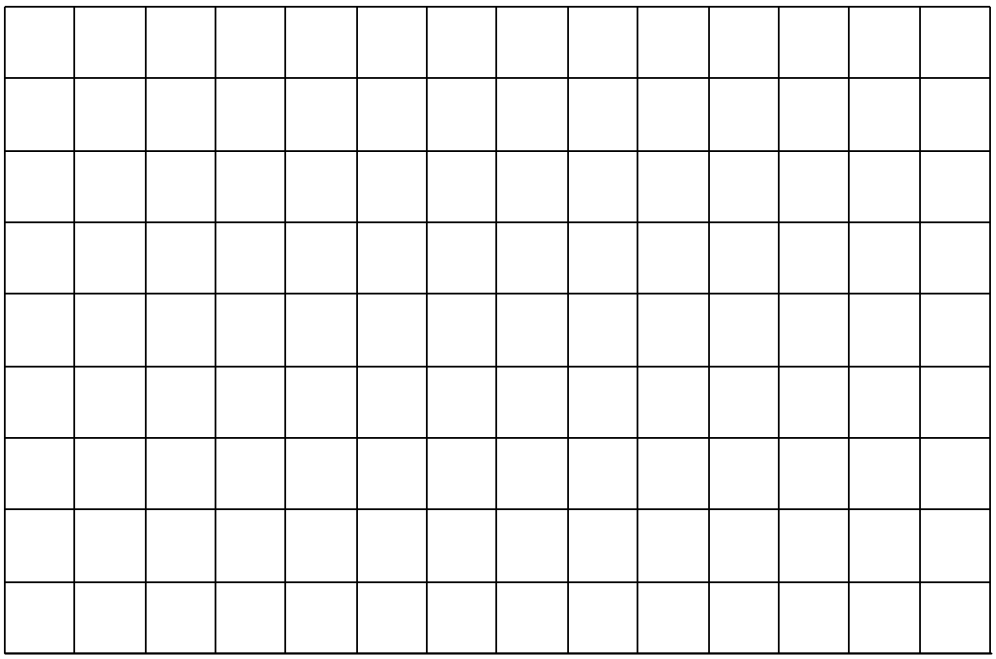


Diagram 1
Rajah 1

On the grid in the answer space, redraw the polygon using the scale 1 :500. The grid has equal squares with sides of 1 cm.
Pada grid di ruang jawapan, lukis semula poligon itu menggunakan skala 1 :500. *Grid itu tediri daripada segi empat sama bersisi* 1 cm. [3 marks]
[*3 markah*]

Answer / *Jawapan*



5

3

6 Diagram 2 shows P' is the image of *P* under an transformation ***W***.
Rajah 2 menunjukkan P' ialah imej P di bawah satu penjelmaan W.

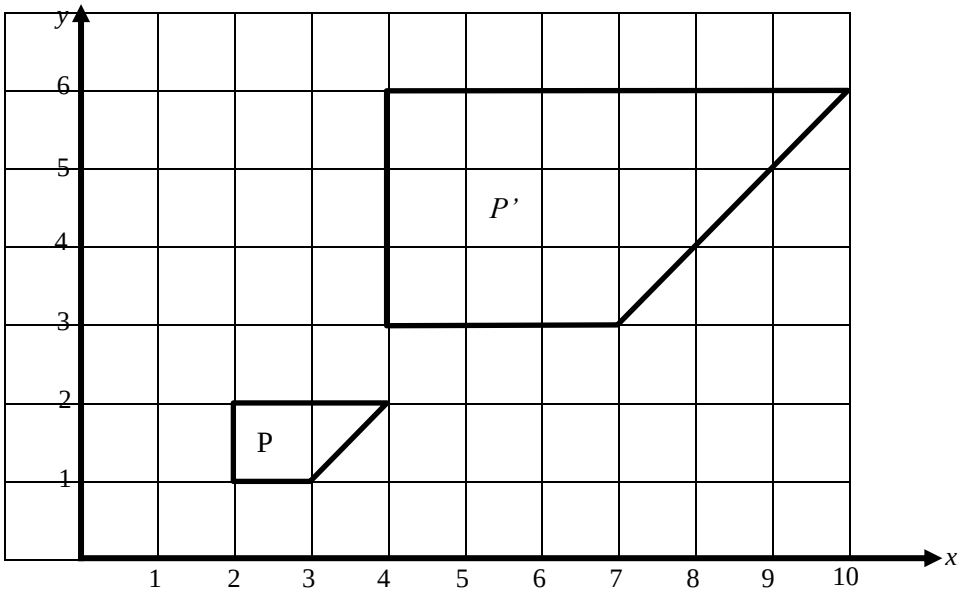


Diagram 2
Rajah 2

Describe in full transformation ***W***.
Huraikan selengkapnya penjelmaan ***W.***

[3 *marks*]
[3 *markah*]

Answer / *Jawapan:*

6

3

For Examiner's Use

7 Diagram 3 shows two triangles *ABC* and *A'B'C'* , drawn on a grid of equal squares. *A'B'C'* is the image of *ABC* under a reflection, on Diagram 3, draw the axis of reflection.

Rajah 3 *menunjukkan dua buah segitiga ABC dan A'B'C', yang dilukis pada grid segiempat sama. A'B'C' ialah imej bagi ABC di bawah satu pantulan. Pada Rajah 3, lukis garis pantulan itu.*

[2 *markah*]

Answer / *Jawapan:*

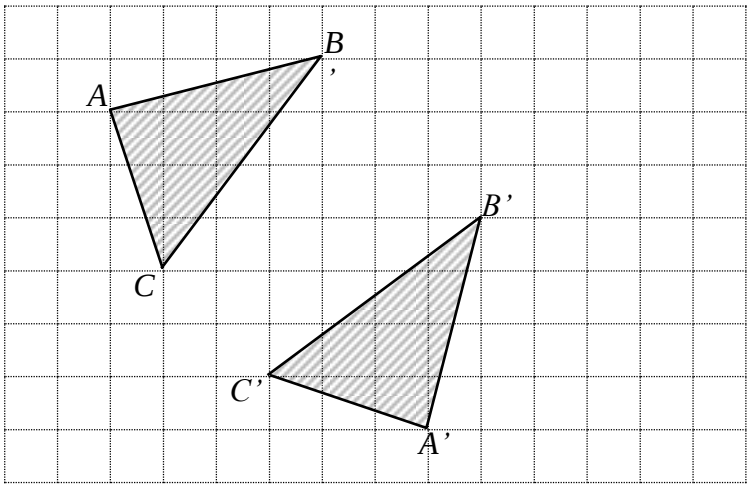


Diagram 3
Rajah 3

7

2

8 Given that $5 = \frac{3-4y}{x+2y}$, express *y* in terms of *x*.

Diberi bahawa $5 = \frac{3-4y}{x+2y}$, *ungkapkan y dalam sebutan x.*

.

[3 *marks*]
[3 *markah*]

Answer / *Jawapan:*

8

3

For Examiner's Use

9 In Diagram 4, *M* is the midpoint of the line *AB*.

Dalam Rajah 4, *M ialah titik tengah garis AB.*

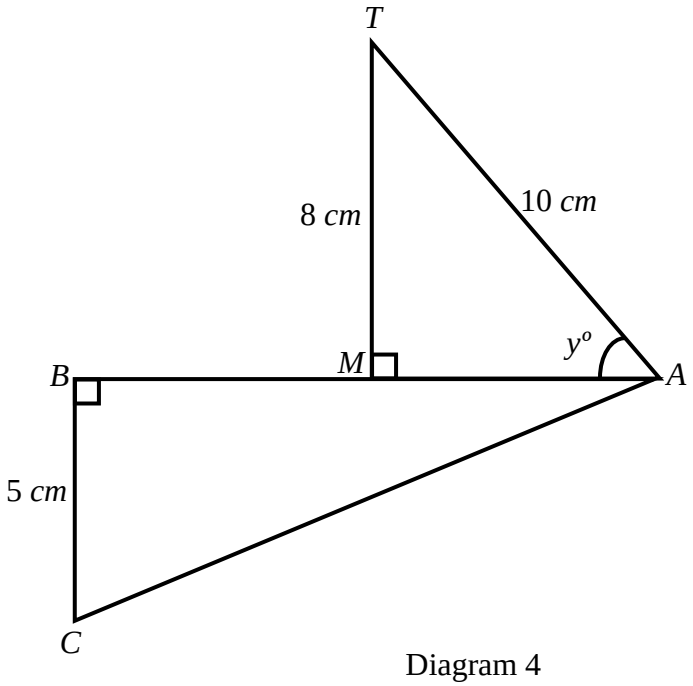


Diagram 4
Rajah 4

(a) Find the value of cos y^0.
Cari nilai bagi kos y^0 .

(b) Calculate the length, in cm , of *AC*.
Hitung panjang, dalam cm, bagi AC.

[*3 marks*]
[*3 markah*]

Answer / *Jawapan*:

9

3

For Examiner's Use

10 Simplify $2(5x - 7xy) - (2xy - 7x)$

Permudahkan $2(5x - 7xy) - (2xy - 7x)$

[2 *marks*]
[2 *markah*]

Answer / *Jawapan:*

10

2

11 Factorise completely $2k^2 - .18$

Faktorkan selengkapnya $2k^2 - 18$.

[2 *marks*]
[2 *markah*]

Answer / *Jawapan:*

11

2

12 Express $\frac{1}{2t} - \frac{t-2}{4t^2}$ as a single fraction in the lowest terms.

Ungkapkan $\frac{1}{2t} - \frac{t-2}{4t^2}$ *sebagai satu pecahan tunggal dalam sebutan terendah.*

[3 *marks*]
[3 *markah*]

Answer / *Jawapan:*

12

3

For Examiner's Use

13 In Diagram 5, hexagon *ABCDEF* and hexagon *PQRSTU* are similar.
Dalam Rajah 5 , heksagon ABCDEF dan heksagon PQRSTU adalah serupa.

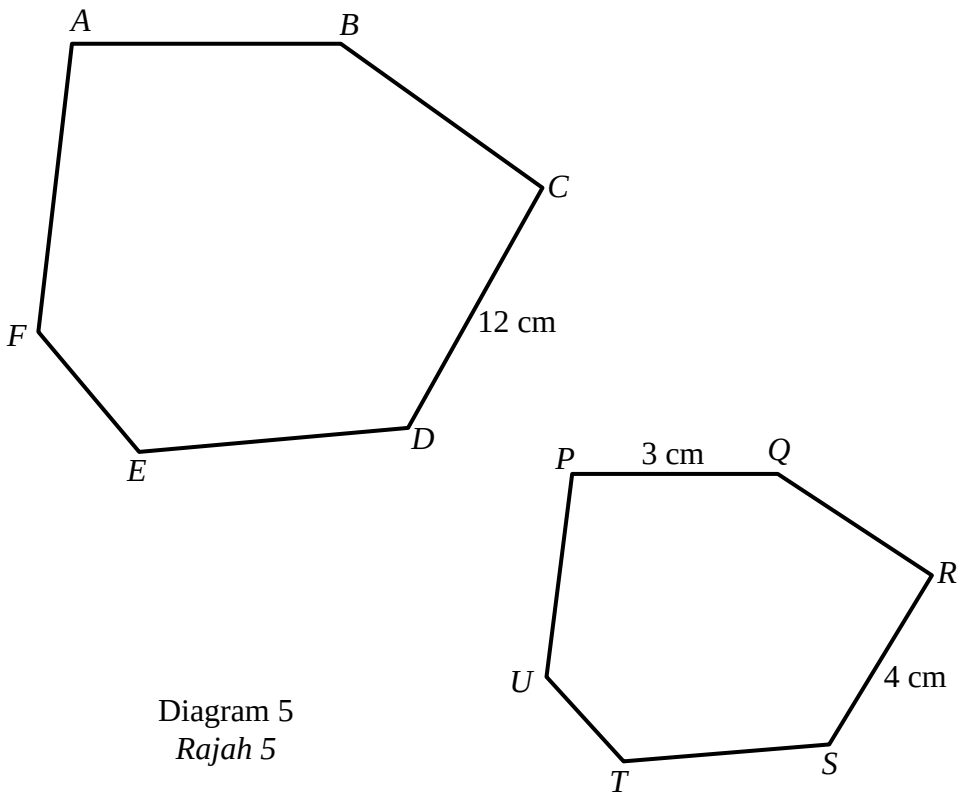


Diagram 5
Rajah 5

(a) Name the angle in hexagon *ABCDEF* which corresponds to $\angle PUT$.
Namakan sudut dalam heksagon ABCDEF yang sepadan dengan $\angle PUT$.

(b) Given that $PQ = ST$, calculate the length, in cm, of DE.
Diberi PQ = ST, hitung panjang , dalam cm, bagi DE.

[3 *marks*]
[3 *markah*]

Answer / *Jawapan*:

(a)

(b)

13

3

For Examiner's Use

14 Find the value of
Cari nilai bagi

$$3^{\frac{1}{2}} \times 5^{\frac{3}{2}} \times (3^3 \times 5^{-1})^{\frac{1}{2}}$$

[2 *marks*]
[2 *markah*]

Answer/ *Jawapan :*

14

2

---

15 List all the integer values of y which satisfy both the inequalities
$\frac{y}{3} + 1 > 2$ and $6 - y \geq -1$.

Senaraikan nilai integer y yang memuaskan kedua-dua ketaksamaan
$\frac{y}{3} + 1 > 2$ *dan* $6 - y \geq -1$.

[3 *marks*]
[3 *markah*]

Answer/ *Jawapan* :

15

3

For Examiner's Use

16 Set squares and protractors are **not** allowed for this question.
*Sesiku dan protraktor **tidak** dibenarkan untuk soalan ini.*

Diagram 6 shows a triangle EFG and a straight line EP.
Rajah 6 menunjukkan sebuah segi tiga EFG dan garis lurus EP

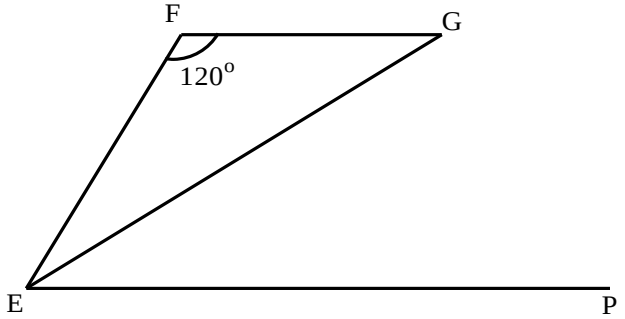


Diagram 6
Rajah 6

(a) Beginning from the straight lines, EF and EP, provided in the answer space, construct the bisector of ∠FEP.
Bermula dengan garis lurus, EF dan EP, yang disediakan di ruang jawapan, bina pembahagi dua sama ∠FEP.

(b) Construct ∠EFG = 120°.
Bina ∠EFG = 120°

(c) Construct GH which is perpendicular to EP such that H lies on EP.
Bina GH yang berserenjang dengan EP dengan keadaan H terletak pada EP.

(d) Measure the length, in cm, of GH.
Ukur panjang, dalam cm, *GH.*

[5 marks]
[5 *markah*]

Answer / *Jawapan*

(a), (b), (c)

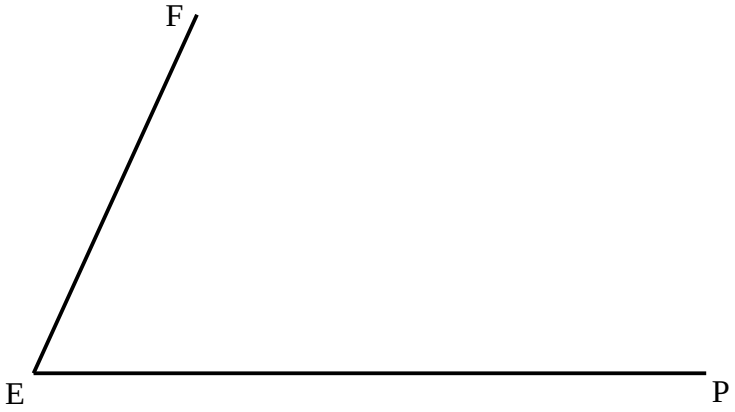


Diagram 6 /Rajah 6

(d)

16

5

For Examiner's Use

17 Diagram 7 below in the answer space shows a square *ABCD*. *X* and *Y* are two moving points inside a square *ABCD*.

Rajah 7 *di bawah di ruang jawapan menunjukkan sebuah segi empat sama ABCD. X dan Y adalah dua titik yang bergerak di dalam segi empat sama.*

a) *W* is the point which moves such that it is equidistant from the lines *AB* and *AD*. By using the letters in the diagram, state the locus of *W*.
W ialah titik yang bergerak dengan keadaan jarak tegaknya sama dari garis lurus AB and AD .Dengan menggunakan huruf abjad pada rajah itu, nyatakan lokus bagi W.

(b) On Diagram 6, draw
Pada Rajah 6, *lukis*

(i) the locus of the point *X* which moves such that its equidistant from *A* and *C*.
lokus bagi titik X yang bergerak dengan keadaan titik itu berjarak sama dari A dan C.

(ii) the locus of the point *Y* which moves such that $YB = \frac{1}{2}BC$.

lokus bagi titik Y yang bergerak dengan keadaan $YB = \frac{1}{2}BC$.

(c) Hence, mark with the symbol ⊗ the intersection of the locus of *X* and the locus of *Y*.
Seterusnya, tandakan dengan simbol ⊗ kedudukan bagi persilangan lokus X dan lokus Y itu.

[5 marks]

Answer / *Jawapan*:
(a)
(b) (i), (ii)

(c)

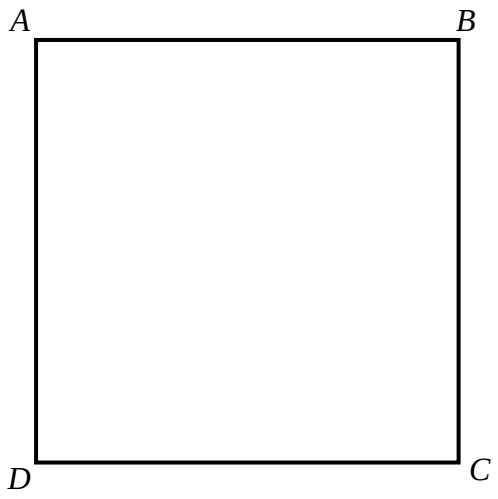


Diagram 7
Rajah 7

17

5

For Examiner's Use

18 Table 1 shows the number of students who represent class 3 Anggerik in Environment Campaign in a certain week.

Jadual 1 *menunjukkan bilangan murid yang melakili kelas 3 Anggerik dalam Persekitaran pada satu minggu tertentu*.

Day *Hari*	Monday *Isnin*	Tuesday *Selasa*	Wednesday *Rabu*	Thursday *Khamis*	Friday *Jumaat*
Number of students *Bilangan murid*	32	20	48	28	36

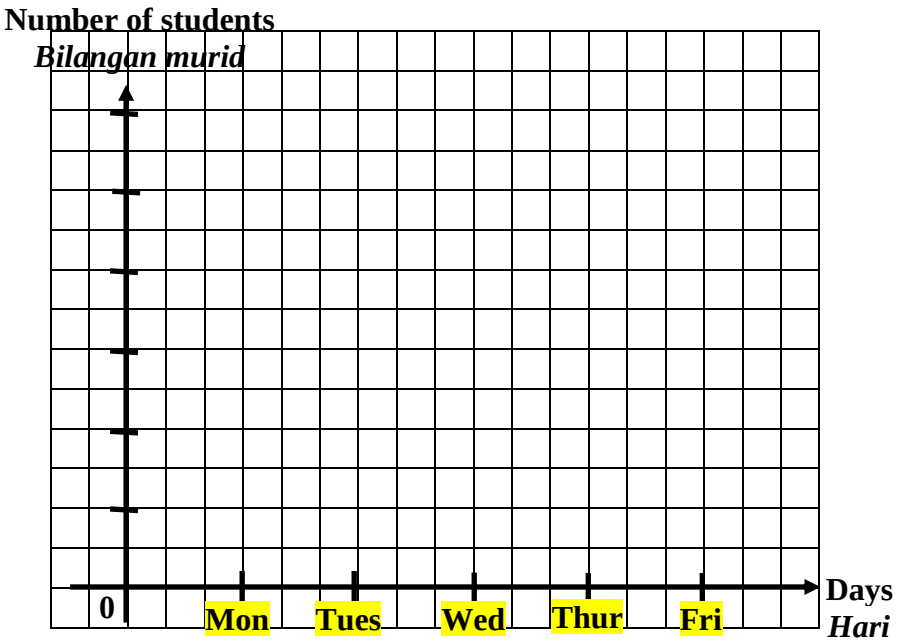
Table 1
Jadual 1

By using the scale of 2 units to 8 students on vertical axis, graph draw a **line graph** in the answer space below to represent all the information in Table 1.

Dengan menggunakan skala 2 unit kepada 8 orang pelajar pada paksi menegak, lukis graf garis pada ruang jawapan berikut untuk mewakili semua maklumat pada jadual 1.

[4 *marks*]
[4 *markah*]

Answer/*Jawapan*:



18

4

For Examiner's Use

19 Table 2 shows the students from 4 schools in Kapit District who take part in District sport. Given that the total number of students that involved is 180.

Jadual 2 menunjukkan bilangan murid 4 buah sekolah dari Daerah Kapit yang mengambil bahagian dalam sukan Daerah. Diberi jumlah pelajar yang terlibat adalah sebanyak 180 orang.

Name of school ***Nama Sekolah***	**Number of students** ***Bilangan Murid***
SMK Kapit	30
SMK Kapit No.2	45
SMK Selirik	x
SMK Song	40

Table 2
Jadual 2

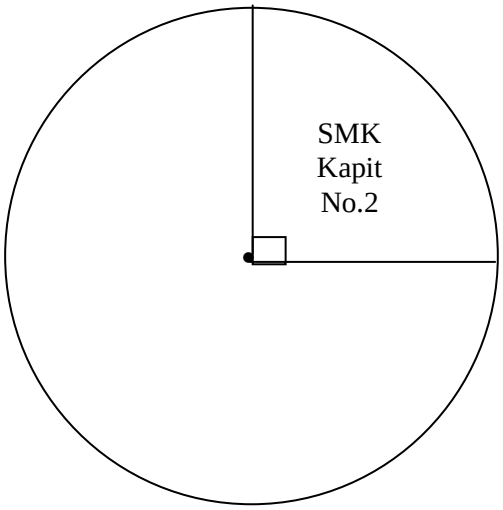
Based on the information above,

(a) find the value of x
Cari nilai x

(b) complete the pie chart to represent all the information in Table 2.
lengkapkan carta pai bagi mewakili semua maklumat di Jadual 2.

[3 *marks*]
[3 *markah*]

Answer/*Jawapan*:



19

3

For Examiner's Use

20 Use the graph paper on next page to answer this questions.
Gunakan kertas graf pada halaman sebelah untuk menjawab soalan ini.

Table 3, shows the values of two variables, *x* and *y*, of a function.
Jadual 3 *menunjukkan nilai-nilai dua pembolehubah, x dan y, bagi suatu fungsi.*

x	– 3	– 2.5	– 2	– 1	0	1	2	2.5
y	33	21.5	14	7	6	5	– 2	– 9.5

Table 3
Jadual 3

Draw the graph of function by using a scale of 2 cm to 1 unit on the *x*-axis and 2 cm to 5 units on the *y*-axis.

Lukiskan graf fungsi dengan menggunakan skala 2 cm *kepada* 1 *unit pada paksi- x dan* 2 cm *kepada* 5 *unit pada paksi-y.*

[4 *marks*]
[4 *markah*]

20

4

END OF TEST PAPER
KERTAS UJIAN TAMAT

Success seems to be connected with action. Successful people keep moving. They make mistakes but they don't quit.

~Conrad Hilton~

Kejayaan berkaitan dengan tindakan. Orang yang berjaya terus melangkah. Mereka melakukan kesilapan, tetapi mereka tidak putus asa.

Prepared by,	Checked by,	Certified by,
Mr. Law Hui Nong	Mr. Ahmad Ridhwan (Ketua Panitia Matematik)	Miss Wong Su Huong (Guru Kanan Sains Dan Matematik)