

SULIT

NAMA

TINGKATAN

SULIT
50/2
Matematik
Kertas 2
Ogos 2011
 $1\frac{3}{4}$ jam



BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KECEMERLANGAN
KEMENTERIAN PELAJARAN MALAYSIA

PEPERIKSAAN PERCUBAAN
PENILAIAN MENENGAH RENDAH

<i>Untuk Kegunaan Pemeriksa</i>		
Soalan	Markah Penuh	Markah Diperoleh
1	2	
2	2	
3	3	
4	3	
5	3	
6	2	
7	3	
8	3	
9	2	
10	4	
11	5	
12	3	
13	3	
14	3	
15	3	
16	3	
17	3	
18	3	
19	3	
20	4	
Jumlah	60	

MATEMATIK**Kertas 2**

Satu jam empat puluh lima minit

1. *Kertas ini mengandungi 20 soalan.*
2. *Jawab semua soalan.*
3. *Jawapan hendaklah ditulis dengan jelas dalam ruang yang disediakan dalam kertas soalan.*
4. *Tunjukkan langkah – langkah. Ini boleh membantu anda untuk mendapatkan markah.*
5. *Penggunaan kalkulator tidak dibenarkan.*
6. *Kertas soalan ini hendaklah diserahkan di akhir peperiksaan.*

Kertas soalan ini mengandungi 21 halaman bercetak

MATHEMATICAL FORMULAE
RUMUS MATEMATIK

The following formulae may be helpful in answering the questions. The symbols given are 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 Midpoint / Titik tengah

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

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

$$\text{Purata laju} = \frac{\text{Jarak yang dilalui}}{\text{Masa yang diambil}}$$

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

$$\text{Min} = \frac{\text{Hasil tambah nilai data}}{\text{bilangan data}}$$

8 Pythagoras Theorem / Teorem Pithagoras

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

SHAPE AND SPACE
BENTUK DAN RUANG

- 1 Area of rectangle = length \times width
Luas segiempat tepat = panjang \times lebar

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

- 3 Area of parallelogram = base \times height
Luas segiempat selari = tapak \times tinggi

- 4 Area of trapezium = $\frac{1}{2} \times$ sum of parallel sides \times height
Luas trapezium = $\frac{1}{2} \times$ hasil tambah dua sisi selari \times 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 \times length
Isipadu prisma tegak = luas keratan rentas \times panjang

- 10 Volume of cuboid = length \times width \times height
Isipadu kuboid = panjang \times lebar \times 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 = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 15 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180^\circ$
- 16
$$\frac{\text{Arc length}}{\text{Circumference of circle}} = \frac{\text{Angle subtended at centre}}{360^\circ}$$

$$\frac{\text{Panjang lengkok}}{\text{Lilitan bulatan}} = \frac{\text{Sudut pusat}}{360^\circ}$$
- 17
$$\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle subtended at centre}}{360^\circ}$$

$$\frac{\text{Luas sektor}}{\text{Luas bulatan}} = \frac{\text{Sudut di pusat}}{360^\circ}$$
- 18 Scale factor / *Faktor skala*, $k = \frac{PA'}{PA}$
- 19 Area of image = $k^2 \times \text{area of object}$
Luas imej = $k^2 \times \text{luas objek}$

For
Examiner's
Use

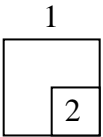
Answer **all** questions.
Jawab **semua** soalan.

1 Calculate the value of $15 - (-12) \div \frac{3}{4}$

Hitung nilai bagi $15 - (-12) \div \frac{3}{4}$

[2 marks]
[2 markah]

Answer / Jawapan:

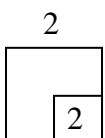


2 Calculate the value of $6\frac{1}{2} - (2.43) \times 0.9$ and express the answer in decimal.

Hitung nilai bagi $6\frac{1}{2} - (2.43) \times 0.9$ dan ungkapkan jawapan dalam perpuluhan.

[2 marks]
[2 markah]

Answer / Jawapan:



- 3 (a) Find the value of $\sqrt[3]{-0.343}$

Cari nilai bagi $\sqrt[3]{-0.343}$

- (b) Calculate the value of $\left(1 - \sqrt{\frac{9}{36}}\right)^3$

Hitung nilai bagi $\left(1 - \sqrt{\frac{9}{36}}\right)^3$

[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

*For
Examiner's
Use*

3
3

4

Diagram 4 shows an irregular pentagon.

Rajah 4 menunjukkan sebuah poligon tak sekata

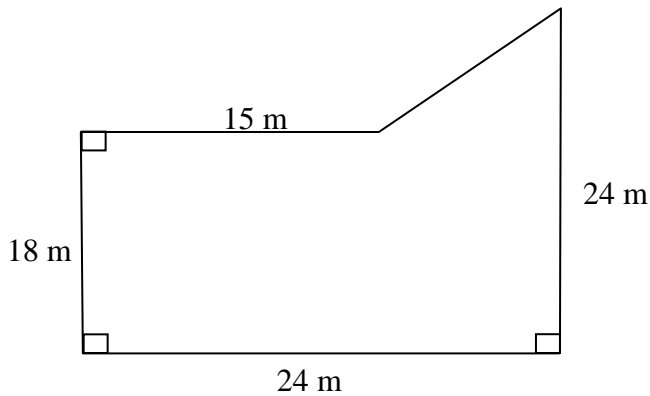


Diagram 4

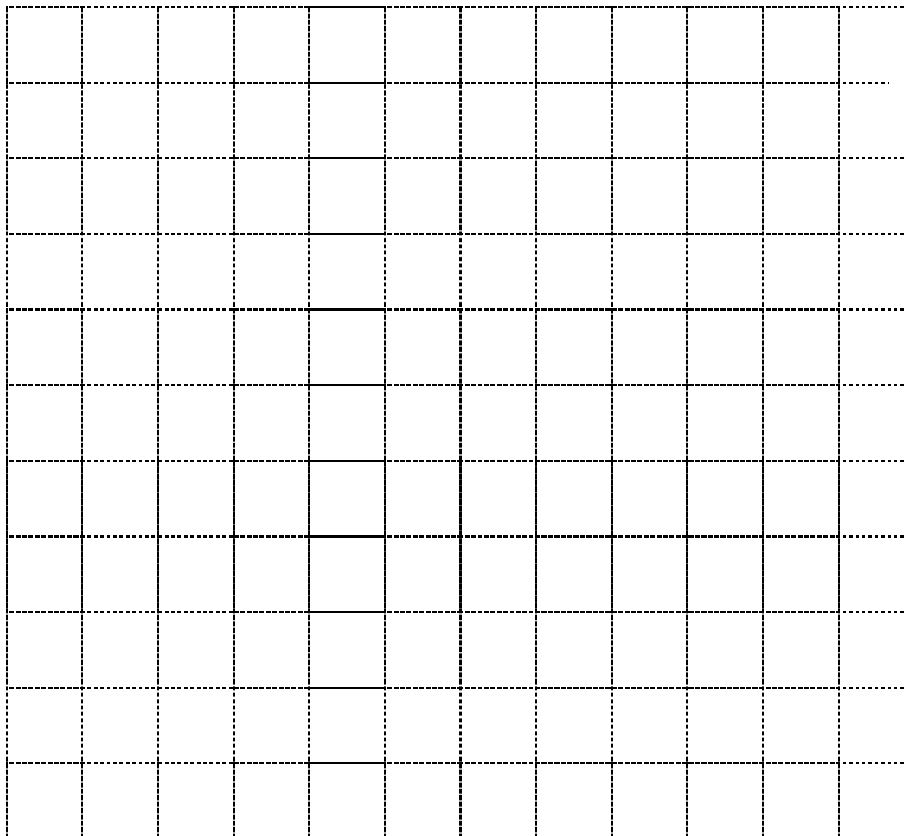
Rajah 4

On the grid in the answer space, draw Diagram 4 using the scale 1 : 300. The grid has equal squares with side of 1 cm.

Pada grid di ruang jawapan, lukis rajah 4 menggunakan skala 1:300. Grid yang disediakan terdiri daripada segiempat sama bersisi 1 cm

[3 marks]
[3 markah]

Answer / Jawapan:



4
3

- 5 Diagram 5 shows two right-angled triangles, PQR and PRS .

Rajah 5 menunjukkan dua buah segitiga bersudut tegak, PQR dan PRS .

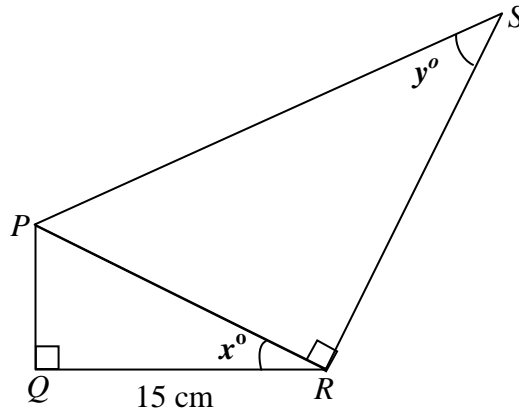


Diagram 5
Rajah 5

Given that $\tan x = \frac{8}{15}$ and $\sin y = \frac{1}{2}$

Diberi bahawa $\tan x = \frac{8}{15}$ dan $\sin y = \frac{1}{2}$.

- (a) Find the value of $\cos x$.
Cari nilai kos x .
- (b) Calculate the length, in cm, of PS .
Hitung panjang PS dalam cm.

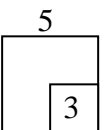
[3 marks]

[3 markah]

Answer / *Jawapan:*

(a)

(b)



For
Examiner's
Use

- 6 Diagram 6 shows two triangles, JKL and $J'K'L'$, drawn on a Cartesian plane. $J'K'L'$ is the image of JKL under transformation **P**.

Rajah 6 menunjukkan dua buah segi tiga, JKL dan $J'K'L'$, yang dilukis pada satu satah Cartesian. $J'K'L'$ ialah imej bagi JKL di bawah penjelmaan **P**.

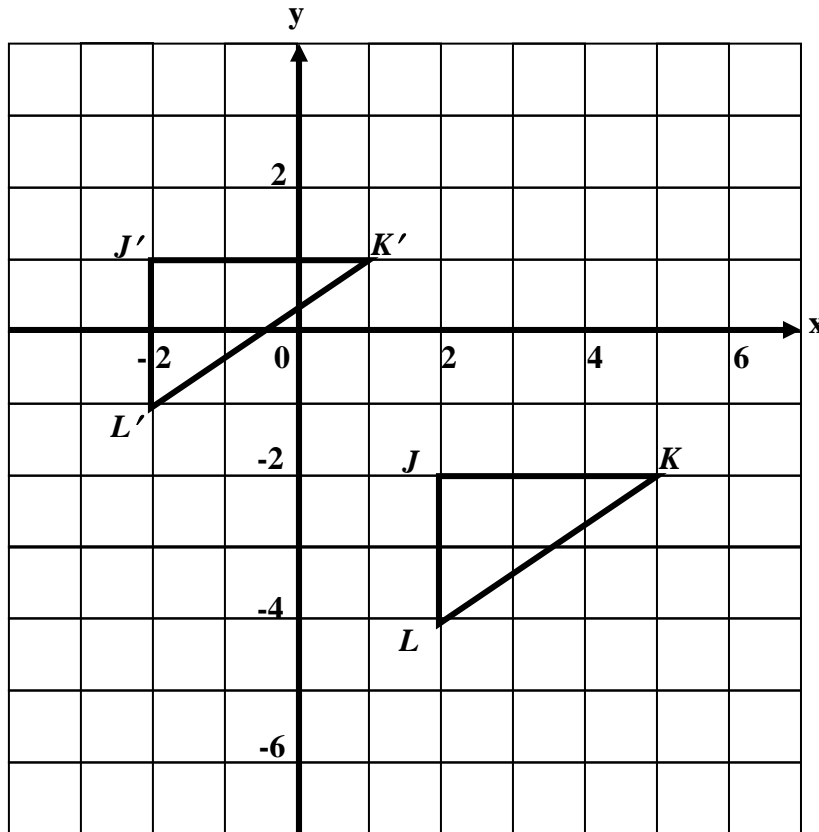


Diagram 6
Rajah 6

Describe in full transformation **P**.

Huraikan selengkapnya penjelmaan **P**.

[2 marks]
[2 markah]

Answer / Jawapan:

6

	2
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7 Diagram 7 in the answer space shows quadrilateral $JKLM$ drawn on a grid of equal squares. $J'K'$ is the image of JK under a rotation 180° about the point O . On Diagram 7, mark and label point O and complete the image of quadrilateral $JKLM$.

Rajah 7 di ruang jawapan menunjukkan sisi empat $JKLM$ yang dilukis pada grid segi empat sama. $J'K'$ ialah imej bagi JK di bawah satu putaran 180° pada titik O . Pada Rajah 7, tanda dan tulis titik O dan lengkapkan imej bagi sisi empat $JKLM$.

[3 marks]
[3 markah]

Answer / Jawapan:

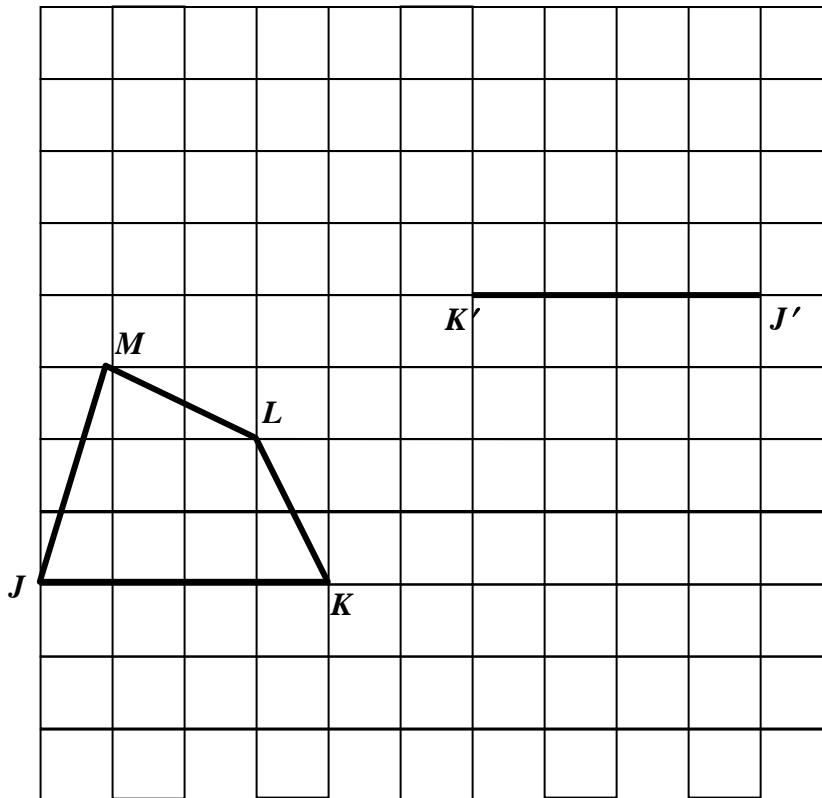
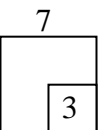


Diagram 7
Rajah 7



For
Examiner's
Use

8 Expand each of the following.
Kembangkan setiap yang berikut.

(a) $(3 - 2p)^2$

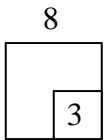
(b) $2m(m - n) + (m + n)^2$

[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

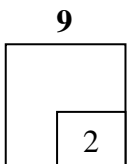


9 Factorise completely $3pr - 6p + 3qr - 6q$.

Faktorkan selengkapnya $3pr - 6p + 3qr - 6q$.

[2 marks]
[2 markah]

Answer / Jawapan:



10 Diagram 10.1 shows a square PQRS. The point K,L,M and N are midpoints on the square.

Rajah 10.1 menunjukkan satu segiempat sama PQRS. Titik K,L,M dan N adalah titik tengah setiap sisi segiempat sama tersebut.

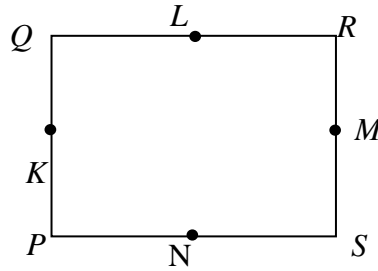


Diagram 10.1
Rajah 10.1

- (a) X is a moving point in the square such that it is a constant distance from the lines QR and PS.
 - (i) Draw the locus of X on Diagram 10.2 .
 - (ii) Using the letters in the diagram, state the locus of X.

X ialah satu titik yang bergerak dengan keadaan jarak sentiasa sama dari garis QR dan PS.

- (i) Lukis lokus bagi X pada Rajah 10.2 .
- (ii) Seterusnya dengan menggunakan huruf dalam rajah 10.1, nyatakan lokus X.

- (b) On Diagram 10.2, draw the locus Y such that YP=PS.
Pada Rajah 10.2, lukis lokus Y dengan keadaan YP=PS

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

[4 marks]
[4 markah]

Answer / Jawapan:

- (a) (ii)

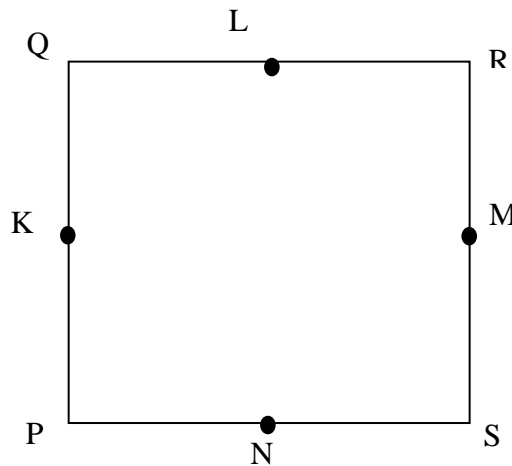


Diagram 10.2
Rajah 10.2

- (b)

10
4

For
Examiner's
Use

- 11 (a) Set squares and protractors are not allowed for this question.

Sesiku dan protractor tidak boleh digunakan dalam soalan ini.

Diagram 11 shows a triangle PQR .

Rajah 11 menunjukkan sebuah setiga PQR

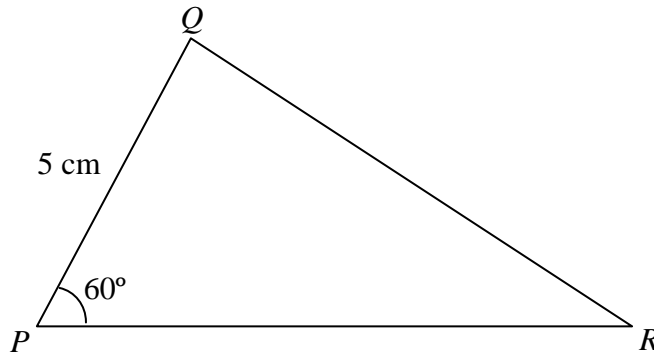


Diagram 11

Rajah 11

- (i) Using only a ruler and a pair of compasses, construct triangle PQR using the measurements given, beginning from the straight line PR provided in the answer space.

Dengan menggunakan pembaris dan jangka lukis sahaja, bina segitiga PQR mengikut ukuran yang diberi, bermula dengan garis lurus PR yang disediakan di ruang jawapan.

- (ii) Hence, construct a perpendicular line to the straight line PR which passes through the point Q .

Seterusnya, bina satu garis serenjang pada garis lurus PR melalui titik Q .

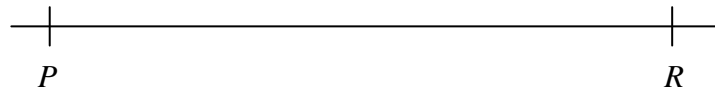
- (b) Based on the diagram constructed in a (ii), measure the perpendicular distance between point Q and the straight line PR .

Berdasarkan rajah yang telah dibina, di a(ii) ukur jarak serenjang di antara titik Q dengan garis lurus PR

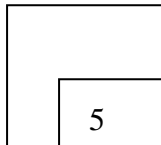
[5 marks]
[5 markah]

Answer / Jawapan:

For
Examiner's
Use



11



12 Express $\frac{3}{2x} - \frac{6-5y}{4x}$ as a single fraction in its simplest form.

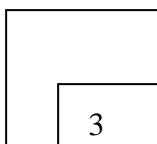
Ungkapkan $\frac{3}{2x} - \frac{6-5y}{4x}$ sebagai satu pecahan tunggal dalam bentuk termudah

[3 marks]

[3 markah]

Answer / Jawapan:

12



For
Examiner's
Use

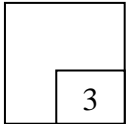
13 Given $\frac{pq}{5} - 3 = r$ express p in terms of q and r .

Diberi $\frac{pq}{5} - 3 = r$ ungkapkan p dalam sebutan q dan r .

[3 marks]
[3 markah]

Answer / Jawapan:

13



14 Solve each of the following linear equations:

Selesaikan tiap-tiap persamaan linear berikut:

(a) $-2k = 6$

(b) $3(f - 8) = \frac{1}{3}f$

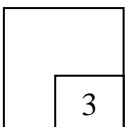
[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

14



15 Simplify each of the following :
Permudahkan tiap-tiap yang berikut :

(a) $(g^3)^{-2}$

(b) $\frac{k^{-2} \times k^{\frac{3}{2}}}{\sqrt{k}}$

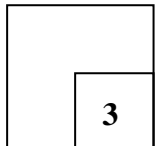
[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

15



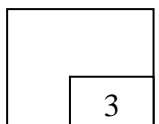
16 Evaluate : $5^{\frac{1}{2}} \times 15^{\frac{3}{2}} \times 3^{\frac{1}{2}}$

Nilaikan : $5^{\frac{1}{2}} \times 15^{\frac{3}{2}} \times 3^{\frac{1}{2}}$

[3 marks]
[3 markah]

Answer / Jawapan:

16



For
Examiner's
Use

- 17 List all the integer values of x which satisfy both the inequalities

$$7 - x \leq 12 \text{ and } 3x < 4 + x$$

Senaraikan semua nilai integer x yang memuaskan kedua-dua ketaksamaan

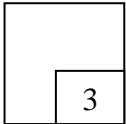
$$7 - x \leq 12 \text{ and } 3x < 4 + x$$

[3 marks]

[3 markah]

Answer / Jawapan:

17



- 18 Diagram 18 is a line graph showing the number of students who obtained gred A for mathematics in the Penilaian Menengah Rendah examination of a school from year 2006 to 2010.

For
Examiner's
Use

Rajah 18 ialah graf garis yang menunjukkan bilangan pelajar yang mendapat gred A untuk subjek matematik dalam peperiksaan Penilaian Menengah Rendah dari tahun 2006 hingga 2010.

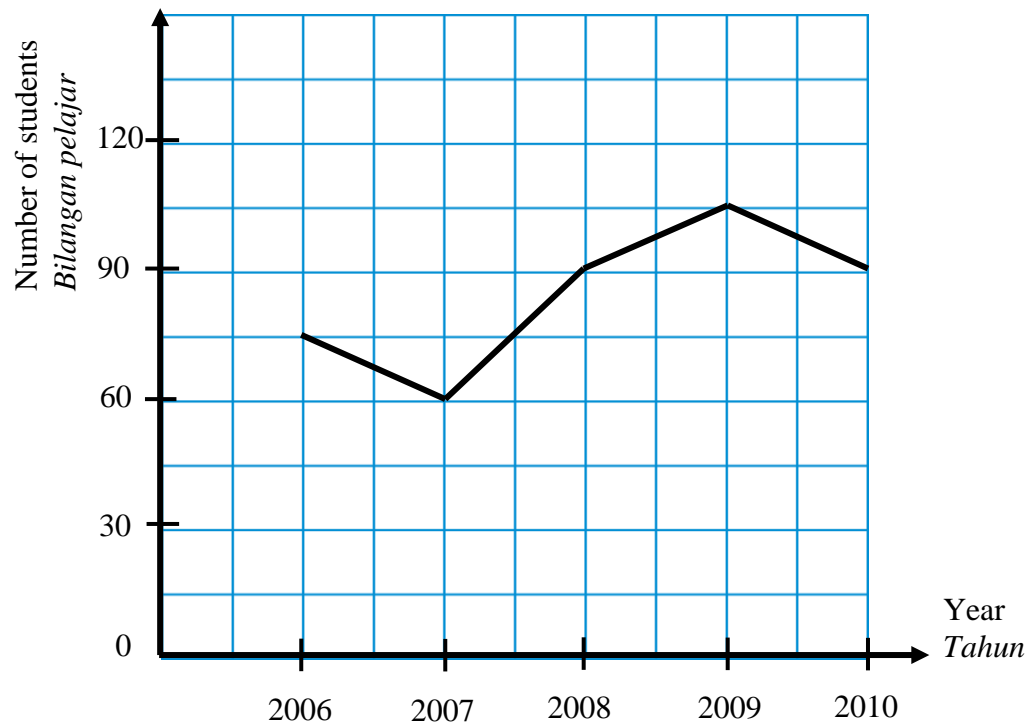


Diagram 18
Rajah 18

- (a) State the mode of the data.
Nyatakan mod bagi data.
- (b) Calculate the difference number of students who obtained gred A between year 2007 and 2009

Hitung beza bilangan murid yang mendapat gred A antara tahun 2007 dan 2009.

[3 marks]
[3 markah]

Answer / Jawapan:

- (a)
- (b)

18

3

For
Examiner's
Use

19 Table 19 shows the total number of tickets sold for a school charity dinner.

Jadual 19 menunjukkan jumlah tiket yang telah dijual untuk makan malam amal sebuah sekolah.

Type of tickets	Number of ticket sold
Students	120
Teachers	90
Alumni	30
VIP	40

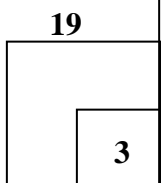
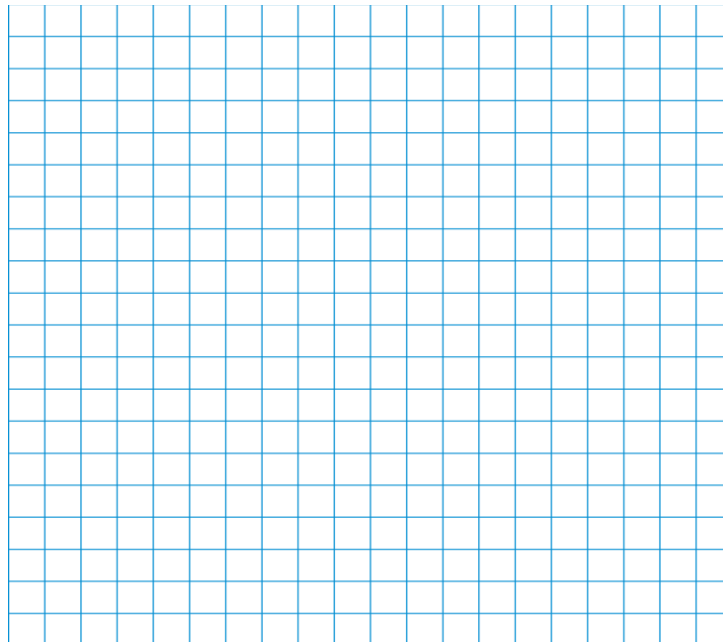
Table 19
Jadual 19

Construct a bar chart to represent the table given.

Bina satu carta palang untuk mewakili jadual yang diberi.

[3 marks]
[3 markah]

Answer / *Jawapan:*



- 20 Table 20 shows the values of two variables x and y of a function.

Jadual 20 menunjukkan nilai dua pembolehubah x dan y bagi suatu fungsi.

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

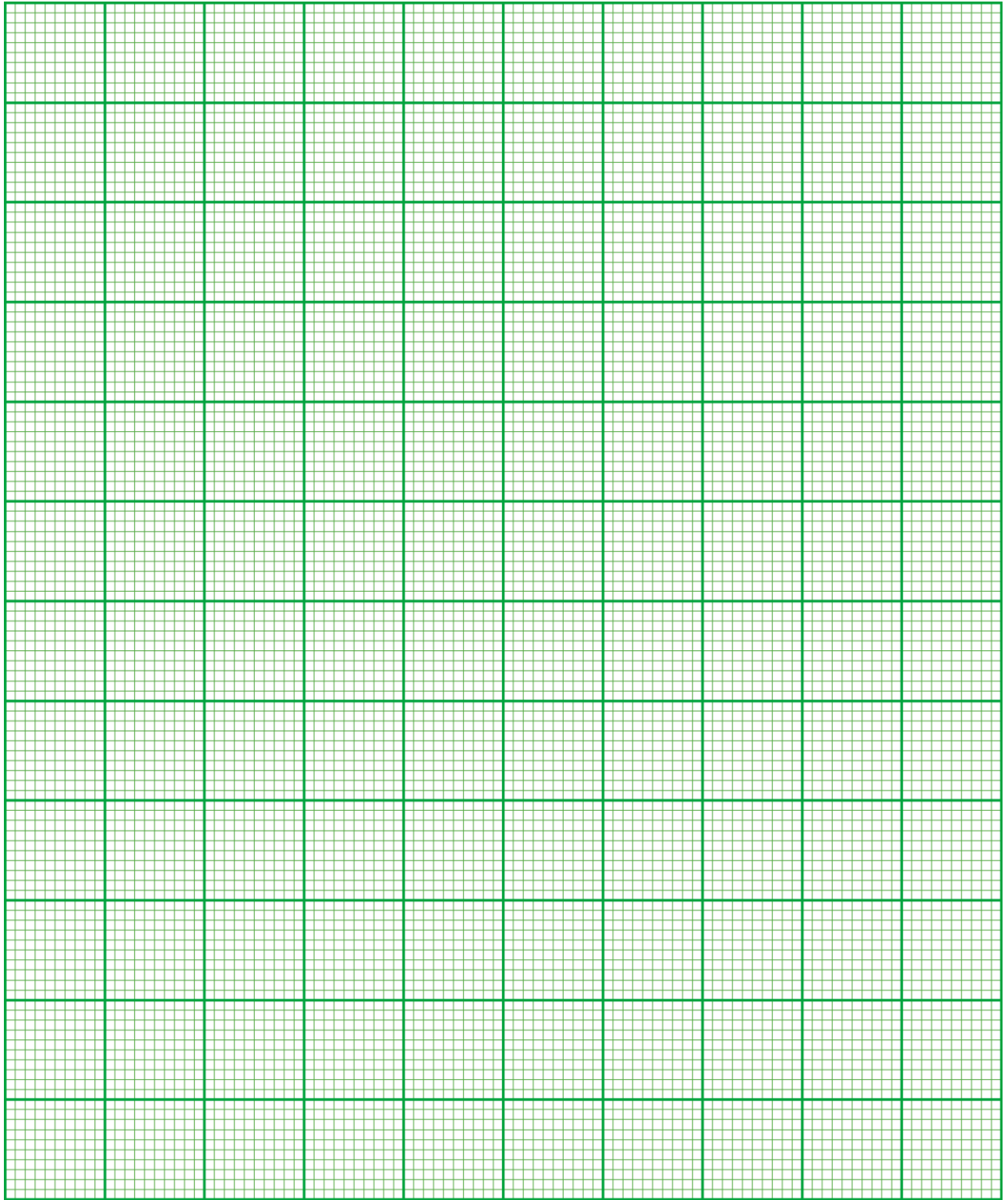
Table 20
Jadual 20

Using the scale of 2 cm to 1 unit on the x -axis and 2 cm to 2 unit on the y -axis, draw the graph function.

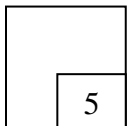
Dengan menggunakan skala 2 cm kepada 2 unit pada paksi- x dan 2 cm kepada 4 unit pada paksi- y , lukis graf fungsi itu.

[4 marks]
[4 markah]

*For
Examiner's
Use*



20



**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**