

Mathematics
August 2010

$1\frac{3}{4}$ hours

Name :

Class :



JABATAN PELAJARAN NEGERI TERENGGANU

**PEPERIKSAAN PERCUBAAN
PENILAIAN MENENGAH RENDAH 2010**

MATHEMATICS

Paper 2

One Hour Forty-Five Minutes

**DO NOT OPEN THIS TEST PAPER
UNTIL YOU ARE TOLD TO DO SO**

INFORMATION FOR CANDIDATES

1. *This question paper consists of 20-questions.*
2. *Answer **all** questions.*
3. *Write your answer clearly in the spaces provided in the question paper.*
4. *Show your working. It may help you to get marks.*
5. *If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer.*
6. *The diagram in the questions provided are not drawn to scale unless stated.*
7. *The marks allocated for each question are shown in brackets.*
8. *A list of formulae is provided on page 2.*
9. *The usage of calculator is **not** allowed.*

Examiner's Code		
Question	Full Marks	Score
1	2	
2	2	
3	3	
4	3	
5	4	
6	3	
7	3	
8	4	
9	3	
10	3	
11	2	
12	3	
13	2	
14	3	
15	2	
16	2	
17	2	
18	5	
19	5	
20	4	
Total		

Disediakan Oleh:

AKRAM NEGERI TERENGGANU

Dibiayai Oleh:

KERAJAAN NEGERI TERENGGANU

TERENGGANU ANJUNG ILMU

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This question paper consists of 21 printed pages.

MATHEMATICS FORMULAE

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used.

RELATIONS

- $a^m \times a^n = a^{m+n}$
- $a^m \div a^n = a^{m-n}$
- $(a^m)^n = a^{mn}$
- Distance = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
- Midpoint

$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$
- Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
- Mean = $\frac{\text{sum of data}}{\text{number of data}}$
- Pythagoras Theorem

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

SHAPE AND SPACE

- Area of rectangle = length x width
- Area of triangle = $\frac{1}{2}$ x base x height
- Area of parallelogram = base x height
- Area of trapezium

$$= \frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height}$$
- Circumference of circle = $\pi d = 2\pi r$
- Area of circle = πr^2
- Curved surface area of cylinder

$$= 2\pi rh$$
- Surface area of sphere = $4\pi r^2$
- Volume of right prism

$$= \text{cross sectional area} \times \text{length}$$
- Volume of cuboid

$$= \text{length} \times \text{width} \times \text{height}$$
- Volume of cylinder = $\pi r^2 h$
- Volume of cone = $\frac{1}{3} \pi r^2 h$
- Volume of sphere = $\frac{4}{3} \pi r^3$
- Volume of pyramid

$$= \frac{1}{3} \times \text{base area} \times \text{height}$$
- Sum of interior angles of polygon

$$= (n - 2) \times 180^\circ$$
- $\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$
- $\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$
- Scale factor, $k = \frac{P'A'}{PA}$
- Area of image = k^2 x area of object

RUMUS MATEMATIK

Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

PERKAITAN

- $a^m \times a^n = a^{m+n}$
- $a^m \div a^n = a^{m-n}$
- $(a^m)^n = a^{mn}$
- Jarak = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
- Titik Tengah
 $(x,y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
- Purata laju = $\frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$
- Min = $\frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$
- Teorem Pithagoras
 $c^2 = a^2 + b^2$

BENTUK DAN RUANG

- Luas segiempat tepat = panjang x lebar
- Luas segitiga = $\frac{1}{2}$ x tapak x tinggi
- Luas segiempat selari = tapak x tinggi
- Luas trapezium
 $= \frac{1}{2}$ x (hasil tambah dua sisi selari) x tinggi
- Lilitan bulatan = $\pi d = 2\pi r$
- Luas Bulatan = πr^2
- Luas permukaan melengkung silinder
 $= 2\pi r t$
- Luas permukaan sfera = $4\pi r^2$
- Isipadu prisma tegak
 $= \text{luas keratan rentas} \times \text{panjang}$
- Isipadu kuboid = panjang x lebar x tinggi
- Isipadu silinder = $\pi r^2 t$
- Isipadu kon = $\frac{1}{3} \pi r^2 t$
- Isipadu sfera = $\frac{4}{3} \pi r^3$
- Isipadu peramid tegak
 $= \frac{1}{3}$ x luas tapak x tinggi
- Hasil tambah sudut pedalaman poligon
 $= (n - 2) \times 180^\circ$
- $\frac{\text{panjang lengkok}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$
- $\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$
- Faktor skala, $k = \frac{P'A'}{PA}$
- Luas Imej = k^2 x luas objek

For
Examiner's
Use

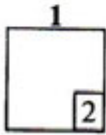
Answer all questions.

- 1 Calculate the value of $-4 + 16 \div 1\frac{1}{3}$

Hitung nilai bagi

Answer / Jawapan:

[2 marks]

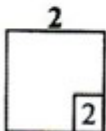


- 2 Calculate the value of $\frac{3}{2} \div \left(1\frac{3}{4} - \frac{9}{8}\right)$ and express the answer as a fraction in its lowest term.

Hitung nilai bagi $\frac{3}{2} \div \left(1\frac{3}{4} - \frac{9}{8}\right)$ dan ungkapkan jawapannya sebagai satu pecahan dalam sebutan terendah.

Answer / Jawapan:

[2 marks]



- 3 (a) Find the value of 6^2
Cari nilai bagi
- (b) Calculate the value of $\sqrt[3]{\frac{27}{8}} + \sqrt{0.25}$
Hitung nilai bagi

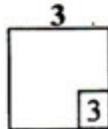
*For
Examiner's
Use*

Answer / *Jawapan:*

[3 marks]

(a)

(b)



- 4 Solve each of the following linear equations:
Selesaikan tiap-tiap persamaan berikut:

(a) $3x - 2 = 2x + 4$

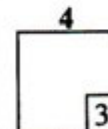
(b) $2p - 1\frac{1}{2} = \frac{5}{2}$

Answer / *Jawapan:*

[3 marks]

(a)

(b)



- 5 Diagram 1 shows the shape of P and R drawn on a grid of equal squares.
Rajah 1 menunjukkan bentuk P dan R dilukis pada grid segiempat sama yang sama besar.

- (a) On the diagram, draw the image of shape P under a reflection on the line KL .
Pada rajah itu, lukis imej bagi bentuk P di bawah pantulan pada garisan KL .
- (b) R is the image of P under transformation M . Describe in full transformation M .
 R ialah imej bagi P di bawah suatu penjelmaan M . Huraikan selengkapnya penjelmaan M .

[4 marks]

Answer / Jawapan:

(a)

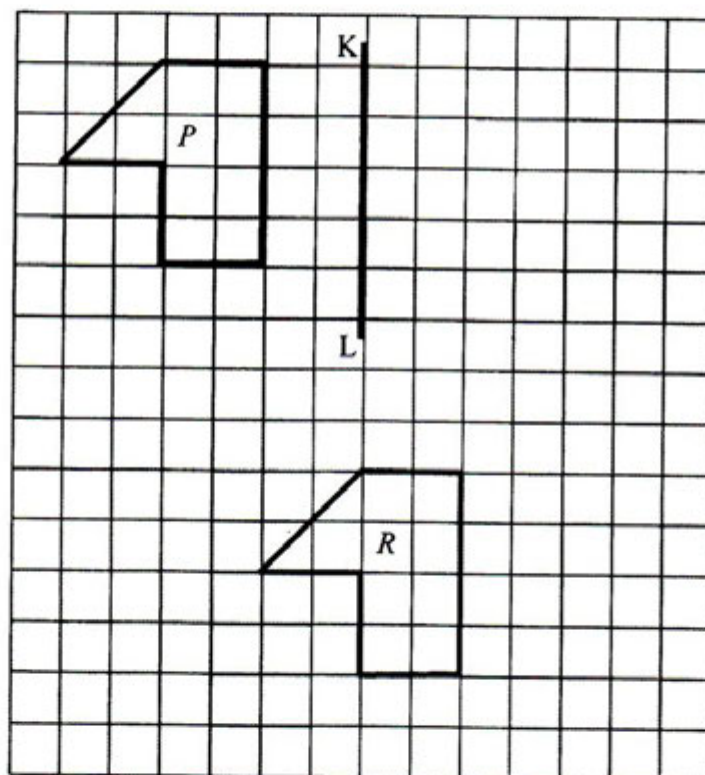
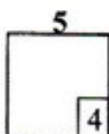


Diagram 1

(b)



- 6 Diagram 2 in the answer space shows a quadrilateral $P'Q'R'S'$ as the image of quadrilateral $PQRS$ under an enlargement drawn on a Cartesian plane.
Rajah 2 di ruang jawapan menunjukkan sebuah sisiempat $P'Q'R'S'$ sebagai imej bagi sisiempat $PQRS$ di bawah satu pembesaran yang dilukis pada satah Cartesian.

On the diagram,

- (a) mark and state the coordinates of the centre of enlargement,
 (b) Find the scale factor.

Pada rajah,

- (a) *tanda dan nyatakan koordinat pusat pembesaran itu,*
 (b) *Cari faktor skala.*

[3 marks]

Answer / Jawaban:

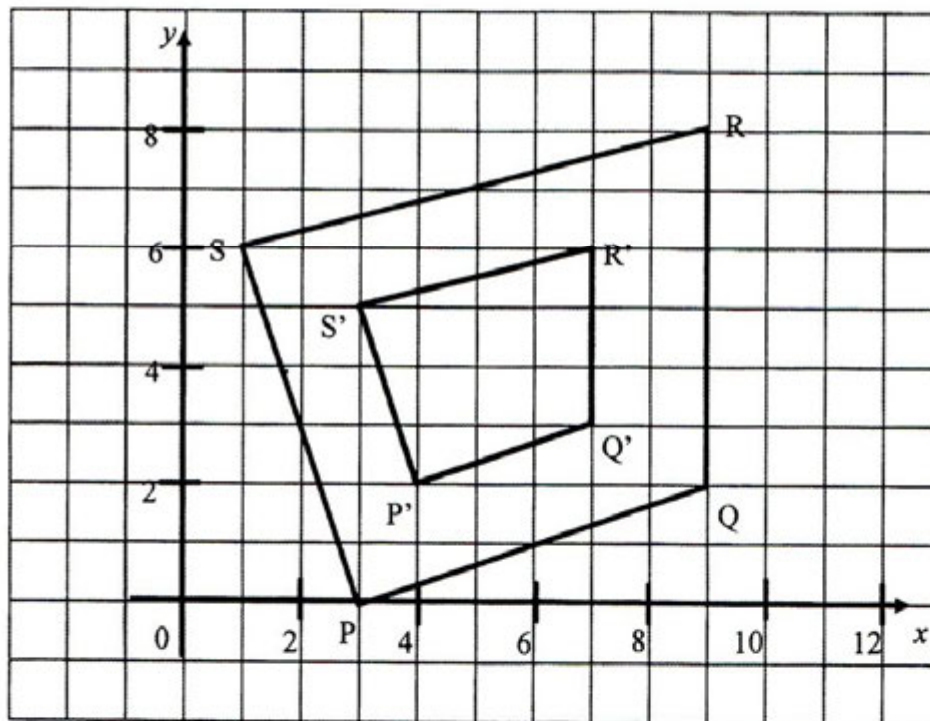


Diagram 2

(a)

(b)

For
 Examiner's
 Use

6
3

- 7 Diagram 3 shows two right angled triangles, JLM and KLM.
Rajah 3 menunjukkan dua segitiga bersudut tegak, JLM dan KLM.

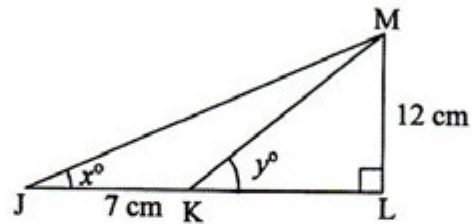


Diagram 3

It is given that $\tan x^\circ = \frac{3}{4}$,

Diberi bahawa $\tan x^\circ = \frac{3}{4}$,

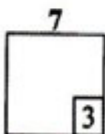
- (a) Calculate the length, in cm, of KL.
Hitung panjang, dalam cm, KL.
- (b) Find the value of $\sin y^\circ$
Cari nilai bagi $\sin y^\circ$

[3 marks]

Answer / *Jawapan:*

(a)

(b)



- 8 Table 1 shows the number of accidents on a highway in a week.
Jadual 1, menunjukkan bilangan kemalangan di sebuah lebuh raya dalam seminggu.

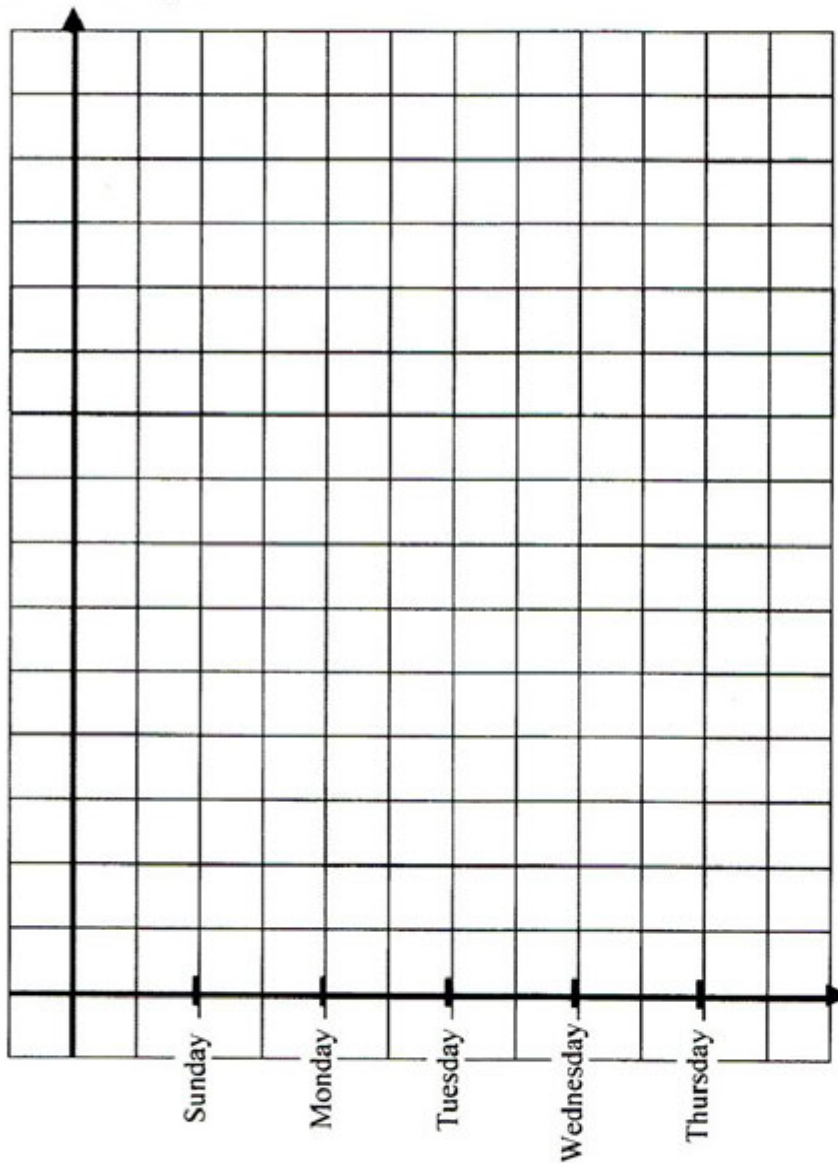
Days	Sunday	Monday	Tuesday	Wednesday	Thursday
Number of Accidents	35	60	20	70	55

Table 1

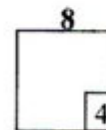
On diagram in the answer space, draw a line graph to represent the data.
Pada rajah di ruang jawapan, lukis sebuah graf garis untuk mewakili data tersebut.

[4 marks]

Answer / Jawapan:



For
 Examiner's
 Use



- 9 The data in Table 2 shows the number of goals scored by 20 teams in a football league.
Data dalam Jadual 2 menunjukkan bilangan gol yang diperolehi oleh 20 pasukan dalam satu liga bola sepak.

Goals	1	2	3	4	5
Frequency	1	7	5	5	2

Table 2

Using the data
Menggunakan data itu

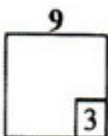
- (a) State the mode.
Nyatakan mod
- (b) Calculate the mean number of goal score by a team.
Hitung min bilangan gol yang diperolehi oleh setiap pasukan

[3 marks]

Answer/Jawapan:

(a)

(b)



- 10 Factorise completely each of the following expressions:
Faktorkan selengkapnya tiap-tiap ungkapan berikut:

(a) $4x + 12y$

(b) $12 - 3m^2$

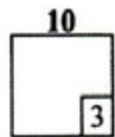
[3 marks]

Answer / Jawaban:

(a)

(b)

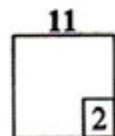
For
Examiner's
Use



- 11 Expand $(p - 6)^2$.
Kembangkan

[2 marks]

Answer / Jawaban:



12 Express $\frac{1}{4x} - \frac{x+4}{12x^2}$ as a single fraction in its simplest form.

Ungkapkan $\frac{1}{4x} - \frac{x+4}{12x^2}$ sebagai pecahan tunggal dalam bentuk termudah.

[3 marks]

Answer / Jawapan:

12
3

13 Given $H = \frac{2m - mt}{3}$, express m in term of H and t

Diberi $H = \frac{2m - mt}{3}$, ungkapkan m dalam sebutan H dan t

[2 marks]

Answer / Jawapan:

13
2

- 14 Solve each of the following inequalities
Selesaikan tiap-tiap ketaksamaan berikut

(a) $p + 4 < 6$

(b) $3 - 2q \geq 5$

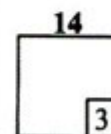
[3 marks]

Answer / *Jawapan*:

(a)

(b)

*For
Examiner's
Use*

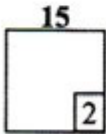


15 Simplify $(mn^2)^3 \times (m^2n^{-3})^4$

Permudahkan

Answer / *Jawapan*:

[2 marks]

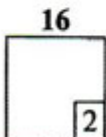


16 Given that $2^{3n-2} = 16$ calculate the value of n .

Diberi $2^{3n-2} = 16$ hitungkan nilai n .

[2 marks]

Answer / *Jawapan*:



- 17 In Diagram 4, DGE and DHF are straight lines. GH is parallel to EF.
 Dalam Rajah 4, DGE dan DHF ialah garis lurus. GH adalah selari dengan EF

For
 Examiner's
 Use

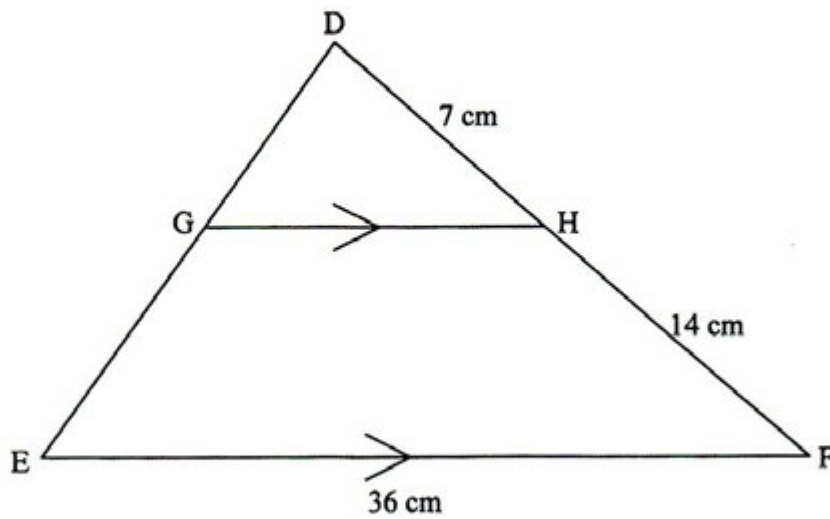


Diagram 4

Find the length, in cm, of GH.
 Cari panjang, dalam cm, GH.

[2 marks]

Answer / Jawapan:

17

For
Examiner's
Use

- 18 Diagram 5 in the answer space shows a semicircle with centre O, drawn on a grid of equal squares with sides of 1 unit.
X, Y and Z are three moving points inside the semicircle.

*Rajah 5 di ruang jawapan menunjukkan sebuah semibulatan berpusat O, yang dilukis pada grid segi empat sama bersisi 1 unit.
X, Y dan Z adalah tiga titik yang bergerak di dalam semibulatan itu.*

- (a) X moves such that it is constantly equidistant from the point L and the point N.
By using the letters in the diagram, state the locus of X.

*X ialah titik yang bergerak dengan keadaan jaraknya adalah sama dari titik L dan titik N.
Dengan menggunakan huruf abjad pada rajah itu, nyatakan lokus X itu.*

- (b) On Diagram 5, draw
Pada Rajah 5, lukis

- (i) the locus of the point Y which moves such that its distance is constantly 4 units from the point N.
lokus bagi titik Y yang bergerak dengan keadaan titik itu sentiasa berjarak 4 unit dari titik N.
- (ii) the locus of the point Z which moves such that its distance is constantly 2 units from the line LN.
lokus bagi titik Z yang bergerak dengan keadaan titik itu sentiasa berjarak 2 unit dari garis LN.

- (c) Hence, mark with the symbol \otimes the intersection of the locus of Y and the locus of Z.
Seterusnya, tandakan \otimes kedudukan bagi persilangan lokus Y dan lokus Z itu.

[5 marks]

*For
Examiner's
Use*

Answer / Jawapan:

(a)

(b) i, ii

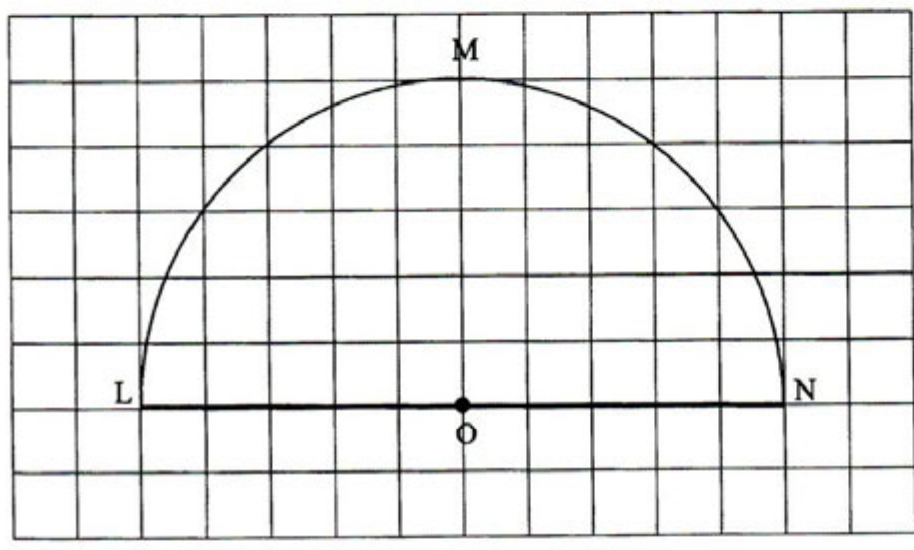


Diagram 5

18
5

For
Examiner's
Use

- 19 (a) Diagram 6 shows a parallelogram PQRS. The point T lies on PS such that QT is perpendicular to PS. Using only a ruler and a pair of compasses, construct Diagram 6, beginning from the lines PQ and PS provided in the answer space.

Rajah 6 menunjukkan suatu segiempat selari PQRS. Titik T terletak pada PS dengan keadaan QT adalah berserenjang dengan PS. Menggunakan pembaris dan jangka lukis sahaja, bina Rajah 6, bermula dengan Garis PQ dan PS, yang disediakan di ruang jawapan

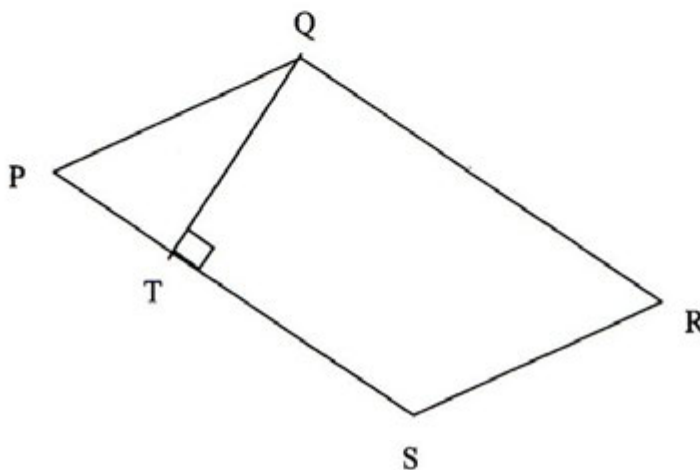


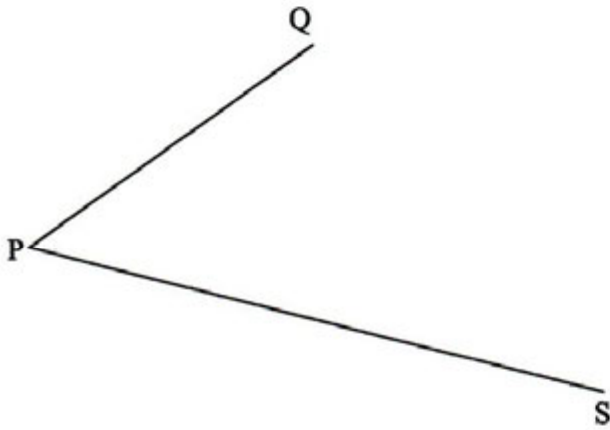
Diagram 6

- (b) Based on the diagram constructed in 19(a), measure the length of QT
Berdasarkan rajah yang dibina dalm 19(a), ukur panjang QT

[5 marks]

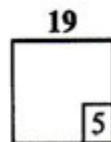
Answer / Jawapan:

(a)



(b)

For
Examiner's
Use



For
Examiner's
Use

20

Use the graph paper on page 21 to answer this question.

Gunakan kertas graf yang disediakan di halaman 21 untuk menjawab soalan ini.

Table 3 shows the values of two variables, x and y , of a function.

Jadual 3 menunjukkan nilai-nilai pembolehubah, x dan y , bagi suatu fungsi.

x	-3	-2	-1	0	1	2	3
y	9	4	1	0	-1	-4	-9

Table 3

The x -axis and the y -axis are provided on the graph paper on page 21.

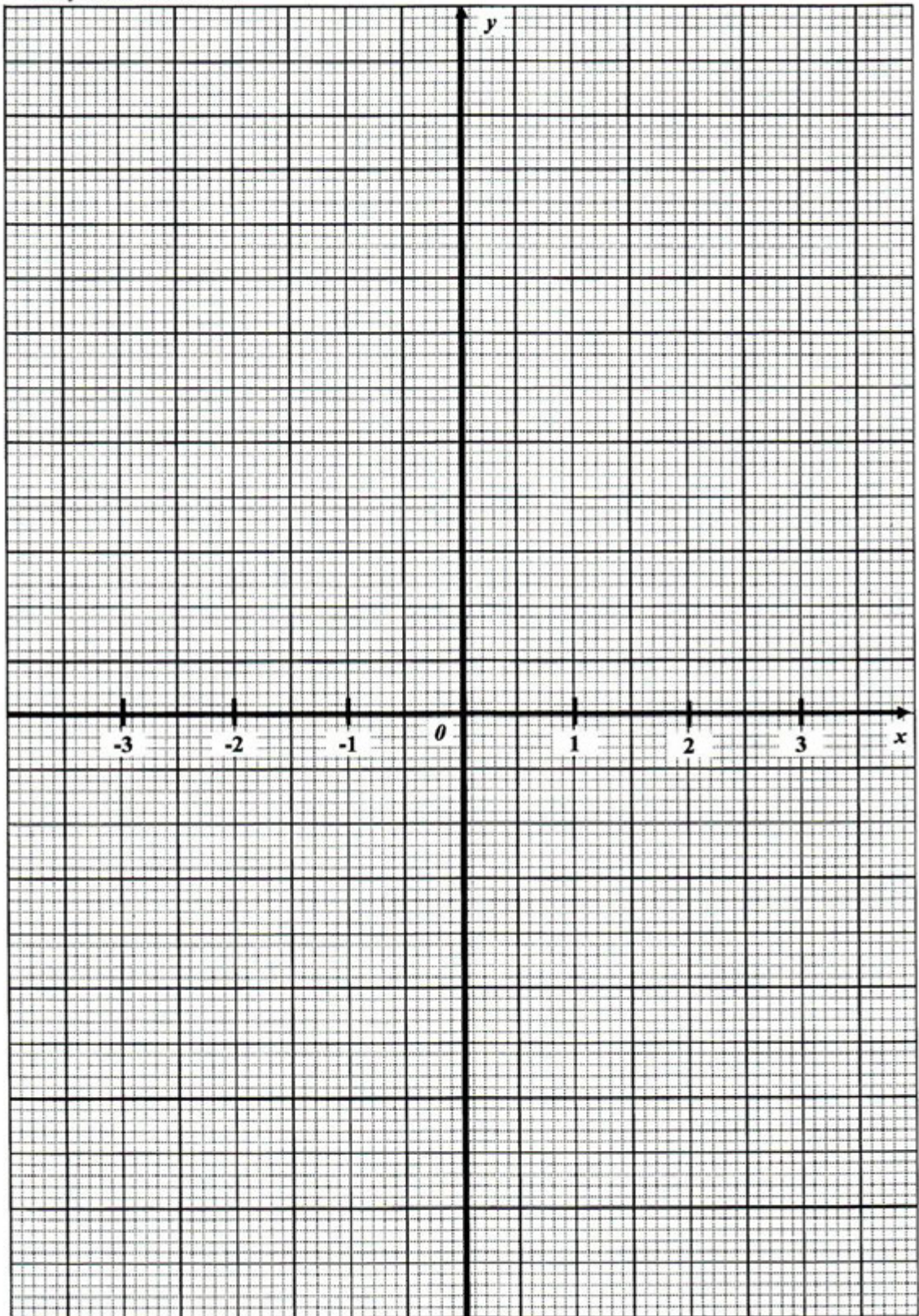
Paksi- x dan paksi- y telah disediakan pada kertas graf di halaman 21.

- By using the scale of 2 cm to 2 units, complete and label the y -axis.
Dengan menggunakan skala 2 cm kepada 2 unit, lengkap dan labelkan paksi- y itu.
- Based on Table 3, plot the points on the graph paper.
Berdasarkan Jadual 3, plot titik-titik pada kertas graf itu.
- Hence, draw the graph of function.
Seterusnya, lukis graf fungsi itu.

[4 marks]

For
Examiner's
Use

Graph for Question 20
Graf untuk Soalan 20



20
4

END OF QUESTION PAPER
KERTAS SOALAN TAMAT