



JABATAN PELAJARAN NEGERI SELANGOR
MAJLIS PENGETUA SEKOLAH MALAYSIA NEGERI SELANGOR



PROGRAM PENINGKATAN PRESTASI AKADEMIK
PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA 2012

1449/1

MATHEMATICS

Kertas 1

Ogos/September

$1\frac{1}{4}$ jam

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Q papers, free skema at : www.myschoolchildren.com www.myschoolchildren.com www.myschoolchildren.com www.myschoolchildren.com

Kertas soalan ini mengandungi 24 halaman bercetak.
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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

- | | |
|---|--|
| <p>1 $a^m \times a^n = a^{m+n}$</p> <p>2 $a^m \div a^n = a^{m-n}$</p> <p>3 $(a^m)^n = a^{mn}$</p> <p>4 $A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$</p> <p>5 Distance / <i>Jarak</i>
 $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$</p> <p>6 Midpoint / <i>Titik Tengah</i>
 $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$</p> <p>7 Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
 <i>Purata laju = $\frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$</i></p> <p>8 Mean = $\frac{\text{sum of data}}{\text{number of data}}$
 <i>Min = $\frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$</i></p> <p>9 Mean = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$
 <i>Min = $\frac{\text{hasil tambah (nilai titik tengah kelas} \times \text{kekerapan)}}{\text{hasil tambah kekerapan}}$</i></p> | <p>10 Pythagoras Theorem
 <i>Teorem Pithagoras</i>
 $c^2 = a^2 + b^2$</p> <p>11 $P(A) = \frac{n(A)}{n(S)}$</p> <p>12 $P(A') = 1 - P(A)$</p> <p>13 $m = \frac{y_2 - y_1}{x_2 - x_1}$</p> <p>14 $m = -\frac{y - \text{intercept}}{x - \text{intercept}}$
 $m = -\frac{\text{pintasan} - y}{\text{pintasan} - x}$</p> |
|---|--|

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SHAPES AND SPACE
BENTUK DAN RUANG

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
Luas trapezium = $\frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
- 2 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi j$
- 3 Area of circle = πr^2
Luas bulatan = πj^2
- 4 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi jt$
- 5 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$
- 6 Volume of right prism = cross sectional area \times length
Isi padu prisma tegak = luas keratan rentas \times panjang
- 7 Volume of cylinder = $\pi r^2 h$
Isi padu silinder = $\pi j^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isi padu kon = $\frac{1}{3} \pi j^2 t$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isi padu sfera = $\frac{4}{3} \pi j^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isi padu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 11 Sum of interior angles of a polygon
Hasil tambah sudut pedalaman poligon
 $= (n - 2) \times 180^\circ$

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$$12 \quad \frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{panjang lengkok}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

$$13 \quad \frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

$$14 \quad \text{Scale factor, } k = \frac{PA'}{PA}$$

$$\text{Faktor skala, } k = \frac{PA'}{PA}$$

$$15 \quad \text{Area of image} = k^2 \times \text{area of object}$$

$$\text{Luas imej} = k^2 \times \text{luas objek}$$

- 7 In Diagram 1, $PQRST$ is a pentagon and straight line PQ is parallel to straight line STU .
 Dalam Rajah 1, $PQRST$ ialah sebuah pentagon dan garis lurus PQ ialah selari dengan garis lurus STU .

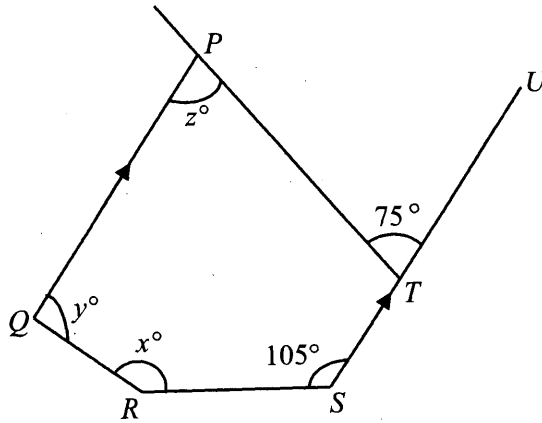


Diagram 1
Rajah 1

Find the value of $x + y + z$.

Cari nilai $x + y + z$.

- A 300
C 360

- B 330
D 435

- 8 In Diagram 2, RST is a tangent to a circle centre O at S . PQT is a straight line.
 Dalam Rajah 2, RST ialah tangen kepada bulatan berpusat O di S . PQT ialah garis lurus.

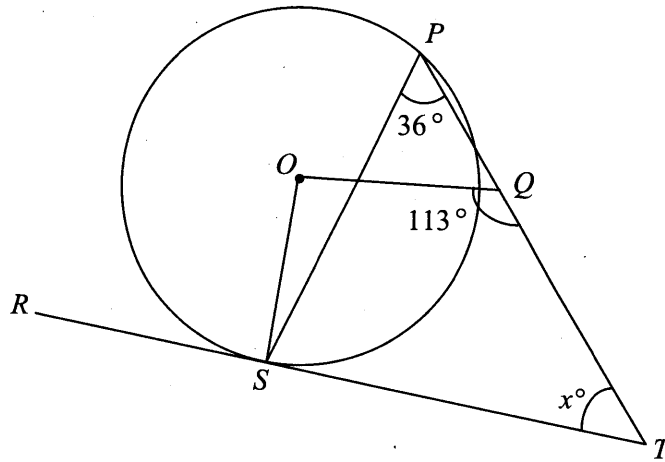


Diagram 2
Rajah 2

Find the value of x .

Cari nilai x .

A 67

B 85

C 121

D 157

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- 9 Diagram 3 shows two rectangle shapes $ABCD$ and $EFGH$, and four straight lines PQ , RS , TU and VW drawn on square grids. Rectangle $ABCD$ is the image of rectangle $EFGH$ under a reflection.

Rajah 3 menunjukkan dua segi empat tepat $ABCD$ dan $EFGH$, dan empat garis lurus PQ , RS , TU dan VW dilukis pada grid segi empat sama. Segi empat $ABCD$ ialah imej bagi segi empat $EFGH$ di bawah suatu pantulan.

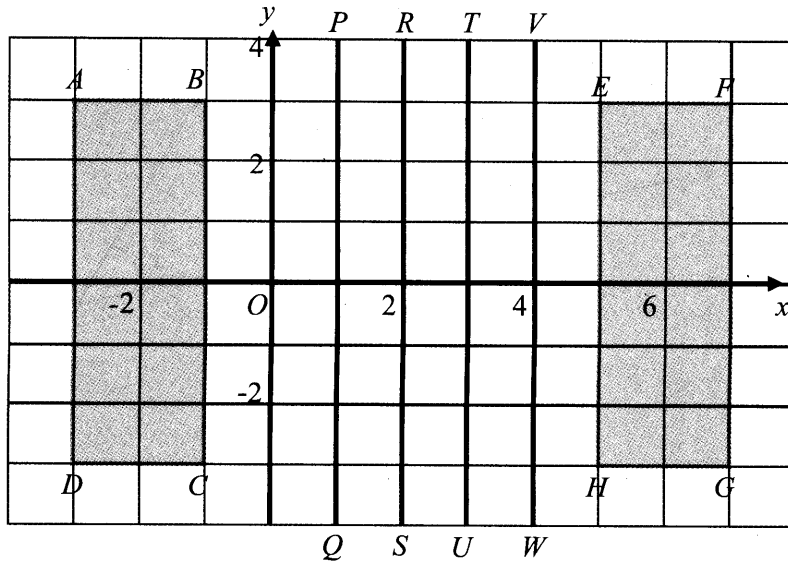


Diagram 3
Rajah 3

The axis of the reflection is the straight line

Paksi pantulan itu ialah garis lurus

- | | | | |
|----------|------|----------|------|
| A | PQ | B | RS |
| C | TU | D | VW |

- 10 In Diagram 4, trapezium $PQRS$ is the image of the trapezium $PTUV$ under an enlargement.
 Dalam Rajah 4, trapezium $PQRS$ ialah imej bagi trapezium $PTUV$ di bawah satu pembesaran.

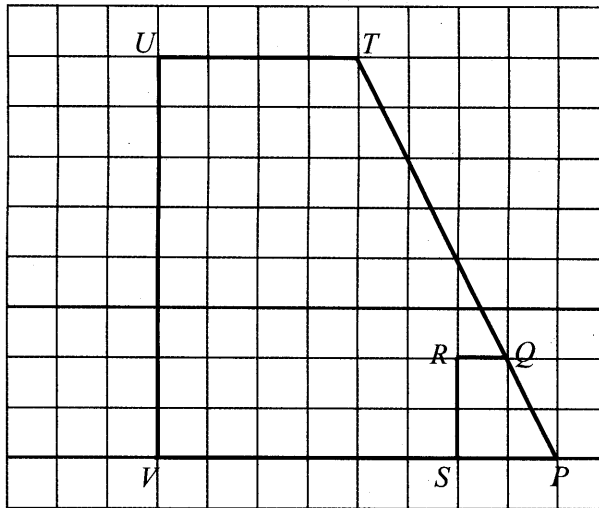


Diagram 4
Rajah 4

The centre of enlargement and its scale factor are

Pusat pembesaran dan faktor skala bagi pembesaran itu adalah

	Centre of enlargement <i>Pusat pembesaran</i>	Scale factor <i>Faktor skala</i>
A	P	$\frac{1}{4}$
B	P	4
C	R	$\frac{1}{4}$
D	R	4

- 13 Diagram 7 shows the graph of $y = \cos x$.
Rajah 7 menunjukkan graf bagi $y = \cos x$.

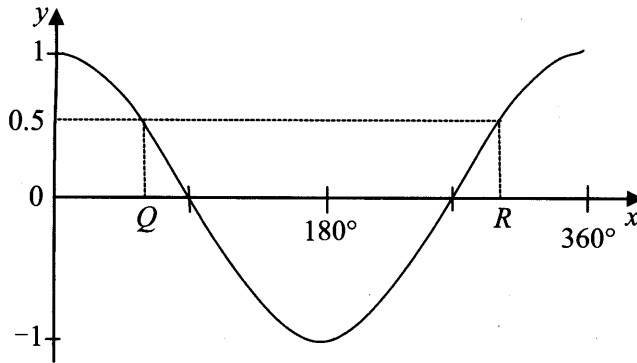


Diagram 7
Rajah 7

State the value of Q and R .

Nyatakan nilai bagi Q dan R .

- A $Q = 60^\circ, R = 240^\circ$
- B $Q = 30^\circ, R = 210^\circ$
- C $Q = 60^\circ, R = 300^\circ$
- D $Q = 30^\circ, R = 330^\circ$

- 18 In Diagram 11, N is the North Pole and S is the South Pole and NLS is the axis of the earth. P and Q are two points on a common parallel of latitude with centre L . Given that $\angle PLQ = 75^\circ$.

Dalam Rajah 11, N ialah Kutub Utara manakala S ialah Kutub Selatan dan NLS adalah paksi bumi. P dan Q ialah dua titik pada selarian latitud sepunya berpusat L . Diberi bahawa $\angle PLQ = 75^\circ$.

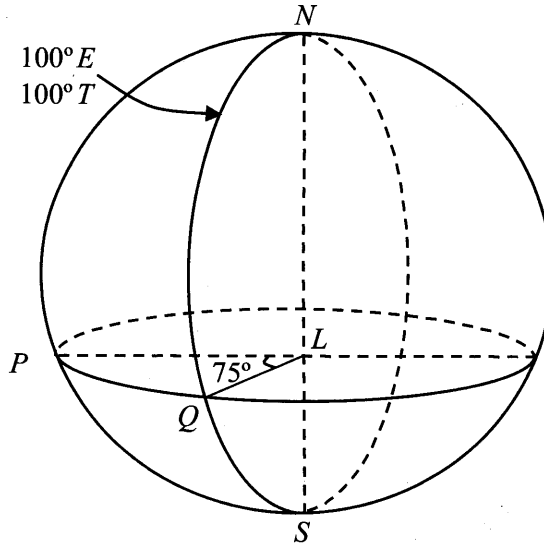


Diagram 11
Rajah 11

State the longitude of point P .

Nyatakan longitud titik P .

- | | |
|---|---|
| A $25^\circ W$
$25^\circ B$ | B $25^\circ E$
$25^\circ T$ |
| C $175^\circ W$
$175^\circ B$ | D $175^\circ E$
$175^\circ T$ |

19 $4(2x - 3) - 3(x + 2) =$

- | | |
|--------------------|-------------------|
| A $5x - 18$ | B $5x - 6$ |
| C $5x + 2$ | D $5x + 1$ |

20 Express $\frac{1-e}{3e} - \frac{2e+1}{5e}$ as a single fraction in its simplest form.

Ungkapkan $\frac{1-e}{3e} - \frac{2e+1}{5e}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{4-7e}{15e}$

B $\frac{6-7e}{15e}$

C $\frac{2-11e}{15e}$

D $\frac{8+11e}{15e}$

21 Given that $x = \frac{4(x-y)}{y}$, express y in terms of x .

Diberi bahawa $x = \frac{4(x-y)}{y}$, ungkapkan y dalam sebutan x .

A $y = \frac{4x}{x+1}$

B $y = \frac{4x}{x+4}$

C $y = \frac{4(x+1)}{x}$

D $y = \frac{4(x-1)}{x}$

22 Given $2(p-6)+p+2=5$, calculate the value of p .

Diberi $2(p-6)+p+2=5$, hitung nilai p .

A 5

B 3

C -3

D -1

23 $(f^2)^4 \times f^{-2} =$

A f

B f^2

C f^4

D f^6

24 Find the value of $(9 \times 4^{-4})^{\frac{1}{2}} \div (2^{-5} \times 3^4)$.

Cari nilai bagi $(9 \times 4^{-4})^{\frac{1}{2}} \div (2^{-5} \times 3^4)$.

A $\frac{1}{54}$

B $\frac{2}{27}$

C $\frac{2}{9}$

D $\frac{9}{64}$

29 Diagram 13 shows a Venn diagram with the universal set $\xi = P \cup Q \cup R$.

Rajah 13 menunjukkan sebuah gambar rajah Venn dengan set semesta $\xi = P \cup Q \cup R$.

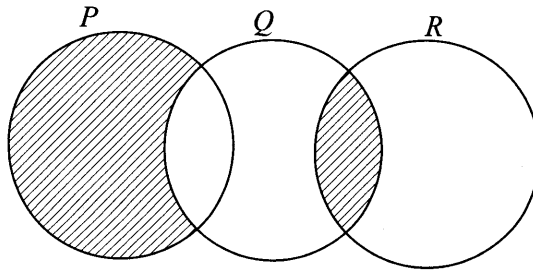


Diagram 13
Rajah 13

Which of the following represent the shaded region in Diagram 13?

Antara yang berikut, yang manakah mewakili kawasan berlorek dalam Rajah 13?

- | | |
|--------------------------------|---------------------------------|
| A $R \cup (P \cap Q)$ | B $(Q \cap R) \cup (P \cap Q')$ |
| C $(Q \cap R) \cup (P \cap Q)$ | D $Q' \cup (Q \cap R)$ |

30 Given $\xi = \{x : 0 \leq x \leq 20, x \text{ is an integer}\}$ and $P = \{x : x \text{ is a prime number}\}$, find $n(P')$.

Diberi $\xi = \{x : 0 \leq x \leq 20, x \text{ ialah integer}\}$ dan $P = \{x : x \text{ ialah nombor perdana}\}$, cari $n(P')$.

- | | |
|------|------|
| A 10 | B 11 |
| C 12 | D 13 |

31 Given:

Universal set $\xi = \{x : 6 \leq x \leq 15, x \text{ is an integer}\}$.

Set $P = \{x : x \text{ is a multiple of } 3\}$.

Set $Q = \{x : x \text{ is an odd number}\}$.

The elements of set $(P \cap Q)'$ are

Diberi:

Set semesta $\xi = \{x : 6 \leq x \leq 15, x \text{ ialah integer}\}$.

Set $P = \{x : x \text{ ialah gandaan } 3\}$.

Set $Q = \{x : x \text{ ialah nombor ganjil}\}$.

Unsur-unsur bagi set $(P \cap Q)'$ ialah

- | | |
|--------------------------------|-------------------------------------|
| A $\{6, 7, 9, 15\}$ | B $\{6, 7, 9, 12, 15\}$ |
| C $\{6, 7, 8, 9, 10, 11, 12\}$ | D $\{6, 7, 8, 10, 11, 12, 13, 14\}$ |

32 In Diagram 14, KL is a straight line with a gradient of $-\frac{2}{5}$.

Dalam Rajah 14, KL adalah garis lurus dengan kecerunan $-\frac{2}{5}$.

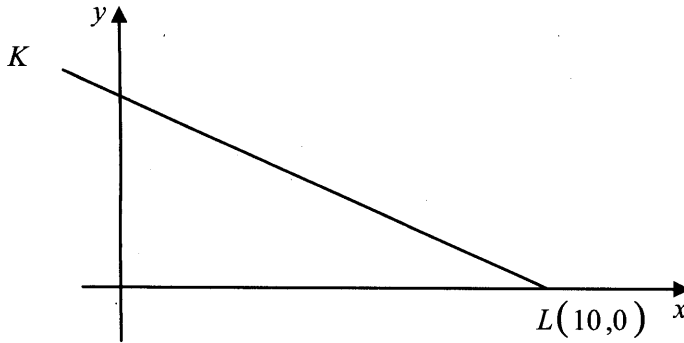


Diagram 14
Rajah 14

Find the y -intercept of the straight line KL .

Cari pintasan- y bagi garis lurus KL .

A $\frac{1}{4}$

B $\frac{1}{2}$

C 2

D 4

33 In Diagram 15, given that $PQ = 10$ units and $PR = 3OR$, find the equation of QR .

Dalam Rajah 15, diberi bahawa $PQ = 10$ unit dan $PR = 3OR$, cari persamaan garis lurus QR .

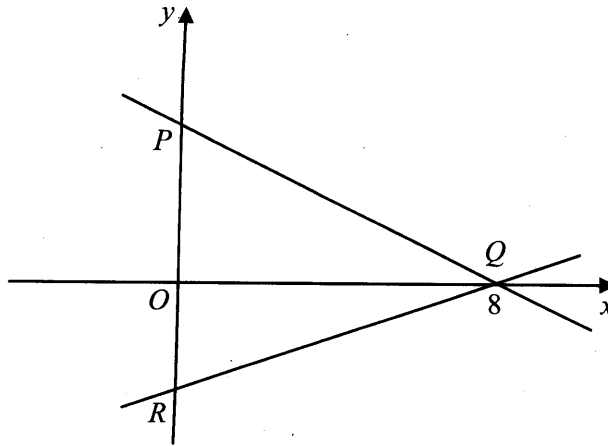


Diagram 15
Rajah 15

A $y = \frac{3}{8}x - 3$

B $y = 6 - \frac{3}{4}x$

C $y = \frac{3}{4}x - 3$

D $y = -\frac{3}{4}x - 3$

- 34 Table 2 shows the probability of a student to win in a singing competition and in a drawing competition.

Jadual 2 menunjukkan kebarangkalian seorang murid menang dalam suatu pertandingan menyanyi dan suatu pertandingan melukis.

Competition Pertandingan	Probability Kebarangkalian
Singing Menyanyi	$\frac{1}{3}$
Drawing Melukis	$\frac{2}{5}$

Table 2
Jadual 2

The probability of the student **not** winning in any of the competition is

Kebarangkalian bahawa murid tersebut **tidak** memenangi mana-mana pertandingan ialah

A $\frac{1}{15}$

B $\frac{2}{15}$

C $\frac{1}{5}$

D $\frac{2}{5}$

- 35 A beg contains 5 yellow marbles, 3 red marbles and 9 blue marbles. A marble is picked at random from the beg.
Find the probability that the marble picked is **not** blue.

Sebuah beg mengandungi 5 biji guli kuning, 3 biji guli merah dan 9 biji guli biru. Sebiji guli dipilih secara rawak daripada beg itu.

Cari kebarangkalian bahawa guli yang dipilih itu **bukan** berwarna biru.

A $\frac{3}{17}$

B $\frac{5}{17}$

C $\frac{8}{17}$

D $\frac{9}{17}$

- 36 It is given that Y varies directly as the cube root of X .
Find the relation between Y and X .

*Diberi bahawa Y berubah secara langsung dengan punca kuasa tiga X .
Cari hubungan antara Y dan X .*

A $Y \propto \sqrt[3]{X}$

B $Y \propto X^3$

C $Y \propto \frac{1}{\sqrt[3]{X}}$

D $Y \propto \frac{1}{X^3}$

- 37 Table 3 shows some values of the variables p and q .
Jadual 3 menunjukkan beberapa nilai bagi pembolehubah p dan q .

p	3	$\frac{4}{3}$
q	4	x

Table 3
Jadual 3

It is given that p varies inversely as square of q .
Find the value of x .

*Diberi bahawa p berubah secara songsang dengan kuasa dua q .
Cari nilai x .*

A $1\frac{1}{3}$

B 3

C 6

D 12

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

- 1 This question paper consists of **40** questions.
Kertas soalan ini mengandungi 40 soalan.
- 2 Answer **all** questions.
Jawab semua soalan.
- 3 Answer each question by blackening the correct space on the objective answer sheet.
Jawab setiap soalan dengan menghitamkan ruangan yang betul pada kertas jawapan objektif.
- 4 Blacken only **one** space for each question.
Hitamkan satu ruangan sahaja bagi setiap soalan.
- 5 If you wish to change your answer, erase the blackened mark that you have done. Then blacken the space for the new answer.
Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baharu.
- 6 The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
- 7 A list of formulae is provided on pages 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
- 8 A booklet four-figure mathematical tables is provided.
Sebuah buku sifir matematik empat angka disediakan.
- 9 You may use a scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.

**PROGRAM PENINGKATAN PRESTASI AKADEMIK
SIJIL PELAJARAN MALAYSIA 2012
MATHEMATICS 1449**

SIFIR MARKAH

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140	=	100%

PAPER 1

No Soalan	Jawapan
1	A
2	C
3	D
4	A
5	A
6	D
7	B
8	B
9	B
10	A

No Soalan	Jawapan
11	B
12	C
13	C
14	A
15	D
16	D
17	C
18	B
19	A
20	C

No Soalan	Jawapan
21	B
22	A
23	D
24	B
25	C
26	C
27	B
28	A
29	B
30	D

No Soalan	Jawapan
31	D
32	D
33	A
34	D
35	C
36	A
37	C
38	B
39	C
40	D