

SULIT



**PEJABAT PELAJARAN DAERAH
SEGAMAT, JOHOR**

PEPERIKSAAN AKHIR TAHUN SETARA 2010

1449/1

**TINGKATAN 4
MATHEMATICS**

**Kertas 1
Oktober**

1¼ 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 2 kertas soalan ini.*

Kertas soalan ini mengandungi 19 halaman bercetak.

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.
Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
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 3 to 5.
Satu senarai rumus disediakan di halaman 3 hingga 5.
8. A booklet of four-figure mathematical tables is provided.
Sebuah buku sifir matematik empat angka disediakan.
9. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

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>10 Pythagoras Theorem
<i>Teorem Pithagoras</i></p> $c^2 = a^2 + b^2$ |
| <p>2 $a^m \div a^n = a^{m-n}$</p> | <p>11 $P(A) = \frac{n(A)}{n(S)}$</p> |
| <p>3 $(a^m)^n = a^{mn}$</p> | <p>12 $P(A') = 1 - P(A)$</p> |
| <p>4 $A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$</p> | <p>13 $m = \frac{y_2 - y_1}{x_2 - x_1}$</p> |
| <p>5 Distance / <i>Jarak</i>
$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$</p> | <p>14 $m = -\frac{\text{y-intercept}}{\text{x-intercept}}$</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>$m = -\frac{\text{pint asan} - y}{\text{pint asan} - x}$</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 = $\frac{\text{sum of (class mark} \times \text{frequency)}}{\text{sum of frequencies}}$

<i>Min = $\frac{\text{hasil tambah (nilai titik tengah} \times \text{kekerapan)}}{\text{hasil tambah kekerapan}}$</i></p> | |

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 = $2\pi r h$

Luas permukaan melengkung silinder = $2\pi j t$

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

Isipadu prisma tegak = *luas keratan rentas* \times *panjang*

7 Volume of cylinder = $\pi r^2 h$

Isipadu silinder = $\pi j^2 t$

8 Volume of cone = $\frac{1}{3} \pi r^2 h$

Isipadu kon = $\frac{1}{3} \pi j^2 t$

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

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

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

Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$

11 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$

Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180^\circ$

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

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

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

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

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

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

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

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

6. Solve / Selesaikan $y^2 = \frac{9y+5}{2}$.

A. $\frac{1}{2}$ or -5

C. $\frac{5}{2}$ or -1

B. $-\frac{1}{2}$ or 5

D. $-\frac{5}{2}$ or 1

7. In Diagram 2, ABCDEF is a regular hexagon.
 Dalam Rajah 2, ABCDEF ialah sebuah heksagon sekata.

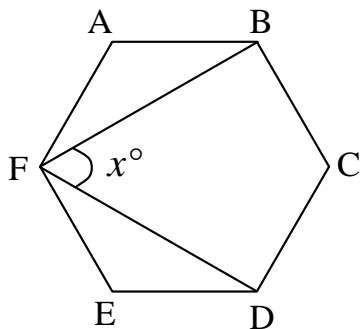


Diagram 2
Rajah 2

Find the value of x° .

Cari nilai x° .

A 30°

C 70°

B 60°

D 120°

8. In Diagram 3, PQR is a tangent to the circle QST at point Q and TSP is a straight line.
 Dalam Rajah 3, PQR ialah tangen kepada bulatan QST di Q dan TSP ialah garis lurus.

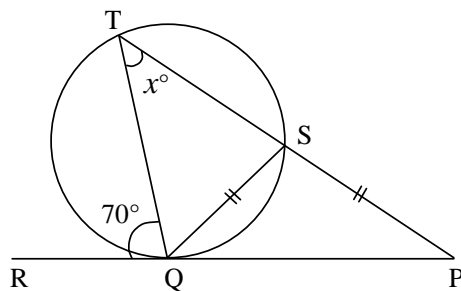


Diagram 3
Rajah 3

Calculate the value of x .

Kira nilai x .

A 35°

C 70°

B 55°

D 80°

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9. Diagram 4 shows two shapes, M and N drawn on a grid of equal squares. M is the image of N under a certain reflection.

Rajah 4 menunjukkan bentuk M dan N yang dilukis di atas grid segi empat sama. M ialah imej bagi N di bawah satu pantulan.

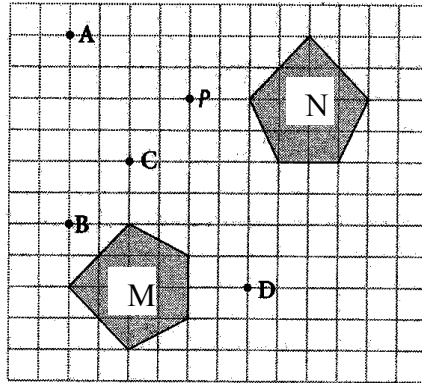


Diagram 4
Rajah 4

Which of the following points, A, B, C or D, is the image of point P under the same reflection?
Antara titik A, B, C dan D, yang manakah imej bagi titik P di bawah pantulan yang sama?

10. Diagram 5 shows that quadrilateral N is the image of quadrilateral M under an enlargement of scale factor 3.
Rajah 5 menunjukkan sisiempat N adalah imej bagi sisiempat M di bawah satu pembesaran dengan faktor skala 3.

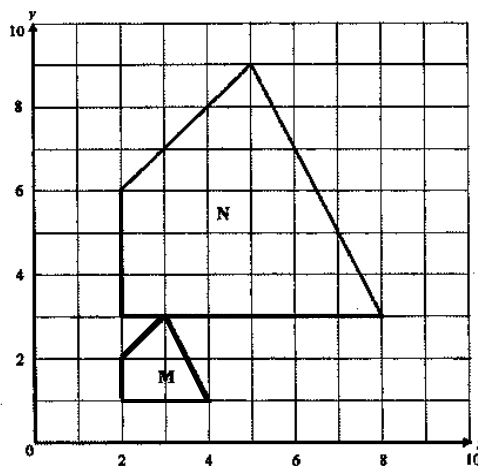


Diagram 5
Rajah 5

Which of the coordinate below is the centre of the enlargement?
Antara koordinat di bawah, yang manakah pusat pembesaran tersebut?

- | | | | |
|----|--------|----|--------|
| A. | (2, 0) | C. | (2, 2) |
| B. | (2, 1) | D. | (2, 3) |

11. In diagram 6, JLM is a right angle triangle and KLM is a straight line.

Dalam rajah 6, JLM ialah sebuah segitiga bersudut tegak dan KLM ialah satu garis lurus.

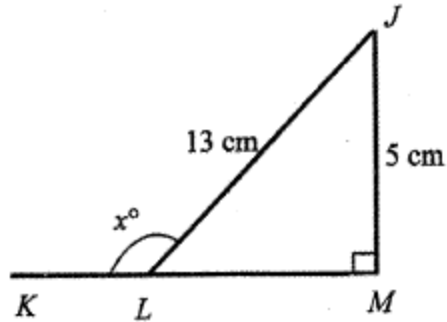


Diagram 6
Rajah 6

Find the value of $\tan x^\circ$.

Cari nilai bagi $\tan x^\circ$

A $\frac{5}{12}$

C $-\frac{12}{5}$

B $\frac{12}{5}$

D $-\frac{5}{12}$

12. Diagram 7 shows the graph of $y = \sin x^\circ$.

Rajah 7 menunjukkan graf $y = \sin x^\circ$.

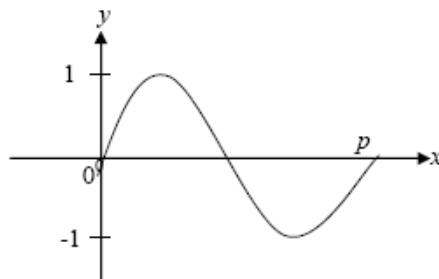


Diagram 7
Rajah 7

The value of p is

Nilai p ialah

A. 90°

C. 270°

B. 180°

D. 360°

13. It is given that $\cos \theta = -0.7721$ and $180^\circ \leq \theta \leq 360^\circ$. Find the value of θ .
 Diberi $\cos \theta = -0.7721$ dan $180^\circ \leq \theta \leq 360^\circ$. Cari nilai bagi θ .

- A. $219^\circ 27'$ C. $309^\circ 27'$
 B. $230^\circ 33'$ D. $320^\circ 33'$

14. Diagram 8 shows a cuboid with a horizontal base ABCD.
 Rajah 8 menunjukkan sebuah kuboid dengan tapak mengufuk ABCD.

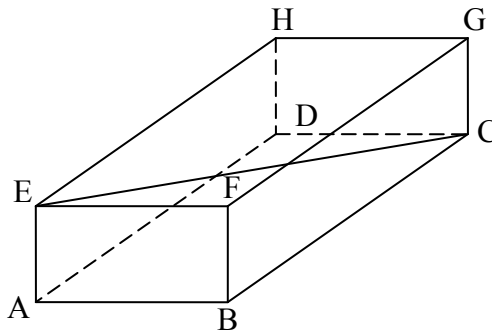


Diagram 8
 Rajah 8

The angle between line CE and plane EFGH is
 Sudut di antara garis CE dan satah EFGH ialah

- A $\angle CGE$ C $\angle CEA$
 B $\angle CEG$ D $\angle CAE$

15. Diagram 9 shows a cube with a horizontal base ABCD.
 Rajah 9 menunjukkan sebuah kubus dengan tapak mengufuk ABCD.

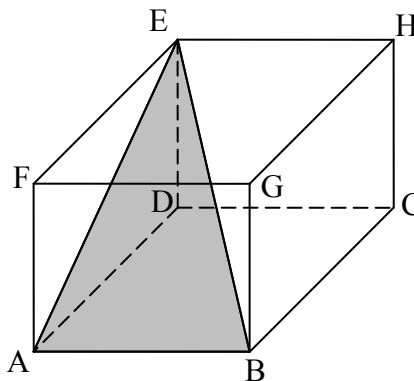


Diagram 9
 Rajah 9

Name the angle between plane ABE and plane ABCD.
 Namakan sudut di antara satah ABE dan satah ABCD.

- A $\angle DBE$ C $\angle ADE$
 B $\angle DAE$ D $\angle AED$

18. Complete the premise in the following argument.
Lengkapkan premis dalam hujah berikut

Premise 1	: All quadrilaterals have four sides
<i>Premis 1</i>	: <i>Semua quadrilateral mempunyai empat sisi</i>
Premise 2	:
<i>Premis 2</i>	:
Conclusion	: KLMN has four sides
<i>Kesimpulan</i>	: <i>KLMN mempunyai empat sisi</i>

- A. The quadrilateral is KLMN / *Sisiempat ialah KLMN.*
 B. KLMN is a quadrilateral / *KLMN ialah sisiempat.*
 C. A quadrilateral has four sides / *Sisiempat mempunyai empat sisi.*
 D. KLMN has four equal sides / *KLMN mempunyai empat sisi sama.*
19. $(2p - 3q)^2 - 5p(p - 4q) =$

- | | | | |
|---|----------------------|---|----------------------|
| A | $-p^2 - 32pq + 9q^2$ | C | $-p^2 - 20pq + 9q^2$ |
| B | $-p^2 + 20pq + 9q^2$ | D | $-p^2 + 8pq + 9q^2$ |

20 $\frac{3}{k} + \frac{4}{1-k} =$

- | | | | |
|---|----------------------|---|-----------------------|
| A | $\frac{3+k}{1-k}$ | C | $\frac{3-7k}{k(1-k)}$ |
| B | $\frac{3+k}{k(1-k)}$ | D | $3+4k^2$ |

21 Given $\frac{2(3r-5p)}{r} = 2$, then $r =$
 Diberi $\frac{2(3r-5p)}{r} = 2$, maka $r =$

- | | | | |
|---|----------------|---|----------------|
| A | $\frac{5p}{2}$ | C | $\frac{5}{2p}$ |
| B | $\frac{2}{5p}$ | D | $10p-4$ |

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22. Given that $8(p - 2) = 6 - 3p$, find the value of p .

Diberi $8(p - 2) = 6 - 3p$, cari nilai p .

A $\frac{1}{2}$

C 3

B 2

D $\frac{22}{5}$

23. $(-3m^3)^2 \div (m^{-4})^2 =$.

A $9m^{14}$

C $-3m^{14}$

B $9m^{-2}$

D $-3m^{-2}$

- 24 Simplify / Permudahkan $\frac{p^2qr^3 + pqr^2}{pqr}$.

A $pr + r$

C $p^2r + r^2$

B $p + r$

D $pr^2 + r$

25. Given that x is an integer, find all the values of x that satisfy both the inequalities

$$3(x-1) \leq 6 \quad \text{and} \quad \frac{1}{2}x - 4 > -5.$$

Diberi x ialah integer, carikan semua nilai x yang memuaskan kedua-dua ketaksamaan

$$3(x-1) \leq 6 \quad \text{dan} \quad \frac{1}{2}x - 4 > -5.$$

A 0, 1

C -1, 0, 1, 2

B -1, 0, 1

D -1, 0, 1, 2, 3

26. Given the set of numbers

Diberi satu set nombor

3, 7, 1, 12, 19, 30, 21

Determine the range of the above set of numbers.

Tentukan julat bagi set nombor di atas.

A 12

C 29

B 18

D 30

29

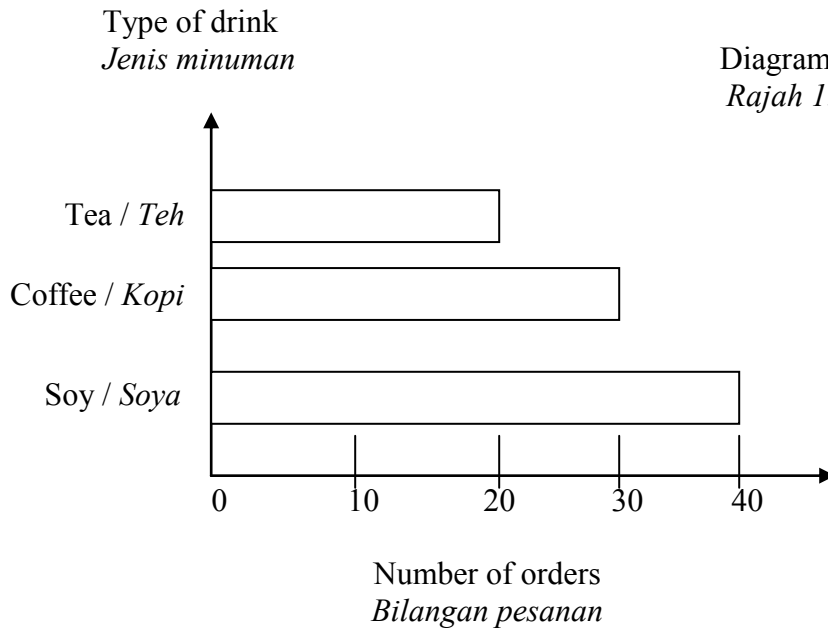
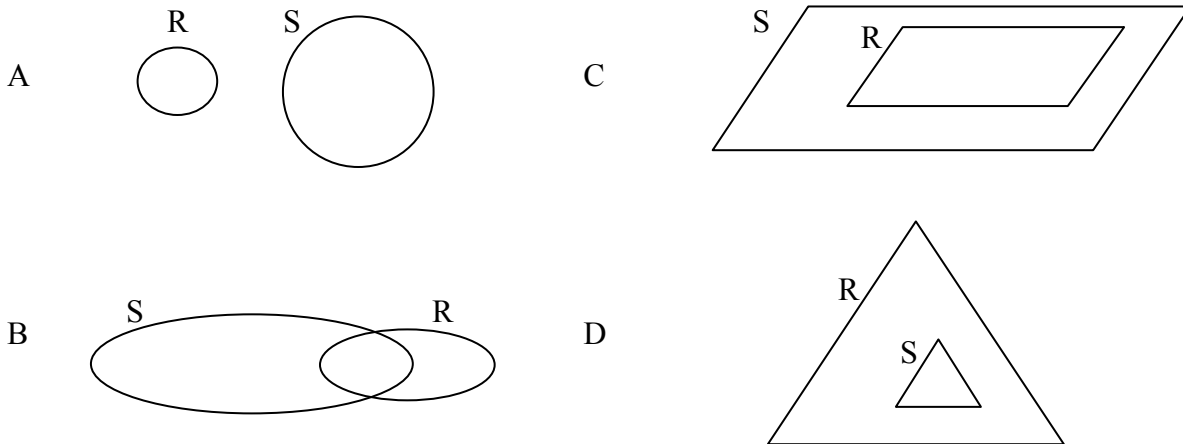


Diagram 13 is a chart which shows the number of drinks ordered at a food stall. Calculate the angle of sector of a pie chart which represents the number of tea that have been ordered.

Rajah 13 adalah sebuah carta bar yang menunjukkan bilangan pesanan minuman di sebuah gerai makan. Kirakan sudut bagi sektor dalam carta pai yang mewakili bilangan pelanggan yang memesan teh.

- | | | | |
|---|------|---|------|
| A | 80° | C | 90° |
| B | 100° | D | 110° |

30. Which of the following Venn diagrams represent $R \subset S$ such that the universal set $\xi = R \cup S$?
Antara berikut, gambar rajah Venn yang manakah mewakili set $R \subset S$ dengan keadaan set semesta set $\xi = R \cup S$?



31. It is given that universal set, $\xi = \{ x: 19 \leq x < 31, x \text{ is an integer} \}$ and set $R = \{ x: x \text{ is a number such that the sum of its two digits is an even number} \}$. Find set R' .

Diberi bahawa set semesta, $\xi = \{ x : 19 \leq x < 31, x \text{ ialah integer} \}$ dan set $R = \{ x: x \text{ ialah nombor dengan keadaan hasil tambah dua digitnya ialah nombor genap} \}$. Carikan set R' .

- A. $\{ 20, 22, 24, 26, 28 \}$ C. $\{ 19, 21, 23, 25, 27, 29 \}$
 B. $\{ 21, 23, 25, 27, 29 \}$ D. $\{ 21, 23, 25, 27, 29, 30 \}$

32. Diagram 14 is a Venn diagram which show the universal set ξ , set P and set Q.
Rajah 14 ialah gambar rajah Venn yang menunjukkan set semesta ξ , set P dan set Q.

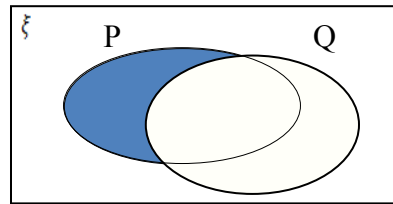


Diagram 14
 Rajah 14

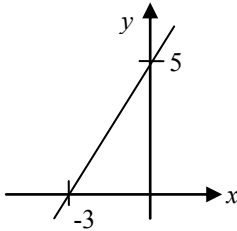
The shaded region in the Venn diagram represents the set
Kawasan yang berlorek dalam gambar rajah Venn ini mewakili set

- A. $P' \cap Q'$ C. $P \cap Q'$
 B. $P' \cap Q$ D. $P \cap Q$
33. Given that $P = \{ \text{prime factors of } 45 \}$, list all the elements of P.
Diberi $P = \{ \text{faktor perdana bagi } 45 \}$, senaraikan semua unsur bagi P.
- A. $\{ 3, 5 \}$ C. $\{ 1, 3, 5, 9 \}$
 B. $\{ 3, 5, 9 \}$ D. $\{ 1, 3, 5, 9, 15 \}$

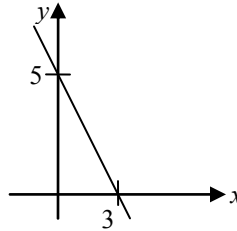
37. Which of the following graphs represents $3y - 5x = 15$?

Graf yang manakah mewakili $3y - 5x = 15$?

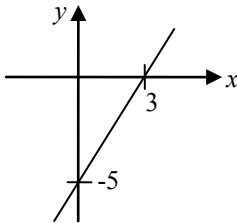
A.



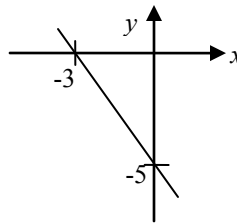
C.



B.



D.



38. A bag has 12 yellow beads, 20 green beads and some blue beads. If a bead is selected at random from the bag, the probability of selecting a green bead is $\frac{5}{12}$. Find the number of blue beads in the bag.

Sebuah beg mengandungi 12 biji manik berwarna kuning, 20 biji manik hijau dan beberapa biji manik biru. Sekiranya manik ini dipilih secara rawak, kebarangkalian untuk memilih manik berwarna hijau ialah $\frac{5}{12}$. Cari bilangan manik biru dalam beg.

A 8

C 12

B 10

D 16

39. Table 2 shows the number of doctors from three cities.
Jadual 2 menunjukkan bilangan doktor dari tiga buah bandar.

Gender / <i>Jantina</i>	Male <i>Lelaki</i>	Female <i>Wanita</i>
City / <i>Bandar</i>		
X	35	10
Y	25	15
Z	15	20

Table 2 / *Jadual 2*

If a female doctor is picked at random, find the probability of picking a female doctor from city Y.
Sekiranya seorang doktor wanita dipilih secara rawak, cari kebarangkalian bahawa doktor wanita dari bandar Y dipilih.

- | | | | |
|---|---------------|---|---------------|
| A | $\frac{1}{3}$ | C | $\frac{3}{9}$ |
| B | $\frac{3}{8}$ | D | $\frac{2}{5}$ |

40. A box consists of 5 red pens, 6 black pens and 9 blue pens. If x black pens are added into the box and the probability of getting a blue pen is $\frac{1}{5}$, find the value of x .

Sebuah kotak mengandungi 5 pen merah, 6 pen hitam dan 9 pen biru. Jika sebanyak x pen hitam dimasukkan ke dalam kotak itu dan kebarangkalian mendapat pen biru ialah $\frac{1}{5}$, cari nilai x .

- | | | | |
|---|---|---|----|
| A | 5 | C | 10 |
| B | 6 | D | 25 |

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

**PEJABAT PELAJARAN DAERAH SEGAMAT
PEPERIKSAAN AKHIR TAHUN SETARA 2010**

**SKEMA PEMARKAHAN
MATEMATIK TINGKATAN 4
KERTAS 1**

1	C	21	A
2	B	22	B
3	D	23	A
4	C	24	D
5	A	25	D
6	B	26	C
7	B	27	C
8	A	28	B
9	C	29	A
10	A	30	C
11	D	31	D
12	D	32	C
13	A	33	A
14	B	34	D
15	B	35	C
16	C	36	B
17	A	37	A
18	B	38	D
19	D	39	A
20	B	40	D