

1449/1
Matematik
Kertas 1
Ogos
2010
1¼ jam

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK
2010**

MATEMATIK

KERTAS 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

MAKLUMAT UNTUK CALON

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 hingga halaman 4.

Kertas soalan ini mengandungi 16 halaman bercetak.

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

SHAPES AND SPACE
BENTUK DAN RUANG

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

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

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

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

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

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

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

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

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

- 7 Diagram 2 shows a regular hexagon PQRSTU and RTSV is a parallelogram.
Rajah 2 menunjukkan sebuah heksagon sekata PQRSTU dan RTSV ialah sebuah segi empat selari.

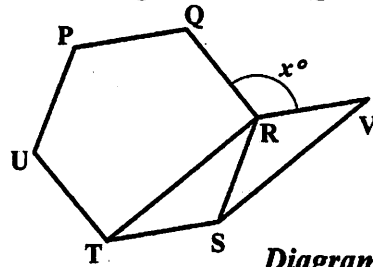


Diagram 2

Find the value of x .

Cari nilai x .

- A 100° C 120°
 B 110° D 140°
- 8 In Diagram 3, ABC is a tangent to a circle with centre O, at point B. DOC is a straight line.
Dalam Rajah 3, ABC ialah tangen kepada bulatan berpusatkan O, pada titik B. DOC ialah garis lurus.

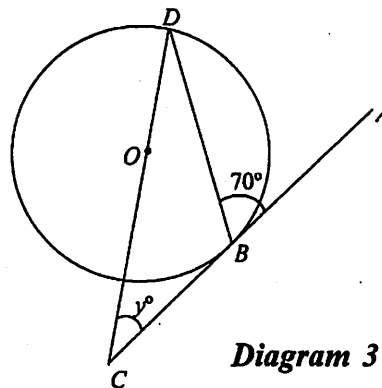


Diagram 3

If $\angle ABD = 70^\circ$, find the value of y .

Jika $\angle ABD = 70^\circ$, cari nilai y .

- A 70° C 55°
 B 60° D 50°
- 9 In Diagram 4, triangle N is the image of triangle M under a clockwise rotation of 90° .
Dalam Rajah 4, segitiga N ialah imej bagi segitiga M di bawah suatu putaran 90° ikut arah jam.

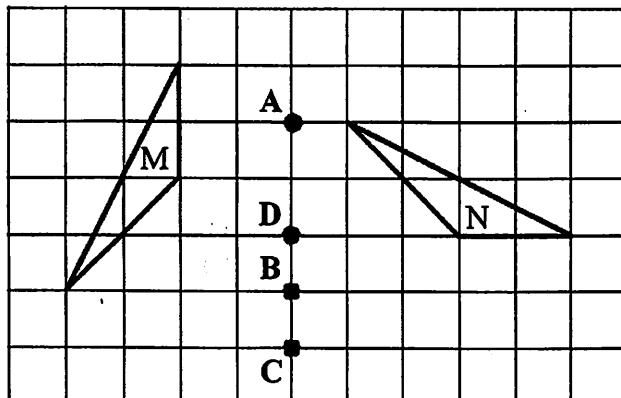


Diagram 4

Which of the points A, B, C or D is the centre of the rotation?

Antara titik A, B, C atau D, yang manakah pusat putaran itu?

- 10 Diagram 5 shows five triangles drawn on a square grids.
Rajah 5 menunjukkan lima segitiga dilukis pada grid segiempat sama.

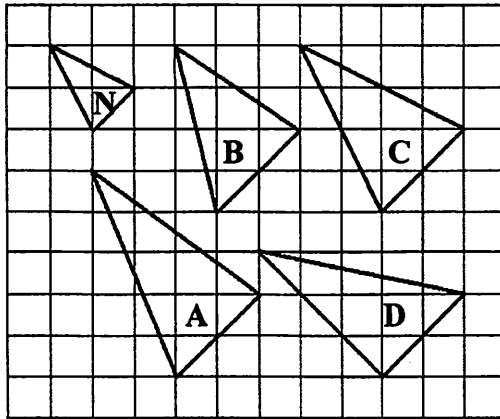


Diagram 5

Which of the triangle A, B, C or D, is the image of triangle N under an enlargement with a scale factor of 2?

Antara segitiga A, B, C atau D, yang manakah imej bagi segitiga N di bawah suatu pembesaran dengan faktor skala 2?

- 11 Diagram 6 shows a right-angled triangle PQR.
Rajah 6 menunjukkan sebuah segitiga bersudut tegak PQR.

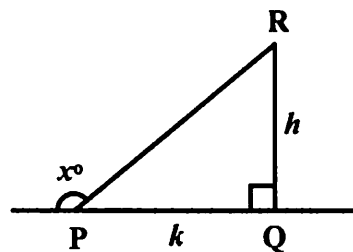


Diagram 6

Given $\cos x^\circ = -\frac{1}{2}$, find the value of h .

Diberi $\cos x^\circ = -\frac{1}{2}$, cari nilai h .

- | | | | |
|---|-------------------|---|---------------------------|
| A | $k \tan 30^\circ$ | C | $\frac{k}{\tan 60^\circ}$ |
| B | $k \tan 60^\circ$ | D | $\frac{\tan 60^\circ}{k}$ |

- 12 Given that $\tan x^\circ = \frac{5}{12}$ where $180^\circ \leq x \leq 360^\circ$, find the value of $\cos x^\circ$.

Diberi bahawa $\tan x^\circ = \frac{5}{12}$ dengan keadaan $180^\circ \leq x \leq 360^\circ$, cari nilai $\cos x^\circ$.

- | | | | |
|---|-----------------|---|------------------|
| A | $\frac{5}{13}$ | C | $-\frac{5}{13}$ |
| B | $\frac{12}{13}$ | D | $-\frac{12}{13}$ |

- 13 Diagram 7 shows the graph $y = \sin x$ and $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$.
Rajah 7 menunjukkan graf $y = \sin x$ dan $y = \cos x$ dengan keadaan $0^\circ \leq x \leq 360^\circ$.

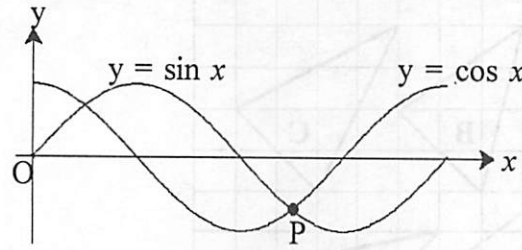


Diagram 7

Find the value of coordinate-x of point P.

Carikan nilai koordinat-x bagi titik P.

- A 215° C 235°
 B 225° D 245°
- 14 Diagram 8 shows a right-angled triangular prism with the horizontal base QSTV.
Rajah 8 menunjukkan sebuah prisma segitiga tegak dengan tapak mengufuk QSTV.

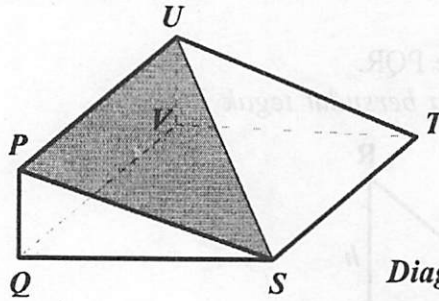


Diagram 8

What is the angle between the plane PSU and the base QSTV.

Apakah sudut di antara satah PSU dengan tapak QSTV.

- A $\angle UVS$ C $\angle PSQ$
 B $\angle USP$ D $\angle PQS$
- 15 Diagram 9 shows two vertical flagpoles on a horizontal plane. P, Q, R, S and T are five points on the poles such that $QR = ST$.
Rajah 9 menunjukkan dua tiang bendera tegak pada satah mengufuk. P, Q, R, S dan T ialah lima titik pada tiang - tiang itu dengan keadaan $QR = ST$.

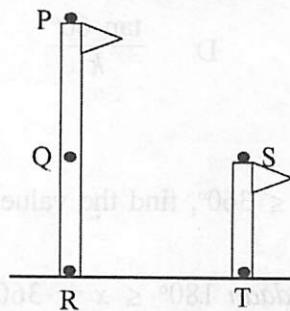


Diagram 9

Name the angle of elevation of point P from point T

Namakan sudut dongakan titik P dari titik T.

- A $\angle PTQ$ C $\angle PRT$
 B $\angle PQT$ D $\angle PTR$

- 16 Diagram 10 shows a tower PQ . The points P , R and S lie on a horizontal plane.
Rajah 10 menunjukkan sebuah menara PQ . Titik P , R dan S terletak di atas satah mengufuk.

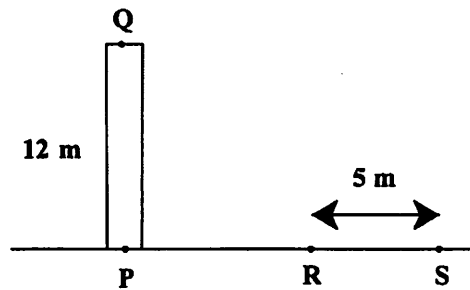


Diagram 10

The angle of depression of R from Q is 60° . Find the angle of elevation of Q from S .
Sudut tondok R dari Q ialah 60° . Cari sudut dongakan Q dari S .

- A 22.62° C 48.83°
B 45.17° D 67.38°
- 17 Diagram 11 shows three points P , Q and R on a horizontal plane.
Rajah 11 menunjukkan tiga titik P , Q dan R pada satah mengufuk.

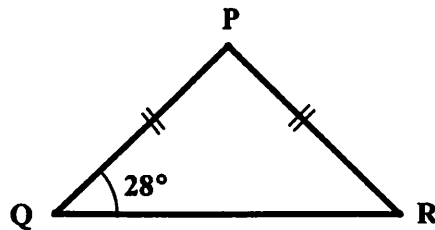


Diagram 11

It is given that P is due north of Q . Find the bearing of P from R .
Diberi P berada ke utara Q . Cari bearing P dari R .

- A 028° C 236°
B 124° D 332°

- 18 In Diagram 12, NOS is the axis of the earth. PR is a diameter of the parallel of latitude and $\angle QMR = 25^\circ$.
 Dalam Rajah 12, UOS ialah paksi bumi. PR ialah diameter selarian latitud dan $\angle QMR = 25^\circ$

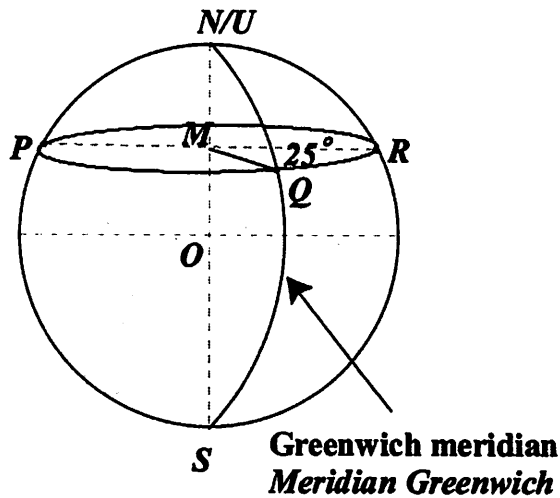


Diagram 12

Find the longitude of P.
 Cari longitud P.

- | | | | |
|---|--------------|---|---------------|
| A | 25° W | C | 155° W |
| | 25° B | | 155° B |
| B | 25° E | D | 155° E |
| | 25° T | | 155° T |
- 19 $(6m - 4)(2 - 5m) =$
- | | | | |
|---|--------------------|---|--------------------|
| A | $-30m^2 + 32m - 8$ | C | $-15m^2 + 16m - 4$ |
| B | $30m^2 - 32m + 8$ | D | $15m^2 + 16m + 4$ |

- 20 Express $\frac{m-3}{2m} - \frac{5-6m}{4m^2}$ as a single fraction in its simplest form.

Ungkapkan $\frac{m-3}{2m} - \frac{5-6m}{4m^2}$ sebagai pecahan tunggal dalam bentuk termudah.

- | | | | |
|---|-------------------------------|---|-------------------------|
| A | $\frac{2m^2 - 12m - 5}{4m^2}$ | C | $\frac{-8m - 11}{4m^2}$ |
| B | $\frac{2m^2 - 5}{4m^2}$ | D | $\frac{4m - 11}{4m^2}$ |

- 21 Given that $M = \frac{2H^2 - T}{4}$, express H in terms of T and M.

Diberi bahawa $M = \frac{2H^2 - T}{4}$, ungkapkan H dalam sebutan T dan M.

- A $\frac{\sqrt{4M + T}}{2}$ C $\sqrt{\frac{4M + T}{2}}$
 B $\sqrt{\frac{4M - T}{2}}$ D $\frac{\sqrt{2M + T}}{2}$

- 22 Given that $\frac{p+7}{3} - (1-p) = 8$, calculate the value of p.

Diberi bahawa $\frac{p+7}{3} - (1-p) = 8$, hitung nilai p.

- A 3 C 6
 B 5 D 8

- 23 Given that $7^x = \frac{343}{7^{3x}}$, find the value of x.

Diberi bahawa $7^x = \frac{343}{7^{3x}}$, cari nilai x.

- A $\frac{1}{2}$ C $\frac{3}{4}$
 B $\frac{7}{4}$ D $\frac{1}{3}$

- 24 Simplify $(3^2fd^2)^{-1} \times (3fd^2)^3$
 Ringkaskan $(3^2fd^2)^{-1} (3fd^2)^3$

- A $3f^2d^4$ C $9f^2d^{-4}$
 B $27f^{-2}d^4$ D $3f^4d^2$

- 25 List all the integers of x that satisfy the inequalities below
 Senaraikan semua integer x yang memuaskan ketaksamaan di bawah

$$2x - 3 \leq x < 5 + 3x$$

- A 0, 1, 2 C -1, 0, 1, 2
 B -1, 0, 1 D -2, -1, 0, 1, 2, 3

- 26 In Diagram 13, a pie chart shows the favourite cakes of a group of students.
 Dalam Rajah 13, carta pai menunjukkan kek kegemaran bagi sekumpulan murid.

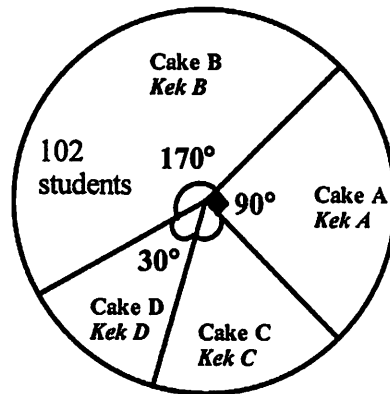


Diagram 13

Calculate the difference between the number of students whose favourite cake is C and the number of students whose favourite cake is D.

Hitungkan beza antara bilangan murid yang gemar kek C dan bilangan murid yang gemar kek D.

- A 60
 B 55
 C 40
 D 24

- 27 Table 1 shows the mass in kg of a group of students in a secondary school.
 Jadual 1 menunjukkan jisim dalam kg bagi sekumpulan murid di sebuah sekolah menengah.

Mass (kg)	Number of students
45	3
50	2
55	y
60	9
65	4
70	1

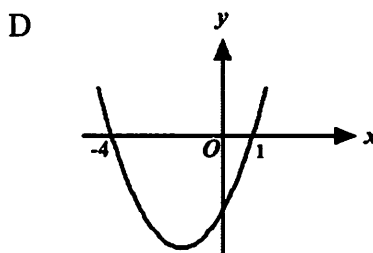
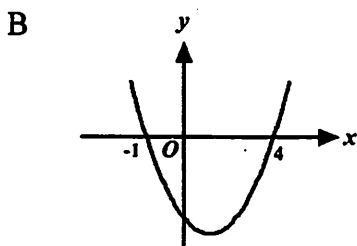
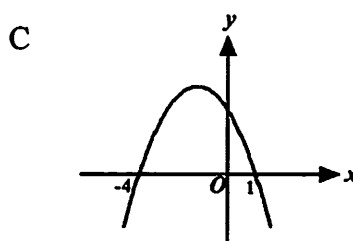
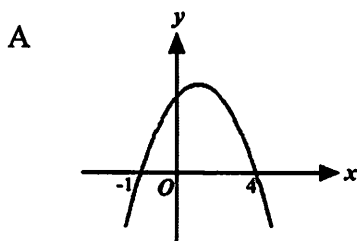
Table 1

If the mean mass of the students is 57.5 kg, find the value of y .

Jika min jisim bagi murid – murid itu ialah 57.5 kg, cari nilai bagi y .

- A 4
 B 5
 C 6
 D 7

- 28 Which graph represents $y = -x^2 + 3x + 4$
 Graf yang manakah yang mewakili $y = -x^2 + 3x + 4$



- 29 List all the subsets of set $Y = \{h, j\}$
 Senaraikan semua subset bagi set $Y = \{h, j\}$

A $\{h\}, \{j\}, \{\}$

C $\{h\}, \{j\}, \{h, j\}, \{\phi\}$

B $\{h\}, \{j\}, \{h, j\}$

D $\{h\}, \{j\}, \{h, j\}, \{\}$

- 30 In Diagram 14, the Venn Diagram shows set W , set X and set Y .
 Dalam Rajah 14, Gambar rajah Venn menunjukkan set W , set X dan set Y .

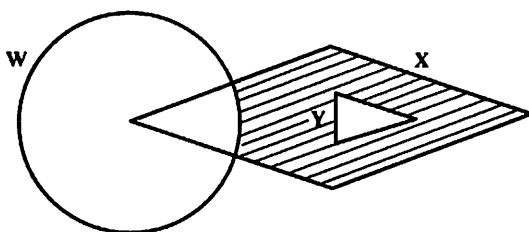


Diagram 14

Given the universal set $\xi = W \cup Y \cup X$. Which of the following relation represents the shaded region?

Diberi set semesta $\xi = W \cup Y \cup X$. Hubungan yang manakah mewakili kawasan yang berlorek?

A $X \cup W \cap Y$

C $X \cap (W \cup Y)'$

B $W \cup (Y \cap X)'$

D $(W \cap Y)' \cap X$

- 31 Diagram 15 is a Venn diagram shows the number of the elements in set P, set Q and set R.
Rajah 15 ialah gambar rajah Venn yang menunjukkan bilangan unsur-unsur set P, set Q dan set R.

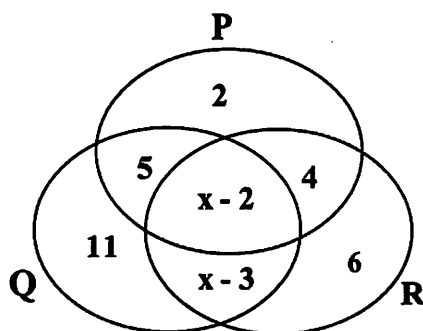


Diagram 15

It is given that the universal set $\xi = P \cup Q \cup R$ and $n(R') = n(P \cup R)$.

Diberi set semesta $\xi = P \cup Q \cup R$ dan $n(R') = n(P \cup R)$.

Find the value of x .

Carikan nilai x .

- A 3
 B 4

- C 7
 D 8

- 32 Diagram 16 shows a straight line EF on a Cartesian plane.
Rajah 16 menunjukkan garis lurus EF pada suatu satah Cartesian.

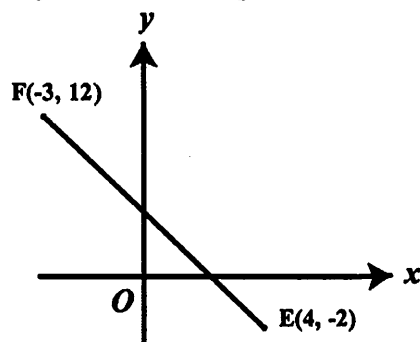


Diagram 16

Find the gradient of EF.

Cari kecerunan EF.

- A -2

- C $\frac{1}{2}$

- B $-\frac{1}{2}$

- D 2

- 33 Find the y -intercept of the straight line $-5x - 2y = -3$

Carikan pintasan- y bagi garis lurus $-5x - 2y = -3$

- A $\frac{5}{2}$

- C $-\frac{5}{2}$

- B $-\frac{3}{2}$

- D $\frac{3}{2}$

- 34 A container holds 34 yellow cards and a number of red cards. A card is picked at random from the container. The probability of getting a yellow card is $\frac{2}{5}$

Sebuah bekas mengandungi 34 keping kad kuning dan beberapa keping kad merah. Sekeping kad dipilih secara rawak daripada bekas itu. Kebarangkalian mendapat sekeping kad kuning ialah $\frac{2}{5}$.

How many red cards are there in the container?

Berapakah bilangan kepingan kad merah dalam bekas itu?

- A 49
B 51
C 68
D 85

- 35 A box contains 6 red balls and 14 blue balls. k red balls are added into the box. If a ball is drawn at random from the box, the probability of getting a red ball is $\frac{8}{15}$. Find the value of k .

Sebuah kotak mengandungi 6 biji bola merah dan 14 biji bola biru. k biji bola merah ditambah ke dalam kotak itu. Jika sebiji bola diambil secara rawak dari kotak itu,

kebarangkalian bola itu berwarna merah ialah $\frac{8}{15}$. Cari nilai k .

- A 7
B 8
C 10
D 15

- 36 Table 2 shows some values of the variables X , Y and Z such that X varies directly as the square of Y and inversely as Z .

Jadual 2 menunjukkan sebahagian daripada nilai-nilai bagi pembolehubah X , Y dan Z dengan keadaan X berubah secara langsung dengan kuasa dua Y dan secara songsang dengan Z .

X	25	32
Y	5	m
Z	3	6

Table 2

Calculate the value of m .

Carikan nilai m .

- A 7
B 8
C 9
D 10

