

1449/1
Matematik
Kertas 1
September
2008
1¼ jam

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK
2008**

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 5.

Kertas soalan ini mengandungi 20 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 answer sheet.
Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.
4. Blacken only one space for each question.
*Bagi setiap soalan hitamkan **satu** ruangan sahaja.*
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 menukarkan 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 halaman 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.

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

$$1 \quad a^m \times a^n = a^{m+n}$$

$$2 \quad a^m \div a^n = a^{m-n}$$

$$3 \quad (a^m)^n = a^{mn}$$

$$4 \quad A^{-1} = \frac{1}{ad - bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

$$5 \quad P(A) = \frac{n(A)}{n(S)}$$

$$6 \quad P(A') = 1 - P(A)$$

$$7 \quad \text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Jarak

$$8 \quad \text{Midpoint, } (x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Titik tengah

$$9 \quad \text{Average speed} = \frac{\text{distance travelled}}{\text{time taken}}$$

$$\text{Purata laju} = \frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$$

$$10 \quad \text{Mean} = \frac{\text{sum of data}}{\text{number of data}}$$

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

$$11 \quad \text{Mean} = \frac{\text{sum of (class mark x frequency)}}{\text{sum of frequencies}}$$

$$\text{Min} = \frac{\text{hasil tambah (nilai titik tengah kelas x kekerapan)}}{\text{hasil tambah kekerapan}}$$

$$12 \quad \text{Pythagoras Theorem} \quad c^2 = a^2 + b^2$$

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

$$13 \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$14 \quad m = \frac{\text{y-intercept}}{\text{x-intercept}}$$

$$m = \frac{\text{pintasan-y}}{\text{pintasan-x}}$$

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 = $\pi d = 2\pi j$

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 x length
Isipadu prisma tegak = luas keratan rentas x 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 = $\frac{1}{3}$ 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 = $(n - 2) \times 180^\circ$

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

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

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

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

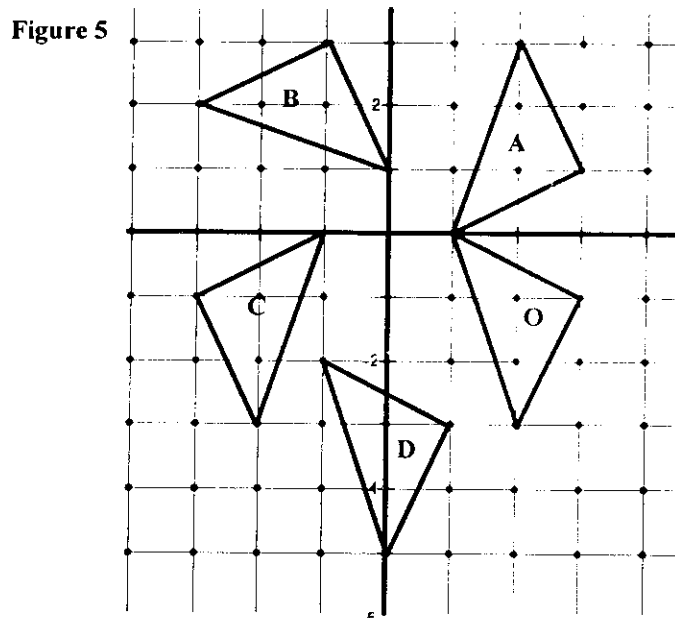
$$14. \quad \text{Scale factor, } k = \frac{PA'}{PA}$$

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

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

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

- 10 In figure 5, state the position of the image of the object O under a reflection along the line $y = x$.
 Dalam rajah 5, nyatakan kedudukan imej objek O di bawah pantulan pada garis $y = x$.



11

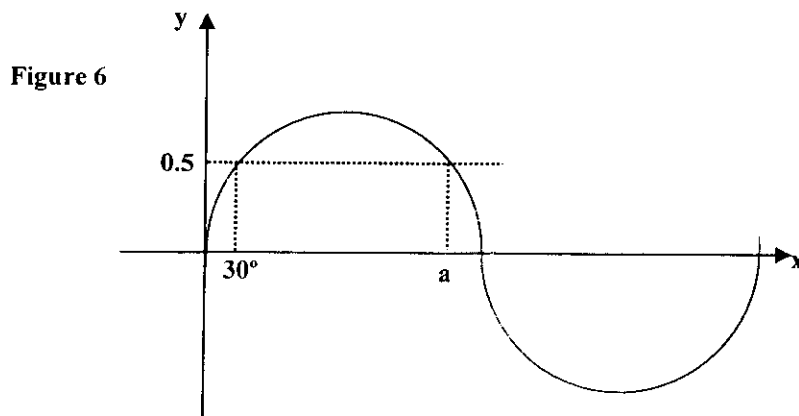
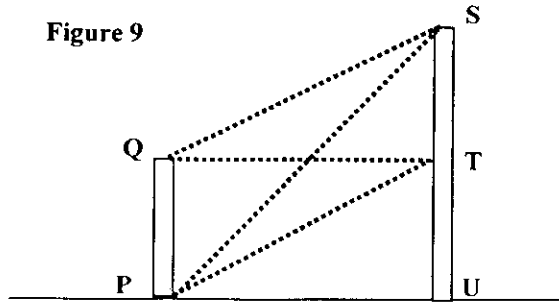


Figure 6 is a graph of function $y = \sin x$. Find the value of a .
 Rajah 6 menunjukkan graf fungsi $y = \sin x$. Cari nilai a .

- | | |
|----------------|----------------|
| A) 90° | B) 120° |
| C) 130° | D) 150° |

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Figure 9



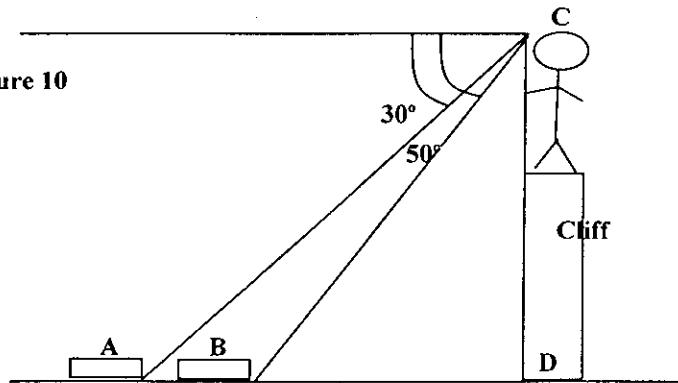
In figure 9, PQ and STU are two poles on horizontal ground. The angle of elevation of S from Q is

Dalam rajah 9, PQ dan STU adalah dua batang tiang tegak di atas tanah mengufuk. Sudut dongak S dari Q ialah

- A) $\angle TPS$
- B) $\angle TQS$
- C) $\angle UQS$
- D) $\angle UQT$

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Figure 10



An observer is standing top of the cliff to measure the distance between boat A and boat B as shown in figure 10. Given that $CD = 21.65$ m, find the length of AB in m .

Seorang pemerhati berdiri di atas sebuah tebing untuk mendapatkan jarak di antara sampan A dan sampan B seperti dalam rajah 10. Diberi $CD = 21.65$ m, cari jarak AB dalam m.

- A) 37.5
- B) 24.33
- C) 19.33
- D) 18.17

16

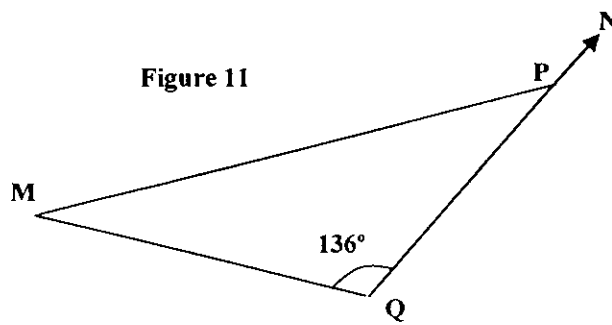
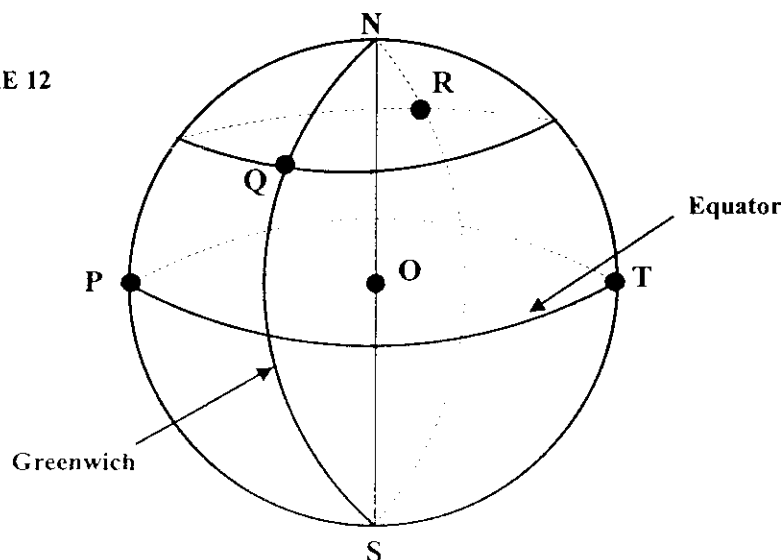


Figure 11 shows three points M, P and Q on a horizontal plane. Given that $MQ = QP$, find the bearing of M from Q.

Rajah 11, menunjukkan 3 titik M, P dan Q yang terletak pada satah mengufuk. Diberi $MQ = QP$, cari bearing titik M dari titik Q.

- A) 022°
 - B) 202°
 - C) 044°
 - D) 224°
- 17 Town A(60°S , 143°E) and town B(60°S , 75°E) are two towns on the surface of the earth. The distance, in nautical miles, from town B due west to town A is
Bandar A(60°S , 143°T) dan bandar B(60°S , 75°T) adalah dua buah bandar yang terletak di atas permukaan bumi. Cari jarak dalam batu nautika dari bandar B menghala Barat ke bandar A
- A) 4080 nautical miles
4080 batu nautika
 - B) 6540 nautical miles
6540 batu nautika
 - C) 8760 nautical miles
8760 batu nautika
 - D) 17520 nautical miles
17520 batu nautika
- 18 In figure 12, NOS is the axis of the earth and O is the centre of the earth. Which of the following points has a longitude of 0° .
Dalam rajah 12, NOS adalah paksi bumi dan O adalah pusat bumi. Antara titik-titik berikut yang manakah mempunyai kedudukan longitud 0° .

FIGURE 12



- A) P
- B) R
- C) Q
- D) T

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[Lihat sebelah
SULIT

- 23 Simplify
Ringkaskan

$$(3m^2n^{-1})^2 \div (m^3n^2)^3$$

- A) $3m^{-5}n^{-8}$ B) $9m^{-5}n^{-8}$
C) $3m^5n^8$ D) $9m^5n^8$

- 24 Find the value of
Nilaikan

$$216^{2/3} \div (6^8 \times 5^{-2})^{1/2}$$

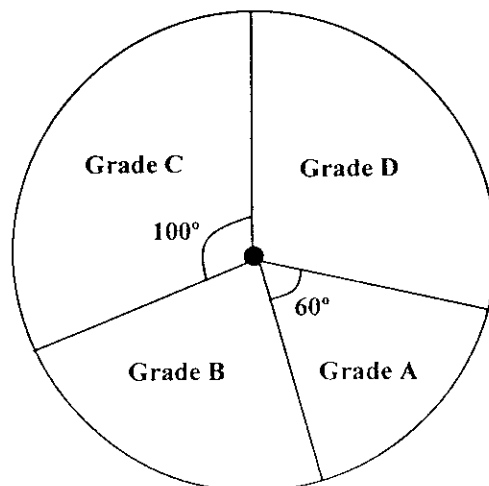
- A) $\frac{36}{5}$ B) $\frac{5}{36}$
C) $\frac{5}{2}$ D) $\frac{2}{5}$

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

$$3x - 2 \leq x \leq 4 + 5x$$

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

- 26 Figure 13



The pie chart in figure 13 shows the distributions of different grade of eggs sold by a shop. The sum of Grade A and Grade C eggs sold is 240. Calculate the sum of Grade B and Grade D eggs sold.

Rajah 13 adalah carta pai menunjukkan pengagihan pelbagai jenis gred telur yang telah dijual oleh sebuah kedai. Sebanyak 240 biji telur gred A dan gred C telah dijual oleh pekedai tersebut. Kirakan jumlah telur gred B dan gred D yang telah dijual.

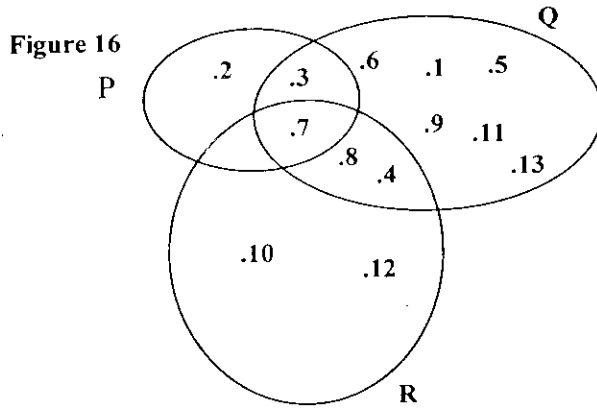
- A) 300 B) 800
C) 540 D) 1440

29 Venn Diagrams in figure 16 shows the elements of set P, Q and R.

List the elements of

Rajah 16 adalah gambar rajah Venn menunjukkan unsur-unsur bagi set P, Q dan R.
Senaraikan unsur bagi

$$P \cup (Q \cap R)$$



A) { 2 , 3 , 4 , 7 }

B) { 2 , 3 , 4 , 7 , 8 }

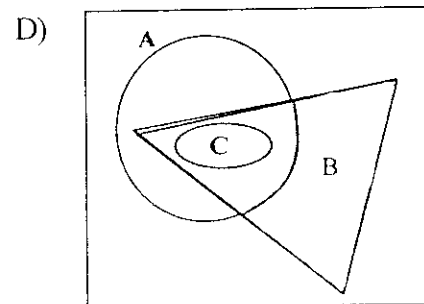
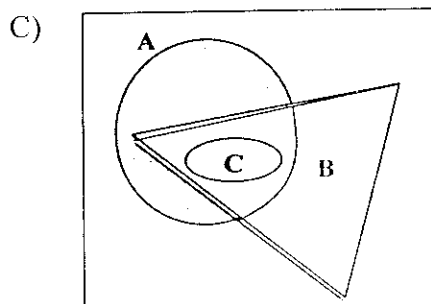
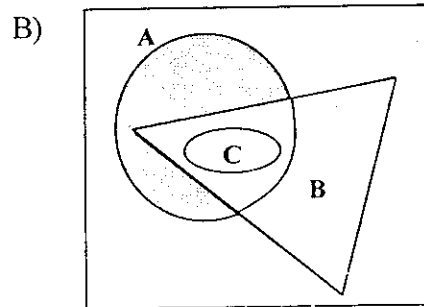
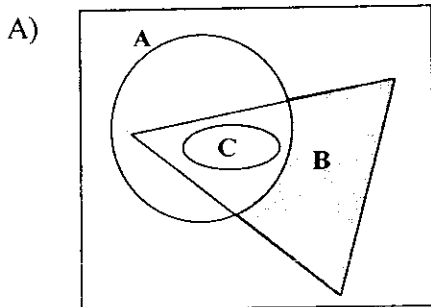
C) { 2 , 3 , 4 , 7 , 8 , 9 }

D) { 2 , 3 , 4 , 7 , 8 , 11 , 12 }

30 Which of the following shaded regions of the Venn diagrams represent

Antara gambar rajah venn berlorek yang manakah mewakili

$$(B \cup C) \cap A'$$



- 31 Given universal set $\xi = P \cup Q \cup R$ where
 Diberi set semesta $\xi = P \cup Q \cup R$ di mana

$$\text{Set } P = \{ D, A, N, C, E \}$$

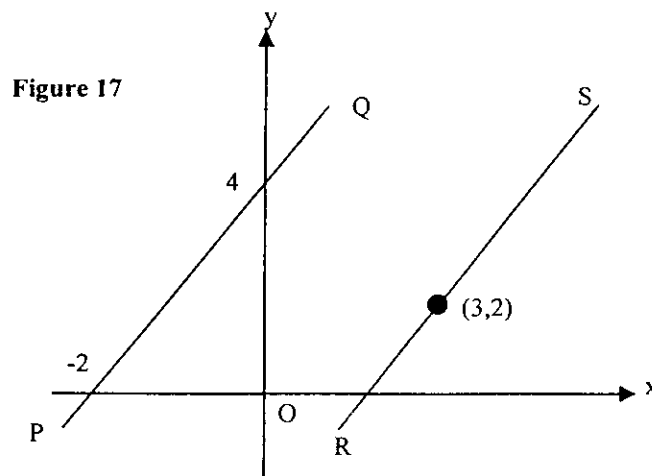
$$\text{Set } Q = \{ P, A, R, T, Y \}$$

$$\text{Set } R = \{ H, A, P, P, Y \}$$

Find $P \cap (Q \cup R)$ '

Cari $P \cap (Q \cup R)$ '

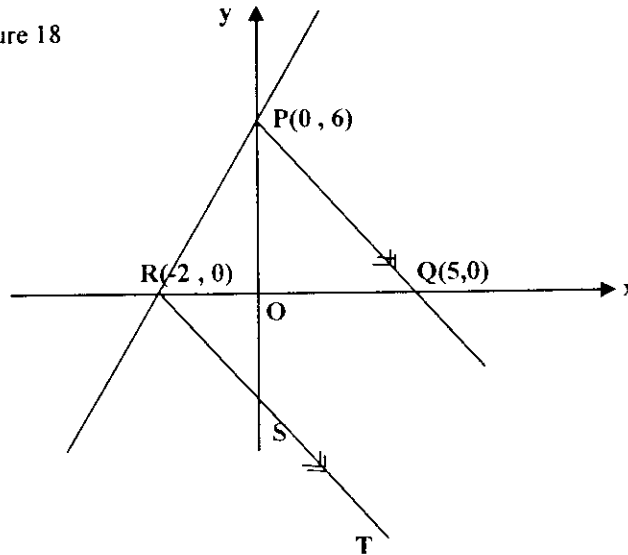
- A) $\{ A, C, D, E, H, P, N, R, T, Y \}$ B) $\{ D, A, N, C, E \}$
 C) $\{ D, N, C, E \}$ D) $\{ H, A, P, R, T, Y \}$
- 32 In figure 17 below, PQ and RS are two parallel lines. Find the x-intercept of the straight line RS .
 Dalam rajah 17 di bawah, PQ dan RS adalah dua garis selari, cari pintasan-x bagi garis lurus RS .



- A) 2 B) -2
 C) 4 D) -4
- 33 Which of the following pairs are parallel lines.
 Antara berikut yang manakah pasangan garis lurus selari.
- A) $2x + y = 1$ and $y + 2x = -5$
 B) $y = 3x$ and $y + 3x = 11$
 C) $y = -2x + 9$ and $-2y + 4x = 0$
 D) $x = 5y - 10$ and $5x = y + 10$

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Figure 18



In figure 18, PQ and RST are two parallel lines.

Find the equation of the straight line RS.

Dalam rajah 18, PQ dan RST adalah dua garis lurus selari.

Cari persamaan garis lurus RS.

A) $y = -\frac{6}{5}x + \frac{12}{5}$

B) $y = \frac{2}{5}x - 2$

C) $y = -\frac{6}{5}x - \frac{12}{5}$

D) $y = -\frac{2}{5}x - 2$

35

GERAK

GEMPU R

All the above alphabet cards are put into an empty box. A card is taken out at random from the box, state the probability that the card taken out is an alphabet R.

Semua kad berhuruf yang ditunjukkan di atas dimasukkan ke dalam sebuah kotak kosong.

Jika sekeping kad dikeluarkan secara rawak daripada kotak itu, nyatakan kebarangkalian bahawa kad yang dikeluarkan itu berhuruf R.

A) $\frac{2}{11}$

B) $\frac{2}{8}$

C) $\frac{1}{5}$

D) $\frac{1}{6}$

39 Given $M - 2 \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix}$ find matrix M .

Diberi $M - 2 \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix}$ cari nilai matrik M .

A) $\begin{pmatrix} 3 & 0 \\ 9 & 8 \end{pmatrix}$

B) $\begin{pmatrix} 3 & 0 \\ 6 & 12 \end{pmatrix}$

C) $\begin{pmatrix} 2 & 0 \\ 4 & 8 \end{pmatrix}$

D) $\begin{pmatrix} 2 & 0 \\ 4 & 4 \end{pmatrix}$

40 Evaluate the product of these two matrices.
Cari hasil darab dua matrik berikut.

$$\begin{pmatrix} 3 & -2 \\ 1 & 5 \end{pmatrix} \begin{pmatrix} -4 & 5 \\ 3 & -1 \end{pmatrix}$$

A) $\begin{pmatrix} -18 & 17 \\ 11 & 0 \end{pmatrix}$

B) $\begin{pmatrix} -18 & 13 \\ -4 & 10 \end{pmatrix}$

C) $\begin{pmatrix} -12 & -10 \\ 3 & -6 \end{pmatrix}$

D) $\begin{pmatrix} -18 & -17 \\ -2 & 0 \end{pmatrix}$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT