



SMK SULTAN ABDULLAH Chenderong Balai, Perak

PEPERIKSAAN PERTENGAHAN TAHUN 2019
MATEMATIK (TINGKATAN 4)

1449/1

Kertas 1

Mei

$1\frac{1}{4}$ 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. *Kertas soalan ini mengandungi 40 soalan.*
4. *Jawab semua soalan.*
5. *Hitamkan satu ruangan sahaja bagi setiap soalan.*
6. *Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
7. *Satu senarai rumus disediakan di halaman 2 hingga 3.*
8. *Anda dibenarkan menggunakan kalkulator saintifik*

Disediakan oleh :

Disemak oleh :

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Kertas soalan ini mengandungi 12 halaman bercetak

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

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. $A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

5. Distance / Jarak = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

6. Midpoint / Titik tengah = $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

7. Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$

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

8. Mean = $\frac{\text{sum of data}}{\text{number of data}}$

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

9. Mean = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$

Min = $\frac{\text{hasil tambah (nilai titik tengah} \times \text{ke ker apan)}}{\text{hasil tambah ke ker apan}}$

10. Pythagoras Theorem

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

11. $P(A) = \frac{n(A)}{n(S)}$

12. $P(A') = 1 - P(A)$

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

14. $m = -\frac{y - \text{int ercept}}{x - \text{intercept}}$

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

**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 = $\pi d = 2\pi r$
3. Area of circle = πr^2
Luas bulatan = πr^2
4. Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi r h$
5. Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi r^2$
6. Volume of right prism = cross sectional area \times length
Isi padu prisma tegak = luas keratan rentas \times panjang
7. Volume of silinder = $\pi r^2 h$
Isi padu silinder = $\pi r^2 h$
8. Volume of cone = $\frac{1}{3} \pi r^2 h$
Volume of cone = $\frac{1}{3} \pi r^2 h$
9. Volume of sphere = $\frac{4}{3} \pi r^3$
Isi padu sfera = $\frac{4}{3} \pi r^3$
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 polygon = $(n - 2) \times 180^\circ$
12. $\frac{\text{arc length}}{\text{circumference}} = \frac{\text{angle subtended at centre}}{360^\circ}$
 $\frac{\text{panjang lengkok}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$
13. $\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$
 $\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$
14. Scale factor, $k = \frac{PA'}{PA}$
Faktor skala, $k = \frac{PA'}{PA}$
15. Area of image = $k^2 \times \text{area of object}$
Luas imej = $k^2 \times \text{luas objek}$

1. Round off 74 855 correct to three significant figures.

Bundarkan 74 855 betul kepada tiga angka bererti.

A 748 B 749 C 74 8000 D 74 900

2. Express 3.766×10^{-3} as a single number.

Ungkapkan 3.766×10^{-3} sebagai suatu nombor tunggal.

A 0.0003766 B 0.003766 C 376.6 D 3 766

3. Express $\frac{0.00042 \times (2 \times 10)^2}{0.6}$ in standard form.

Ungkapkan $\frac{0.00042 \times (2 \times 10)^2}{0.6}$ dalam bentuk piawai

A 1.4×10^{-1} B 1.4×10^1 C 2.8×10^{-1} D 2.8×10^1

4. Express 0.0006145 in standard form.

Ungkapkan 0.0006145 dalam bentuk piawai.

A 6.145×10^4 B 6.145×10^3 C 6.145×10^{-3} D 6.145×10^{-4}

5. $3.14 \times 10^{-5} - 1.3 \times 10^{-6} =$

A 1.84×10^{-5} B 1.84×10^{-6} C 3.01×10^{-5} D 3.01×10^{-6}

6. The perimeter of a rectangular pool is 5.2×10^4 cm. Given the width is 3.7×10^2 cm, find the length, in cm.

Perimeter sebuah kolam berbentuk segi empat tepat ialah 5.2×10^4 cm. Diberi lebarnya ialah 3.7×10^2 cm, cari panjang dalam cm.

A 2.56×10^2 B 2.13×10^2 C 2.56×10^4 D 5.13×10^4

7. A plastic factory produces 1.42×10^2 plastic bottle caps in a minute. If the factory is operating 18 hours a day, calculate the number of the plastic bottle caps produced by the factory in a day.

Sebuah kilang plastic menghasilkan 1.42×10^2 buah penutup botol plastic dalam seminit. Jika kilang itu beroperasi 18 jam sehari, kira bilangan penutup botol plastik yang dihasilkan oleh kilang itu dalam sehari.

A 1.534×10^4 B 1.534×10^5 C 2.556×10^4 D 2.556×10^5

8. Diagram 1 shows a hexagon RSTUVW. MVUL is a straight line.

Rajah 1 menunjukkan sebuah heksagon RSTUVW. MVUL adalah garis lurus.

Calculate the value of $x + y$.

A 130°
B 230°
C 310°
D 490°

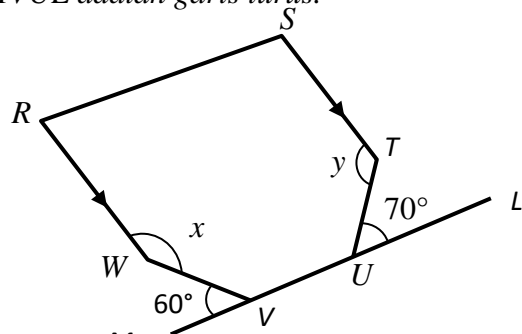


Diagram 1 / Rajah 1

9. Diagram 2 shows a parallelogram $KLMN$.
Rajah 2 menunjukkan sebuah segiempat selari $KLMN$.
 Find the value of x .
Cari nilai x .

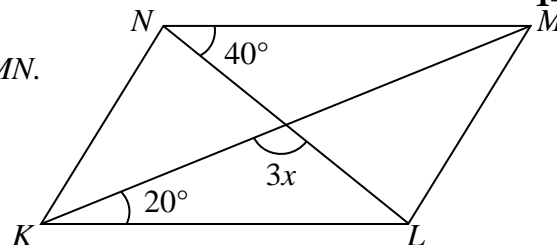


Diagram 2 / Rajah 2

- A 20
- B 40
- C 60
- D 120

10. Diagram 3 shows points plotted on a Cartesian plane.
Rajah 3 menunjukkan titik – titik yang diplot pada satah Cartes.

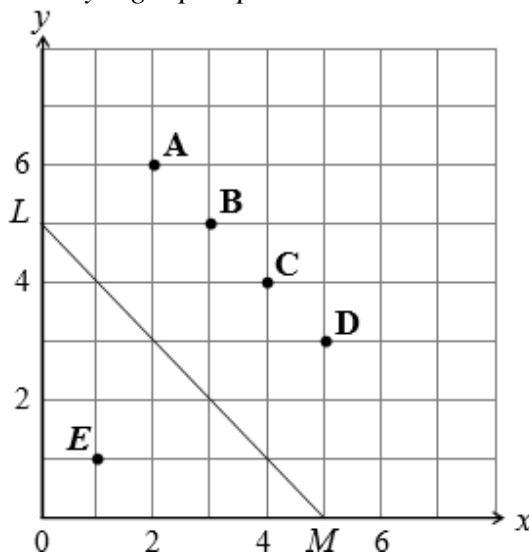


Diagram 3 / Rajah 3

Which of the point **A**, **B**, **C** or **D** is the image of E under a reflection in the line LM ?
*Antara titik **A**, **B**, **C** atau **D**, yang mana imej bagi E di bawah pantulan pada garis LM ?*

11. Diagram 4 shows five triangles drawn on square grids.
Rajah 4 menunjukkan lima segitiga dilukis di atas grid segiempat sama.

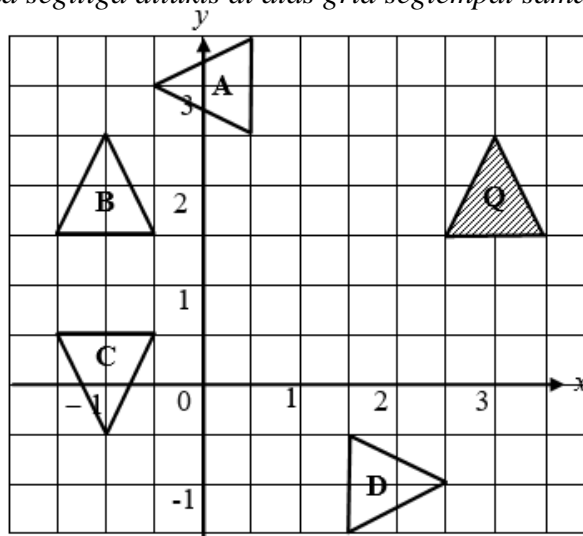


Diagram 4 / Rajah 4

Which of the triangles, **A**, **B**, **C** or **D** is the image of triangle Q under an anticlockwise rotation of 90° about the centre $(1,1)$?
*Antara segitiga **A**, **B**, **C** atau **D** yang manakah imej bagi segitiga Q di bawah putaran 90° lawan arah jam pada pusat $(1,1)$?*

12. Diagram 5 shows two trapeziums drawn on a Cartesian plane.

Rajah 5 menunjukkan dua trapezium yang dilukis pada suatu satah Cartes.

Trapezium A' is the image of trapezium A under a transformation. Describe in full, the transformation.

Trapezium A' ialah imej bagi trapezium A di bawah suatu penjelmaan.

Huraikan selengkapnya penjelmaan itu.

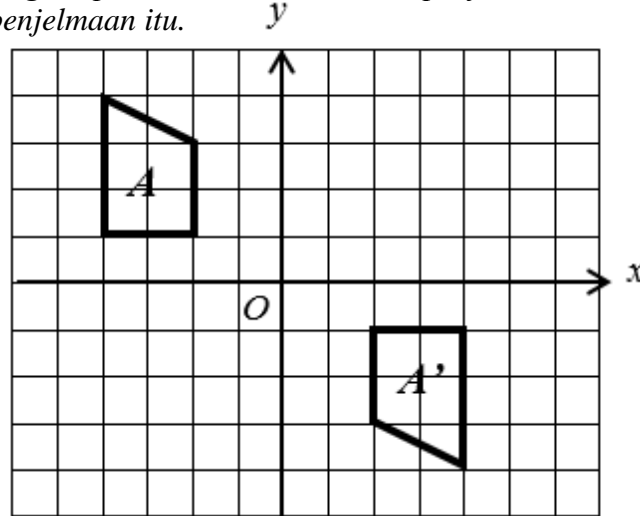


Diagram 5 / Rajah 5

- | | |
|---|---|
| A Reflection in the line $y = -x$ <i>Pantulan pada garis $y = -x$</i> | B Reflection in the line $y = x$ <i>Pantulan pada garis $y = x$</i> |
| C Clockwise rotation of 90° about the centre O <i>Putaran 90° ikut ara jam pada pusat O.</i> | D Rotation of 180° about the centre O <i>Putaran 180° pada pusat O</i> |

13. Given that $g = \frac{3h}{2-h}$, express h in terms of g .

Diberi bahawa $g = \frac{3h}{2-h}$, ungkapkan h dalam sebutan g .

- | | | | |
|---------------------|----------------------|------------------------|------------------------|
| A $h = \frac{g}{2}$ | B $h = \frac{3g}{2}$ | C $h = \frac{2g}{3+g}$ | D $h = \frac{2g-1}{3}$ |
|---------------------|----------------------|------------------------|------------------------|

14. Given that $v = \sqrt{\frac{1-t}{4}}$, then $t =$

Diberi bahawa $v = \sqrt{\frac{1-t}{4}}$, maka $t =$

- | | | | |
|--------------------------|-------------------------|------------|----------|
| A $\sqrt{\frac{1}{4-v}}$ | B $\sqrt{\frac{1}{4v}}$ | C $1-4v^2$ | D $4v+1$ |
|--------------------------|-------------------------|------------|----------|

15. $4hk - 3(2 - hk) =$

- | | | | |
|------------|------------|-------------|-------------|
| A $hk - 5$ | B $hk - 6$ | C $7hk - 5$ | D $7hk - 6$ |
|------------|------------|-------------|-------------|

16. $(2p - 3q)^2 - 3p(p + 2q) =$

- | | |
|-----------------------|----------------------|
| A $p^2 - 18pq + 9q^2$ | B $p^2 - 6pq + 9q^2$ |
| C $p^2 - 6pq - 6q^2$ | D $p^2 + 6pq + 9q^2$ |

17. Given $\frac{3x}{2} + 2 = 2x$, find the value of x .

Diberi $\frac{3x}{2} + 2 = 2x$, cari nilai x .

- | | | | |
|-----|-----|-----|------|
| A 2 | B 4 | C 6 | D 12 |
|-----|-----|-----|------|

18. Express $\frac{m+6n}{2mn} - \frac{m+3}{m}$ as a single fraction in its simplest form.

Ungkapkan $\frac{m+6n}{2mn} - \frac{m+3}{m}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{1-2n}{2n}$

B $\frac{m-2mn}{2mn}$

C $\frac{m-2mn-4n}{2mn}$

D $\frac{m-2mn+4n}{2mn}$

19. $\left(xy^{\frac{1}{2}}\right)^3 \div (x^4y^{-5})^{\frac{1}{2}} =$

A xy

B xy^4

C $\frac{x}{y}$

D $\frac{x}{y^4}$

20. $\sqrt{\left(\frac{2}{5}\right)^{-4}} =$

A $\frac{2}{5}$

B $\frac{5}{2}$

C $\frac{4}{25}$

D $\frac{25}{4}$

21. List all the integers x that satisfy both the simultaneous linear inequalities $x-3 > 2x-9$ and $-3x \leq x-8$.

Senaraikan semua integer x yang memuaskan kedua – dua ketaksamaan linear serentak $x-3 > 2x-9$ dan $-3x \leq x-8$.

A 2, 3, 4

B 2, 3, 4, 5

C 3, 4, 5, 6

D 2, 3, 4, 5, 6

22. The solution for the inequalities $10-3k \leq 2+k$ is

Penyelesaian bagi $10-3k \leq 2+k$ ialah

A $k \geq 2$

B $k \leq 2$

C $k \geq -2$

D $k \leq -2$

23. Which of the following is a statement?

Antara yang berikut, yang manakah pernyataan?

A $3+5$

B $x+2=5$

C $\sin 60^\circ - \cos 30^\circ$

D $6^2 < 15$

$\sin 60^\circ - \cos 30^\circ$

24. “If $m = -7$, then $m^2 = 49$ ”

“Jika $m = -7$, maka $m^2 = 49$ ”

The antecedent in the above implication is

Antejadian dalam implikasi di atas adalah

A $m = -7$

B $m = 7$

C $m^2 = -49$

D $m^2 = 49$

25. Which of the following is a true statement?

Antara yang berikut, yang manakah pernyataan benar?

A $5^2 = 10$ or $7^2 \div 8 = 6$

$5^2 = 10$ atau $7^2 \div 8 = 6$

B $8+9=17$ and $8 \times 4 = 32$

$8+9=17$ dan $8 \times 4 = 32$

C 5 is a factor of 20 and 7 is a factor of 10.

5 ialah factor bagi 20 dan 7 ialah faktor bagi 10.

D Hexagons have 6 sides and octagons have 7 sides.

Hexagon mempunyai 6 sisi dan octagon mempunyai 7 sisi.

26. The pie chart in Diagram 6, shows the number of shirts with sizes XL, XXL, and XXXL produced by Ricci Factory in a week.

Carta pai dalam Rajah 6 menunjukkan bilangan kemeja bersaiz, XL, XXL, dan XXXL yang dikeluarkan oleh Ricci Factory dalam seminggu.

The number of shirt with the size of XXXL is 2,100. Calculate the number of shirts with the size of XL.

Bilangan kemeja bersaiz XXXL ialah 2,100 helai. Hitung bilangan kemeja bersaiz XL.

A 2,436

B 2,268

C 2,100

D 2,000

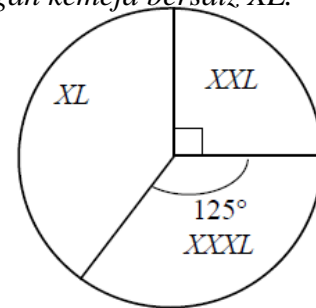





Diagram 6 / Rajah 6

27. Diagram 7 is a pictogram showing the number of dictionaries sold on Wednesday is not shown.

Rajah 7 ialah pictogram yang menunjukkan bilangan kamus yang dijual dalam masa tiga hari.

Bilangan pada hari Rabu tidak ditunjukkan.

| | |
|--------------------------|--|
| Sunday <i>Ahad</i> |  |
| Monday <i>Isnin</i> |  |
| Tuesday <i>Selasa</i> |  |
| Wednesday <i>Rabu</i> | |


 represents 4 dictionaries
mewakili 4 kamus

Diagram 7 / Rajah 7

The ratio of the number of dictionaries sold on Sunday to the number of dictionaries sold on Wednesday is 3:1. If a pie chart is drawn to represent the given information, calculate the angle of the sector representing the number of dictionaries sold on Wednesday.

Nisbah bilangan kamus yang dijual pada hari Ahad kepada bilangan kamus yang dijual pada hari Rabu ialah 3:1. Jika satu carta pai dilukis untuk mewakili maklumat yang diberi, hitung sudut sektor yang mewakili bilangan kamus yang dijual pada hari Rabu.

A 45°

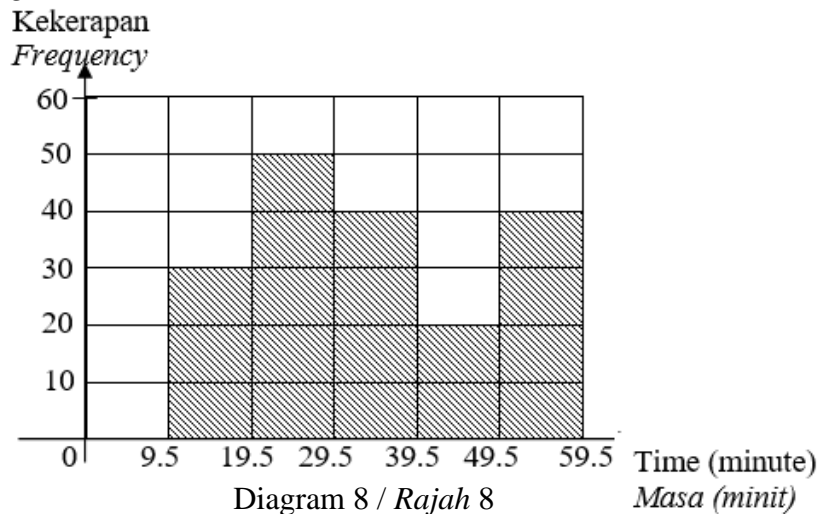
B 50°

C 80°

D 90°

28. In Diagram 8, the histogram shows the time spent by a group of students watching television on a certain day.

Dalam Rajah 8, histogram menunjukkan masa yang diperuntukkan oleh sekumpulan pelajar menonton television bagi hari tertentu.



Calculate the mean, in minutes, of the time spent by the students watching television.

Hitung min, dalam minit, bagi masa yang diperuntukkan oleh pelajar menonton television.

- A 39.94 B 39.54 C 33.95 D 33.94

29. Table 1 shows the frequency distribution of the scores of a group of students in a quiz.

Jadual 1 menunjukkan taburan kekerapan skor sekumpulan murid dalam suatu kuiz.

| | | | | | |
|-----------------------|---|---|-----|---|---|
| Score / Skor | 1 | 2 | 3 | 4 | 5 |
| Frequency / Kekerapan | 4 | 8 | m | 7 | 9 |

Table 1 / Jadual 1

Given skor mod is 3, find the possible values of m .

Diberi skor mod ialah 3, cari nilai – nilai yang mungkin bagi m .

- A 9, 10, 11 B 9, 10, 12 C 10, 11, 12 D 9, 10, 11, 12

30. Diagram 9 shows a set of data where m is an integer.

Rajah 9 menunjukkan satu set data dengan keadaan m ialah integer.

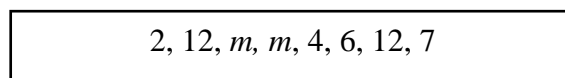


Diagram 9 / Rajah 9

If the median of the data is 9, calculate the, mean of the data.

Jika median bagi data itu ialah 9, hitung min bagi data itu.

- A 5.625 B 7.375 C 8.125 D 7.256

31. Given the universal set, $\xi = P \cup Q \cup R$, set $P = \{2, 4, 5, 7, 8\}$, set $Q = \{4, 5, 10\}$ and set $R = \{4, 12\}$.

List all the elements of set $(P \cup Q)'$.

Diberi set semesta, $\xi = P \cup Q \cup R$, set $P = \{2, 4, 5, 7, 8\}$, set $Q = \{4, 5, 10\}$ dan set $R = \{4, 12\}$.

Senaraikan semua unsur bagi set set $(P \cup Q)'$.

- A $\{12\}$ B $\{4, 5\}$ C $\{7, 8, 10\}$ D $\{2, 7, 8, 10, 12\}$

36. Diagram 12 shows a straight line RS drawn on a Cartesian plane.

Rajah 12 menunjukkan garis lurus RS dilukis pada satu satah Cartesan.

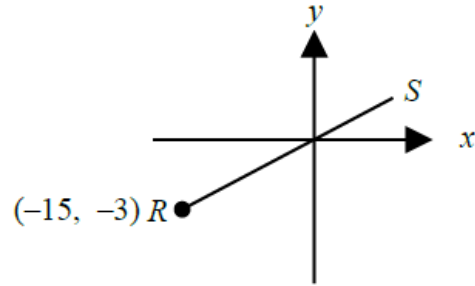


Diagram 12/ *Rajah 12*

The gradient of a straight line RS is

Kecerunan bagi garis lurus RS ialah

- A $-\frac{1}{5}$
- B -5
- C $\frac{1}{5}$
- D 5

37. Diagram 13 shows the straight line PQ and LM drawn on a Cartesian plane.

Rajah 13 menunjukkan garis lurus PQ dan LM yang dilukis pada satah Cartes.

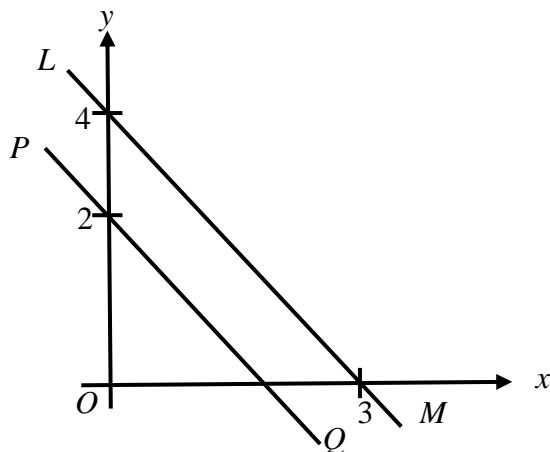


Diagram 13 / *Rajah 13*

Given PQ is parallel to LM . Find the equation of PQ .

Diberi PQ selari dengan LM . Cari persamaan bagi PQ .

- A $2y = 3x + 6$
- B $3y + 4x = 6$
- C $4y = 3x + 12$
- D $4y + 3x = 8$

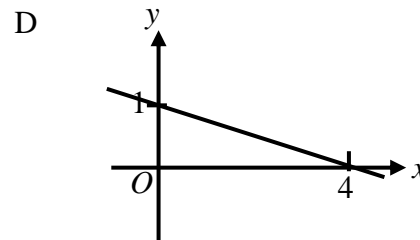
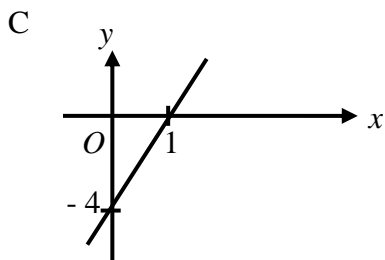
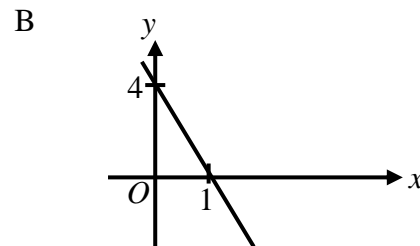
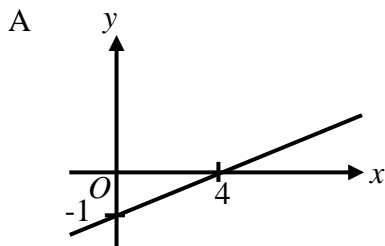
38. Determine the gradient and y – intercept for the straight line graph $3x + 4y = 12$.

Tentukan kecerunan dan pintasan $-y$ bagi graf garis lurus $3x + 4y = 12$.

| | Gradient <i>Kecerunan</i> | y – intercept <i>pintasan - y</i> |
|---|------------------------------|--|
| A | $-\frac{3}{4}$ | 4 |
| B | $-\frac{3}{4}$ | 3 |
| C | $-\frac{4}{3}$ | 4 |
| D | $-\frac{4}{3}$ | 3 |

39. Which graph represents a straight line with a gradient $-\frac{1}{4}$?

Graf manakah yang menunjukkan garis lurus dengan kecerunan $-\frac{1}{4}$?



40. Which of the following straight lines **is not** parallel to the straight line $10y = 8 - 5x$?

Antara garis lurus berikut, yang manakah **tidak** selari dengan $10y = 8 - 5x$?

- A $4y = -2x$
- B $2y = 8 - x$
- C $y + 2x = 6$
- D $8y + 4x = 11$

END OF QUESTION PAPER
KERTAS PEPERIKSAAN TAMAT