

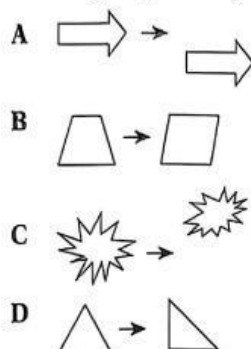


Transformasi Isometri Isometric Transformations

Bahagian A/Section A

11.1 Transformasi Transformations

- 1 Antara berikut, yang manakah menunjukkan transformasi?
Which of the following shows a transformation?



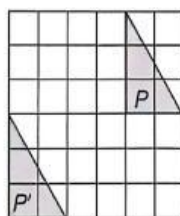
- 2 Dua objek adalah _____ apabila kedua-duanya mempunyai bentuk dan saiz yang sama.

Two objects are _____ when both have the same shape and size.

- | | |
|---------------------|-------------------------|
| A serupa
similar | C isometri
isometric |
| B sama
same | D kongruen
congruent |

11.2 Translasi Translation

- 3 Rajah 1 menunjukkan P' ialah imej bagi P .
Diagram 1 shows P' is the image of P .



Rajah 1/Diagram 1

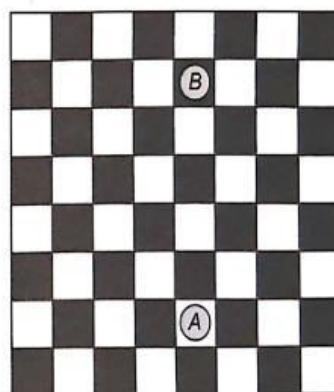
Antara berikut, yang manakah benar?

Which of the following is true?

- A Objek P bergerak 3 unit ke bawah dan 4 unit ke kiri
Object P moves 3 units downwards and 4 units to the left

- B Objek P bergerak 4 unit ke kanan dan 3 unit ke atas
Object P moves 4 units to the right and 3 units upwards
- C Objek P bergerak 4 unit ke kiri dan 3 unit ke bawah
Object P moves 4 units to the left and 3 units downwards
- D Objek P bergerak 3 unit ke atas dan 4 unit ke kanan
Object P moves 3 units upwards and 4 units to the right

- 4 Rajah 2 menunjukkan pergerakan buah dam dari A ke B .
Diagram 2 shows the movement of a checker piece from A to B .



Rajah 2/Diagram 2

Tentukan vektor translasi bagi pergerakan itu.

Determine the translation vector of the movement.

- | | |
|---|---|
| A $\begin{pmatrix} -5 \\ 0 \end{pmatrix}$ | C $\begin{pmatrix} 0 \\ -5 \end{pmatrix}$ |
| B $\begin{pmatrix} 5 \\ 0 \end{pmatrix}$ | D $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$ |

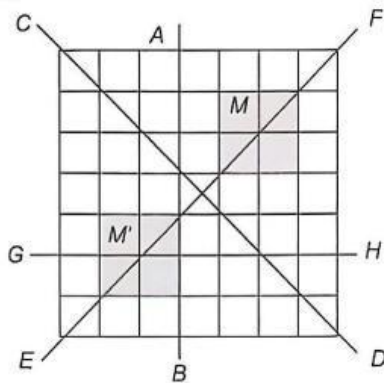
11.3 Pantulan Reflection

- 5 Jika titik $W(4, 1)$ dipetakan kepada titik $W'(4, 5)$ di bawah satu pantulan, tentukan koordinat imej bagi titik $(-2, 0)$ di bawah paksi pantulan yang sama.

If point $W(4, 1)$ is mapped to point $W'(4, 5)$ under a reflection, determine the coordinates of the image of the point $(-2, 0)$ in the same axis of reflection.

- | | |
|-------------|------------|
| A $(-2, 5)$ | C $(4, 0)$ |
| B $(-2, 6)$ | D $(4, 5)$ |

- 6 Rajah 3 menunjukkan M' ialah imej bagi M di bawah suatu pantulan.
Diagram 3 shows M' is the image of M under a reflection.



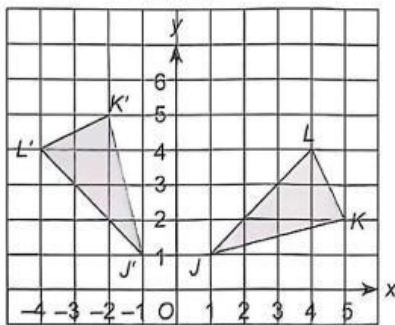
Rajah 3/Diagram 3

Antara garis lurus berikut, yang manakah merupakan paksi pantulan tersebut?
Which of the following straight lines is the axis of reflection?

- | | |
|------|------|
| A AB | C EF |
| B CD | D GH |

11.4 Putaran Rotation

- 7 Dalam Rajah 4, $\Delta J'K'L'$ ialah imej bagi ΔJKL apabila diputar 90° lawan arah jam.
In Diagram 4, $\Delta J'K'L'$ is the image of ΔJKL when rotated 90° anticlockwise.



Rajah 4/Diagram 4

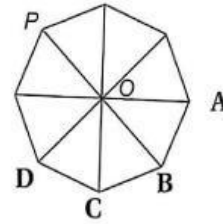
Tentukan koordinat pusat putaran itu.
Determine the coordinates of the centre of the rotation.

- | | |
|-----------|----------|
| A (-1, 0) | C (0, 1) |
| B (0, 0) | D (1, 1) |

- 8 Titik P' ialah imej bagi titik P di bawah putaran 90° lawan arah jam pada asalan. Jika koordinat P' ialah $(-5, 3)$, apakah koordinat P ?
Point P' is the image of point P under a rotation of 90° anticlockwise at origin. If the coordinates of P' are $(-5, 3)$, what are the coordinates of P ?
- | | |
|------------|-----------|
| A (-3, -5) | C (3, -5) |
| B (-3, 5) | D (3, 5) |

- 9 Rajah 5 menunjukkan sebuah oktagon sekata berpusat O .

Diagram 5 shows a regular octagon with centre O .



Rajah 5/Diagram 5

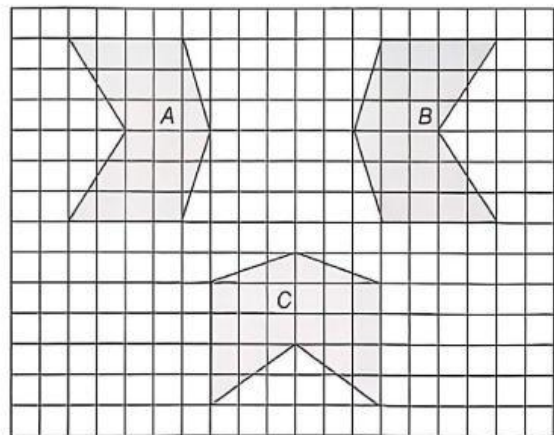
Antara titik A , B , C dan D , yang manakah merupakan imej bagi P di bawah putaran 225° lawan arah jam pada pusat O ?

Which of the points, A , B , C or D , is the image of P under a rotation of 225° anticlockwise at centre O ?

11.5 Translasi, Pantulan dan Putaran sebagai Isometri Translation, Reflection and Rotation as an Isometry

- 10 Rajah 6 menunjukkan tiga heksagon yang dilukis pada grid segi empat sama yang sama saiz.

Diagram 6 shows three hexagons drawn on a grid of equal squares.



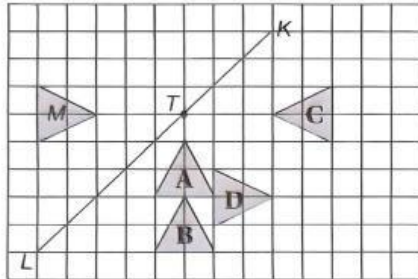
Rajah 6/Diagram 6

Nyatakan isometri yang memetakan heksagon A kepada heksagon B dan heksagon B kepada heksagon C ?

State the isometry that maps hexagon A to hexagon B and hexagon B to hexagon C ?

- | |
|--|
| A Translasi diikuti pantulan
A translation followed by a reflection |
| B Pantulan diikuti translasi
A reflection followed by a translation |
| C Pantulan diikuti putaran
A reflection followed by a rotation |
| D Translasi diikuti putaran
A translation followed by a rotation |

- 11** Rajah 7 menunjukkan segi tiga *M* yang dilukis pada grid segi empat sama yang sama saiz. *Diagram 7 shows a triangle M that is drawn on a grid of equal squares.*



Rajah 7 / Diagram 7

Antara segi tiga **A**, **B**, **C** dan **D**, yang manakah merupakan imej bagi *M* di bawah pantulan pada garis lurus *KL* diikuti putaran 90° lawan arah jam pada titik *T*?

Which of the triangles, A, B, C or D, is the image of M under a reflection in the straight line KL followed by a rotation of 90° anticlockwise at point T?

11.6 Simetri Putaran Rotational Symmetry

- 12** Antara objek berikut, yang manakah mempunyai simetri putaran?
Which of the following objects has rotational symmetry?

