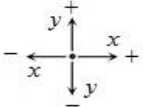
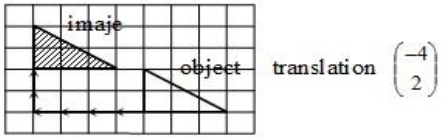


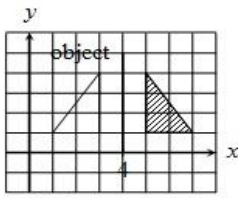
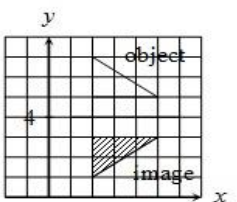
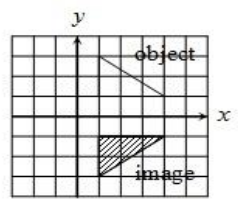
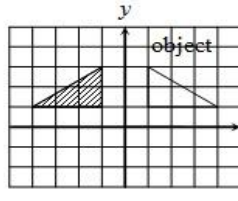
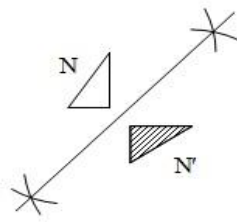
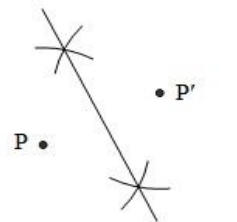
**(25) TRANSFORMASI I, II, III
TRANSFORMATION**

(a) **TRANSLASI** $\begin{pmatrix} x \\ y \end{pmatrix}$ translation

	<p>Contoh :</p> 	<p>Imej = objek + trans. $\begin{pmatrix} x \\ y \end{pmatrix}$</p> <p>Objek = imej + trans. $\begin{pmatrix} -x \\ -y \end{pmatrix}$</p>
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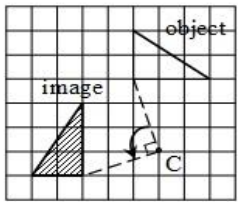
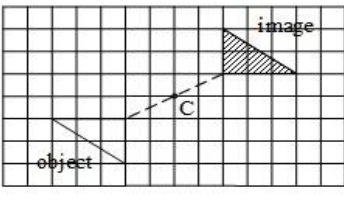
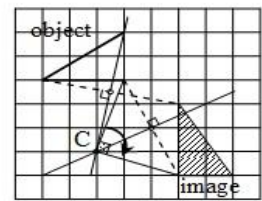
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(b) **PANTULAN (Reflection)**

<p>Contoh 1 :</p>  <p align="center">Pantulan pada garis $x = 4$</p>	<p>Contoh 2 :</p>  <p align="center">Pantulan pada garis $y = 4$</p>	<p>Contoh 3 :</p>  <p align="center">Pantulan pada garis paksi-x</p>
Melukis garis pantulan diberi imej dan objek		
<p>Contoh 4 :</p>  <p align="center">Pantulan pada garis paksi-y</p>	<p>Contoh 1 :</p> 	<p>Contoh 2 :</p> 

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(c) **PUTARAN (Rotation)**

<p>Contoh 1 :</p>  <p align="center">Putaran lawan jam, 90°, di pusat C <i>An anticlockwise rotation of 90° about the centre C</i></p>	<p>Contoh 2 :</p>  <p align="center">Putaran 180°, di pusat C <i>A rotation of 180° about the centre C</i></p>	<p align="center">Menentukan Pusat Putaran</p>  <p align="center">Putaran arah jam 90°, di pusat C <i>A clockwise rotation of 90° about the centre C</i></p>
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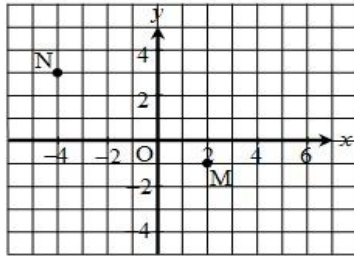
(d) PEMBESARAN (Enlargement)

<p>Faktor Skala = $\frac{\text{panjang imej}}{\text{Panjang objek}}$</p> <p>scale factor, $k = \frac{\text{length of image}}{\text{length of object}}$</p>	<p>Luas Imej = $k^2 \times$ luas objek</p> <p>area of image = $k^2 \times$ area of object</p>
<p>Contoh :</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="321 514 641 730"> </div> <div data-bbox="755 472 1323 535"> <p>QR = 1 cm, Q'R' = 3 cm and the area of PQR = 5 cm², area of P'Q'R' = ???</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div data-bbox="771 598 852 703"> $k = \frac{3}{1}$ $= 3$ </div> <div data-bbox="1015 619 1291 703"> <p>area of P'Q'R' = $3^2 \times 5$</p> <p>= 45</p> </div> </div>	
<p>Drawing image / determine centre / describe</p>	
<p>Contoh 1 :</p> <div style="text-align: center;"> </div> <p>Pembesaran, pusat C, dengan faktor skala 2 <i>An enlargement at centre C with a scale factor of 2</i></p>	<p>Contoh 2 :</p> <div style="text-align: center;"> </div> <p>Pembesaran di pusat C dengan faktor skala $\frac{1}{3}$ <i>An enlargement at centre C with a scale factor of $\frac{1}{3}$</i></p>
<p>Contoh 3 :</p> <div style="text-align: center;"> </div> <p>Pembesaran di pusat C dengan faktor skala -2 <i>An enlargement at centre C with a scale factor of -2</i></p>	

(e) **KOMBINASI DUA TRANSFORMASI (Combination of two transformations)**

- transformasi AB = transformasi B dilakukan dahulu, kemudian transformasi A.
- transformasi A^2 = transformasi AA.

Contoh :

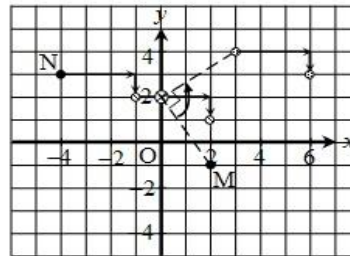


$$T = \text{translasi} \begin{pmatrix} 3 \\ -1 \end{pmatrix}$$

R = Putaran lawan jam, 90° , di pusat (0, 2)

$$N \xrightarrow{T^2} ??, \quad M \xrightarrow{RT} ??$$

Jawapan :



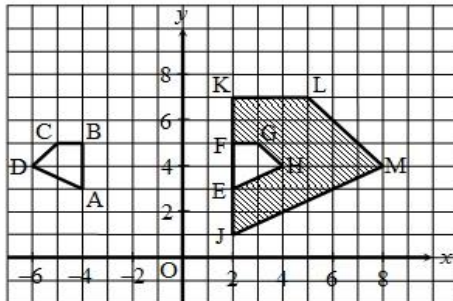
$$\therefore N \xrightarrow{T} (-1, 2) \xrightarrow{T} (2, 1)$$

$$\therefore M \xrightarrow{R} (3, 4) \xrightarrow{T} (6, 3)$$

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(f) **Penyelesaian Masalah (Jenis 1)**

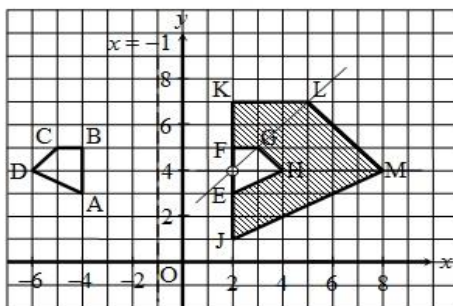
Contoh 1 :



JKLM adalah imej ABCD di bawah transformasi gabungan VU.

$$\Rightarrow U = ???, \quad V = ???$$

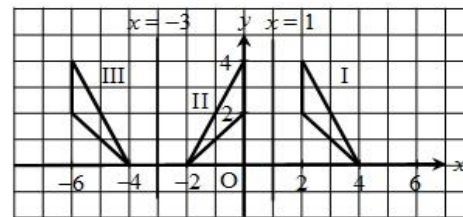
⇓ jawapan ⇓



- U = Pantulan di garis $x = -1$
- V = Pembesaran di pusat (2, 4) dengan faktor skala 3

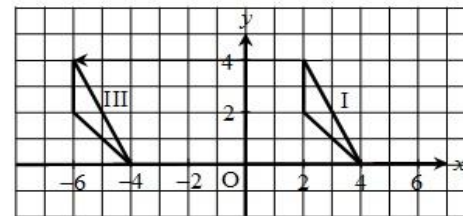
Penyelesaian Masalah (Jenis 2)

Contoh 1 :



Segitiga III adalah imej segitiga I dibawah transformasi WV. Cari satu transformasi dari gabungan transformasi itu = ???

⇓ jawapan ⇓



$$\therefore \text{translasi} \begin{pmatrix} -8 \\ 0 \end{pmatrix}$$

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