

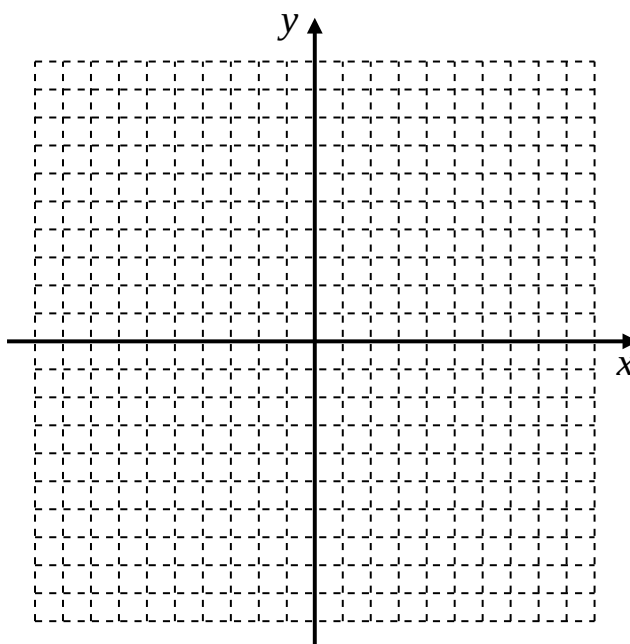
6.1 T4 Enlargement with Positive Scale Factor

An **enlargement** is the fourth of the four **transformations** to be studied.

Two items of information describe an enlargement fully:

- En1** The **scale factor** of the enlargement.
- En2** The **centre** (a point, the focus) of the enlargement.

6.2 Example



(i) Plot the X-shape, X , with vertices;

$A (3, 8), \quad B (1, 7), \quad C (-1, 8), \quad D (-1, 7),$

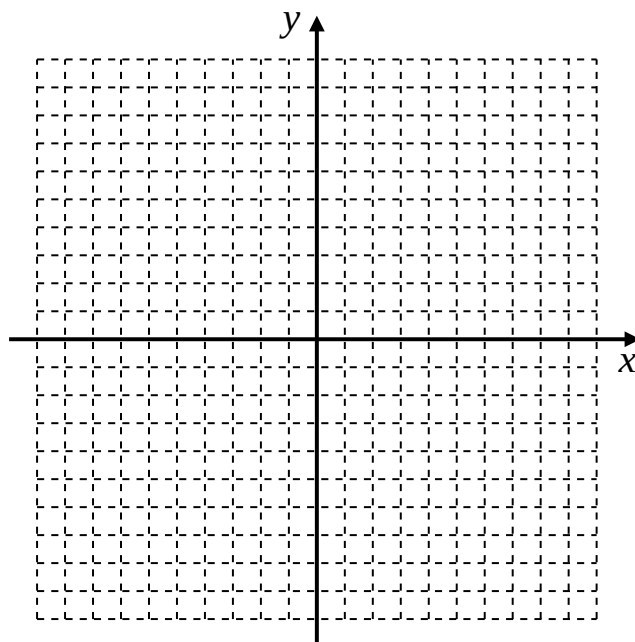
$E (0, 6), \quad F (-1, 5), \quad G (-1, 4), \quad H (1, 5),$

$I (3, 4), \quad J (3, 5), \quad K (2, 6), \quad L (3, 7).$

(ii) Enlarge X with scale factor 3, centre $(2, 10)$.

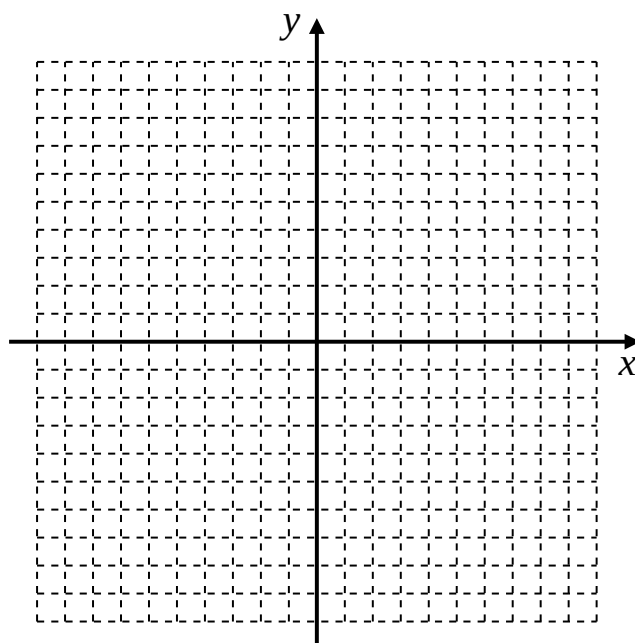
6.3 Exercise

Question 1



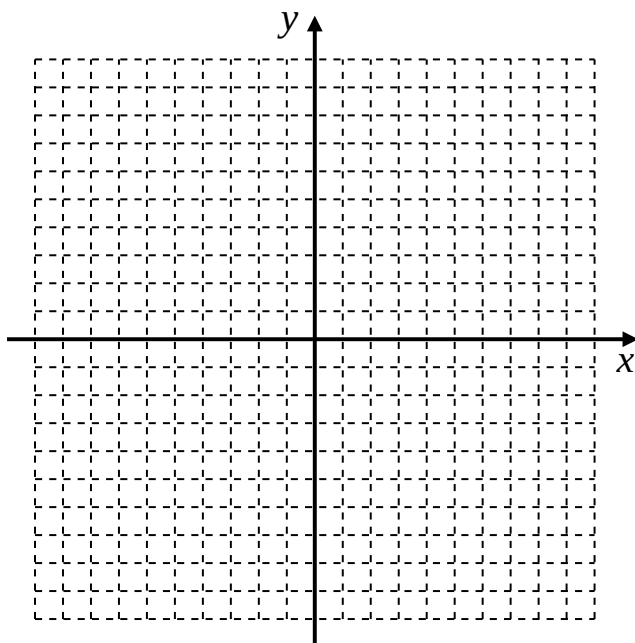
- (i) Plot the six sided shape, H , with vertices;
 $U (10, 4), \quad V (8, 6), \quad W (8, 5),$
 $X (5, 5), \quad Y (7, 3), \quad Z (7, 4).$
- (ii) Enlarge H with scale factor 4, centre $(10, 7)$.

Question 2



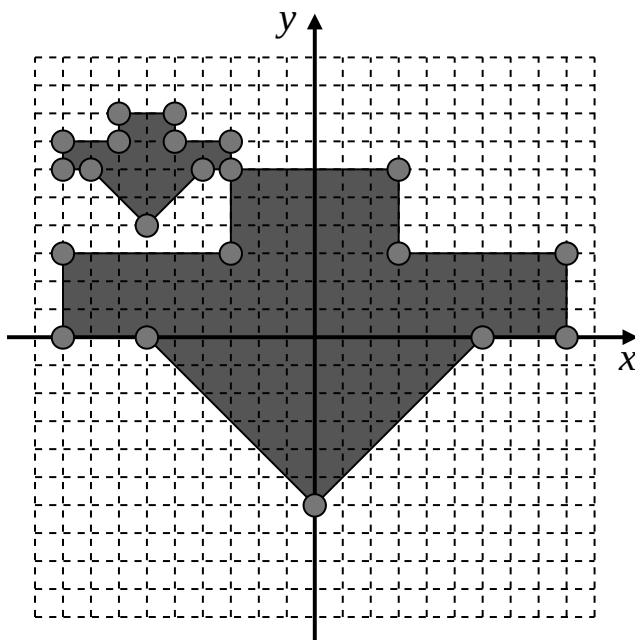
- (i) Plot the space invader, SI , with vertices;
 $P (10, 0), \quad Q (4, 6), \quad R (4, 3), \quad S (-2, 3),$
 $T (-2, 6), \quad U (-8, 0), \quad V (1, -3).$
- (ii) Enlarge SI with scale factor “one third”, centre $(7, -9)$.

Question 3



- (i) Plot the vase, V , with vertices;
- | | | | |
|-------------|--------------|--------------|--------------|
| $A (4, 1),$ | $B (3, 2),$ | $C (3, 3),$ | $D (0, 3),$ |
| $E (0, 2),$ | $F (-1, 1),$ | $G (1, -1),$ | $H (2, -1).$ |
- (ii) Enlarge V with scale factor 3, centre $(1, 1)$.

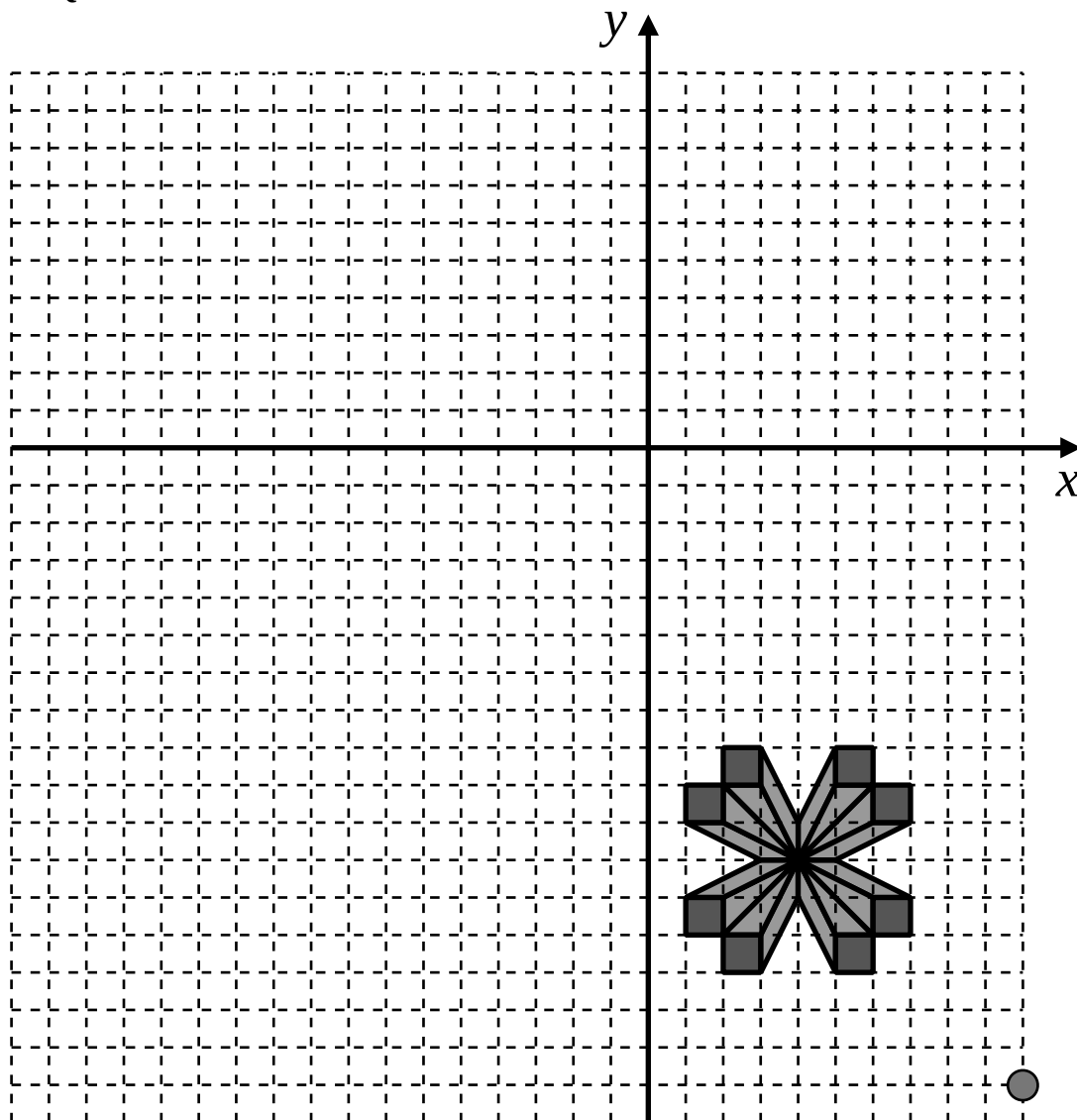
Question 4



The small “spinning top” is enlarged onto the big.

- (i) What is the scale factor of the enlargement ?
- (ii) Where is the centre of the enlargement ?

Question 5



Enlarge the given geometric shape by scale factor 3 and centre $(10, -17)$

Question 6

Wolverhampton has a football team (The 'Wolves') which has a distinctive badge in the form of a black wolf face on a yellow background.

Use the internet to find this badge.

Copy it onto squared paper.

Now enlarge your copy, making it three times as big and clearly marking the centre of your enlargement on the squared paper.

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk