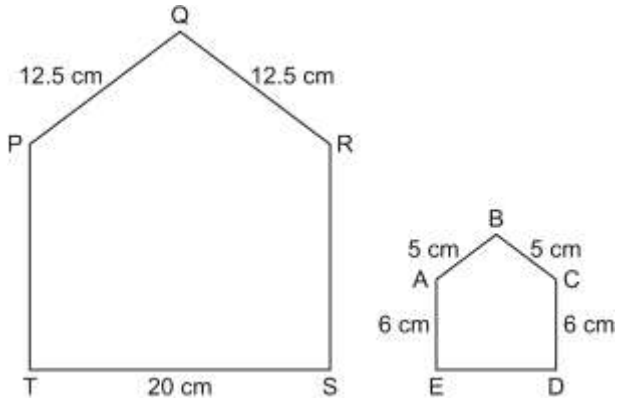
Name: _____ Date: _____

# Unit Test: Unit 7 Similarity and Transformations

**1.** These two pentagons are similar.




**a)** Calculate the length of PT.

**b)** Calculate the length of DE.

**c)** Draw a reduction of pentagon PQRST with a scale factor of $\frac{3}{5}$ and label all dimensions clearly.

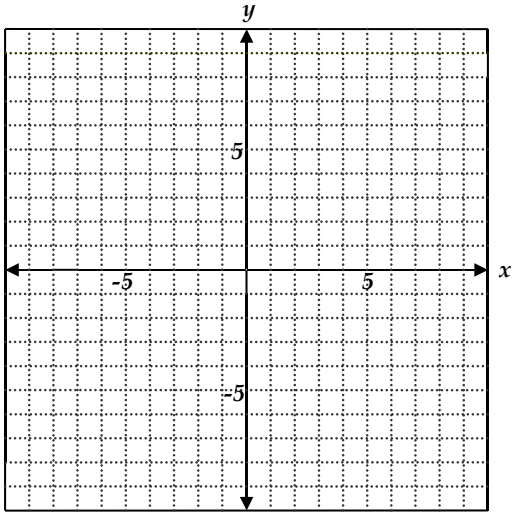
**d)** Draw an enlargement of pentagon ABCDE with a scale factor of 2 and label all dimensions clearly.

**2.** Naomi wants to calculate the height of a tree. She is 1.5 m tall and casts a shadow of 2.5 m. At the same time, the shadow of the tree is 10.5 m long. What is the height of the tree?

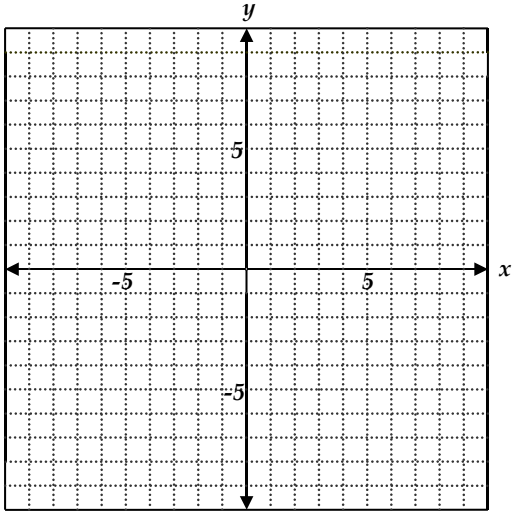
**3.** Plot these points on a grid: A(−2, 4), B(2, 4), C(2, 2), D(−2, 2)
For each transformation below:

**i) Draw the transformation image.**
**ii) Record the coordinates of its vertices.**
**iii) Describe the symmetry of the diagram formed by the original shape and its image.**

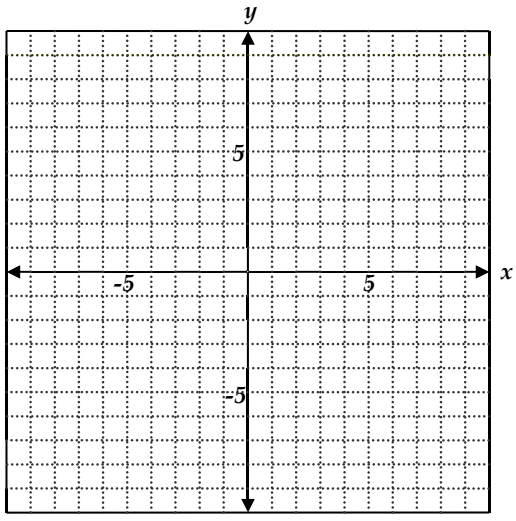
**a)** rotation 90° clockwise about point E(0, 3)




**b)** reflection in the horizontal line passing through (0, 2)

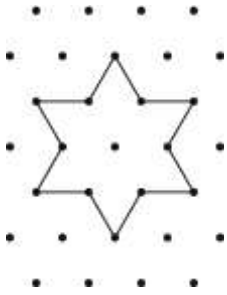


**c)** a translation 4R, 2U

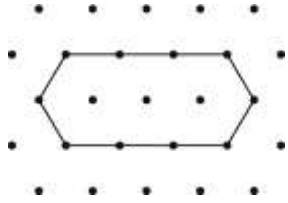



**4.** For each of the following figure, draw all lines of symmetry and state the order of rotation and the angle of rotation symmetry if present.

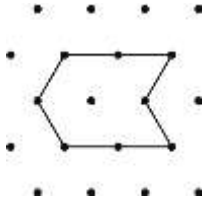
**a)**



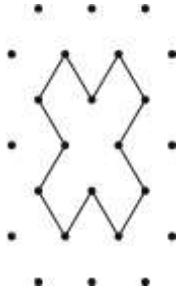
**b)**



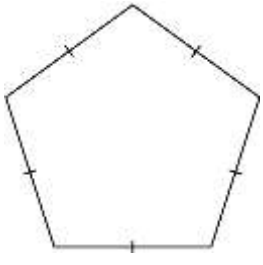
**c)**



**d)**



**e)**

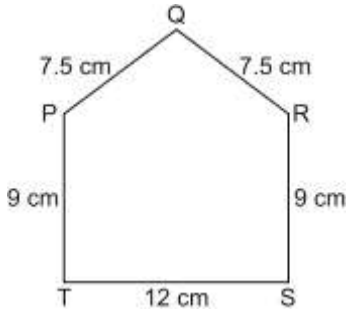


Master 7.22

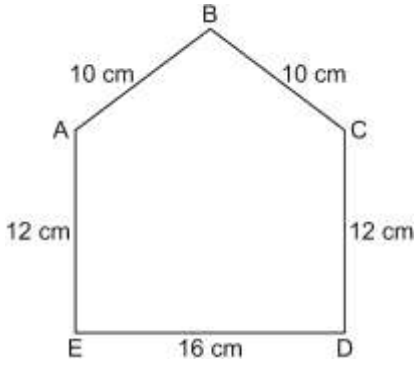
# Unit 7 Test Sample Answers

**1.** **a)** 15 cm **b)** 8 cm

**c)**

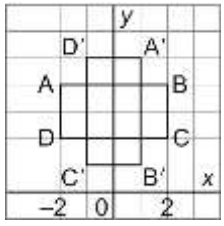



**d)**




**2.** **b)** 6.3 m

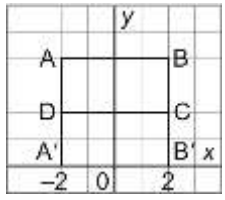
**3.** **a)** **i)**




**ii)** A′(1, 5), B′(1, 1), C′(−1, 1), D′(−1, 5)

**iii)** The *y*-axis is a line of symmetry; the horizontal line through (0, 3) is a line of symmetry; the oblique line through (−1, 2) and (1, 4) is a line of symmetry; the oblique line through (−1, 4) and (1, 2) is a line of symmetry; the shape has rotational symmetry of order 4 about (0, 3).

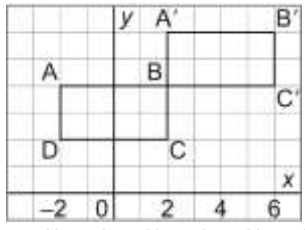
**b)** **i)**




**ii)** A′(−2, 0), D(–2, 2), C(2, 2), B′(2, 0)

**iii)** The *y*-axis is a line of symmetry; the horizontal line through (0, 2) is a line of symmetry; the oblique line through (−2, 0) and (2, 4) is a line of symmetry; the oblique line through (−2, 4) and (2, 0) is a line of symmetry; the shape has rotational symmetry of order 4 about (0, 2).

**c)** **i)**




**ii)** A′(2, 6), B′(6, 6), C′(6, 4), D′(2, 4)

**iii)** The shape has rotational symmetry of order 2 about the point (2, 4).

**4.** **a)** 6 lines of symmetry, rotational symmetry of order 6 with angle of rotation symmetry 60°

**b)** 2 lines of symmetry, rotational symmetry of order 2 with angle of rotation symmetry 180°

**c)** 1 line of symmetry, no rotational symmetry

**d)** 2 lines of symmetry, rotational symmetry of order 2 with angle of rotation symmetry 180°

**e)** 5 lines of symmetry, rotational symmetry of order 5 with angle of rotation symmetry 72°