Unit 7:   Similarity and Transformations
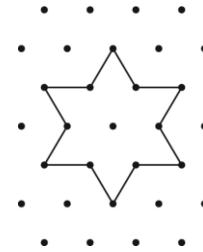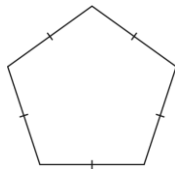
1. How many lines of symmetry does this diagram have?

    A.   1   B.   2
    C.   5   D.   6

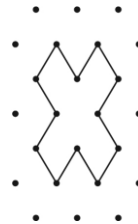2.   What is the order of rotational symmetry of this diagram?

                                    A. 0   B.   1
                                    C. 5   D.   6
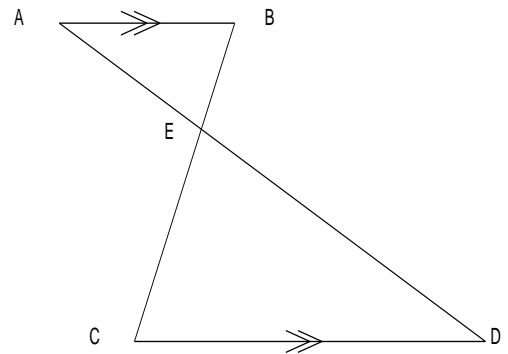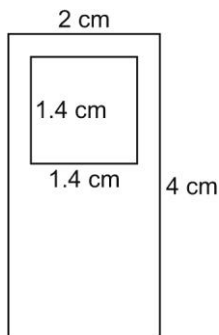
3. What is the angle of rotation symmetry
    for this diagram?

    A.   45°   B.   90°
    C.   120°   D.   180°

4. If $\triangle ABE \sim \triangle DCE$, which is true?

    (A) $\dfrac{AB}{DE} = \dfrac{AE}{DC}$ (B) $\dfrac{DC}{AB} = \dfrac{AE}{DE}$

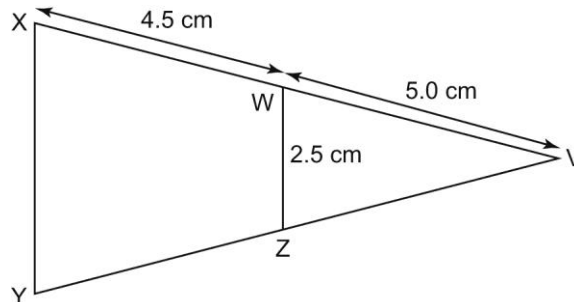   (C) $\dfrac{AE}{DC} = \dfrac{AB}{DE}$ (D) $\dfrac{AB}{DC} = \dfrac{BE}{CE}$

5.   What are the new dimensions of this MP3 player if you use a scale factor
      of 2.5?

2 cm

1.4 cm

1.4 cm   4 cm

6a). Why is Δ XYV ~ Δ WZV ?

b). Using the idea of similar triangles, find the length of XY in the diagram.

X ———— 4.5 cm ————
                                    5.0 cm
                    W
                          2.5 cm   ➤ V
                            Z
Y

7. 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.

a). Sketch a diagram that can be used to calculate the height of the tree.

b). What is the height of the tree?

8. Plot these points on a grid: A(–3, 4), B(–3, 2), C(0, 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 C(0, 2)
   b) reflection in the horizontal line passing through (0, 2)
   c) a translation 4R, 2U