In problems 1-3, draw the indicated dilation:

1. Perform the dilation:  $D_{E, 2.5} (ABCD)$

2. Perform the dilation:  $D_{F, 0.7} (GHJ)$

3. Perform the dilation:  $D_{K, 1.5} (KLMN)$
In problems 4 and 5, answer the questions:

4. For the figure at right, \( A'B'C'D'E' \) is the image of \( ABCDE \) under a dilation.
   
   a) Is the dilation an expansion or a contraction?

   b) Using a straightedge, find the center of the dilation.

   c) Using a ruler, find the scale factor \( k \) of the dilation.

5. For the figure at right, \( X'Y'Z' \) is the image of \( XYZ \) under a dilation.

   a) Is the dilation an expansion or a contraction?

   b) Using a straightedge, find the center of the dilation.

   c) Without using a ruler, if \( XY = 10 \) and \( X'Y' = 8 \), find the scale factor \( k \) of the dilation.

   d) Use your answer from part c to find \( Y'Z' \) if \( YZ = 6.4 \).
In problem 6, recall that when using a negative scale factor, you have to measure in the opposite direction from the center when determining the image:

6. Perform the dilation: $D_{P, -2}(RST)$

In problems 7-9, answer the questions:

7. Given the following points:
   $Q = (-3, 4) \quad R = (1, 3) \quad S = (2, -2) \quad T = (-2, -3)$
   a) Graph $QRST$ at the right.
   b) Find the coordinates of the images of these points under a dilation with scale factor 2.
      $Q' = \quad R' = \quad S' = \quad T' =$
   c) Graph $Q'R'S'T'$ at the right.
   d) Use the distance formula to find:
      $QR = \quad Q'R' =$
   e) How are $QR$ and $Q'R'$ related?
8. Given the following points:
   \[ A = (8, -2) \quad B = (0, 0) \quad C = (-2, 8) \]
   
   a) Graph \( \triangle ABC \) at the right.
   
   b) Find the coordinates of the images of these points under a dilation with scale factor 0.75.
   
   \[ A' = \quad B' = \quad C' = \]
   
   c) Graph \( \triangle A'B'C' \) at the right.
   
   d) Find the slopes of:
   
   \[ \overline{AC} = \quad \overline{A'C'} = \]
   
   e) How are \( \overline{AC} \) and \( \overline{A'C'} \) related?

9. Given the following points:
   \[ M = (10, 2) \quad N = (7, 12) \quad P = (-1, 6) \]
   
   a) Find the coordinates of the images of these points under a dilation with scale factor 4.
   
   \[ M' = \quad N' = \quad P' = \]
   
   b) Find the slopes of:
   
   \[ \overline{MN} = \quad \overline{M'N'} = \]
   
   c) How are \( \overline{MN} \) and \( \overline{M'N'} \) related?
   
   d) Find the lengths of:
   
   \[ MN = \quad M'N' = \]
   
   e) How are \( MN \) and \( M'N' \) related?