

## Dilation – Activity 1: King Tut

1. Use the graph paper vertically. Put the origin in the center
2. Plot and label these points.  
 $A = (1, 5)$   $B = (7, -2)$   $C = (4, -3)$   $D = (-4, -3)$   $E = (-1, -2)$
3. Make solid lines  $\overline{AB}$ ,  $\overline{AC}$ ,  $\overline{BC}$ ,  $\overline{CD}$  and  $\overline{AD}$
4. Make dashed lines  $\overline{AE}$ ,  $\overline{DE}$  and  $\overline{EB}$
5. Dilate each coordinate of A, B, C, D, E by a scale factor of 2 to get new points  $A'$ ,  $B'$ ,  $C'$ ,  $D'$  and  $E'$ . Remember  $(x, y) = (2x, 2y)$

Rewrite as points:  $A' = ( \quad , \quad )$   $B' = ( \quad , \quad )$   $C' = ( \quad , \quad )$   $D' = ( \quad , \quad )$   
 $E' = ( \quad , \quad )$

6. Plot and label  $A'$ ,  $B'$ ,  $C'$ ,  $D'$  and  $E'$  on the same graph **in a different color**.
7. Make solid lines:  $\overline{A'B'}$ ,  $\overline{A'C'}$ ,  $\overline{B'C'}$ ,  $\overline{C'D'}$  and  $\overline{A'D'}$
8. Make dashed lines:  $\overline{A'E'}$ ,  $\overline{D'E'}$  and  $\overline{E'B'}$
9. How does the two graphs compare?
10. What did the scale factor of 2 do to the original image?
11. Are they proportional? Explain.
12. Are they similar? Explain.

## Dilation – Activity 2: The Incredible Shrinking Cube

1. Use the graph paper horizontally. Put the origin the lower left-hand corner.
2. Plot and label the following points. A= (12,12) B= (12,20) C= (20,20)  
D=( 20,12) E=( 16,24) F= ( 24,24) G=( 24,16) H=(16,16)
3. Make solid lines AB, AD, AH, BE, EF, EH, DG, FG and GH
4. Make dashed lines BC, CF and CD
5. Dilate each coordinate of A, B, C, D, E, F, G and H by a scale factor of  $\frac{1}{2}$  to get new points A', B', C', D', E', F', G' and H'. *Remember*  
 $(x, y) = (\frac{1}{2}x, \frac{1}{2}y)$

Rewrite as points: A' = (   ,   ) B' = (   ,   ) C' = (   ,   ) D' = (   ,   )  
E' = (   ,   ) F' = (   ,   ) G' = (   ,   ) and H' = (   ,   )

6. Plot and label A', B', C', D', E', F', G' and H' **in a different color**.
7. Make solid lines  $\overline{A'B'}$ ,  $\overline{A'D'}$ ,  $\overline{A'H'}$ ,  $\overline{B'E'}$ ,  $\overline{E'F'}$ ,  $\overline{E'H'}$ ,  $\overline{D'G'}$ ,  $\overline{F'G'}$  and  $\overline{G'H'}$
8. Make dashed lines  $\overline{B'C'}$ ,  $\overline{C'F'}$  and  $\overline{C'D'}$
9. *Using your new coordinates* of A', B', C', D', E', F', G' and H' from #5 dilate each coordinate with a scale factor of  $\frac{1}{2}$  to get new points A'', B'', C'', D'', E'', F'', G'' and H'' *Remember*  $(x, y) = (\frac{1}{2}x, \frac{1}{2}y)$

A'' = (   ,   ) B'' = (   ,   ) C'' = (   ,   ) D'' = (   ,   )  
E'' = (   ,   ) F'' = (   ,   ) G'' = (   ,   ) and H'' = (   ,   )

10. Plot points A'', B'', C'', D'', E'', F'', G'' and H'' **in a different color**.
11. Make solid lines  $\overline{A''B''}$ ,  $\overline{A''D''}$ ,  $\overline{A''H''}$ ,  $\overline{B''E''}$ ,  $\overline{E''F''}$ ,  $\overline{E''H''}$ ,  $\overline{D''G''}$ ,  $\overline{F''G''}$  and  $\overline{G''H''}$
12. Make dashed lines  $\overline{B''C''}$ ,  $\overline{C''F''}$  and  $\overline{C''D''}$

13. Describe the size and location of the three cubes.

14. Are they proportional? Explain.

15. Are they similar? Explain.

