

7.5 Notes → Dilations

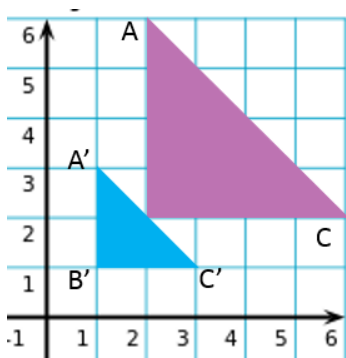
Today we will be working with a new type of transformation. List the three previous transformations we have studied. For each transformation, explain what it does in “everyday language”.

- _____
- _____
- _____

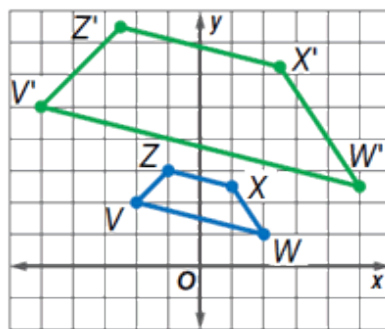
These three transformations are known as *rigid transformations*. What similarity do you think these transformations have that makes them all *rigid transformations*?

Now we are going to study dilations. Dilations change the *size* of the shape. They either expand the shape by a **scale factor** or they shrink the shape by a **scale factor**. What does scale factor mean?

- In math, the word dilate means to _____ or _____ a figure.
- If a scale factor is less than 1, then the figure gets _____.
- If a scale factor is greater than 1, then the figure gets _____.



Reduction
Scale Factor of $\frac{1}{2}$
from the origin

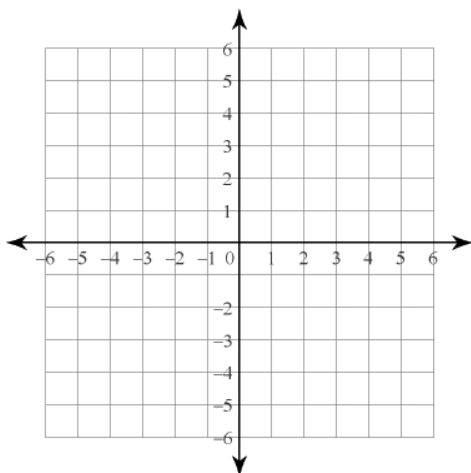


Enlargement
Scale Factor of 2.5
from the origin

Dilate $\triangle ADI$, $A(-1,-1)$, $D(0,2)$, $I(3,1)$ by a scale factor of 2 from the origin.

A' (____, ____)
 D' (____, ____)
 I' (____, ____)

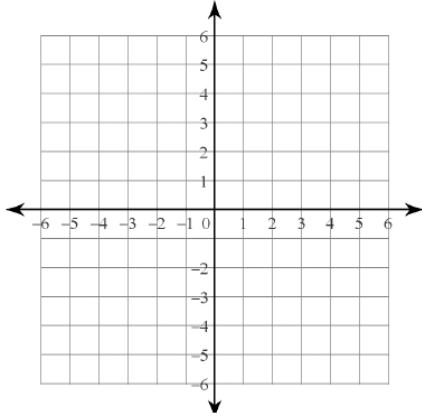
How do you do a dilation from the origin?



What are the important pieces of information given for a dilation?

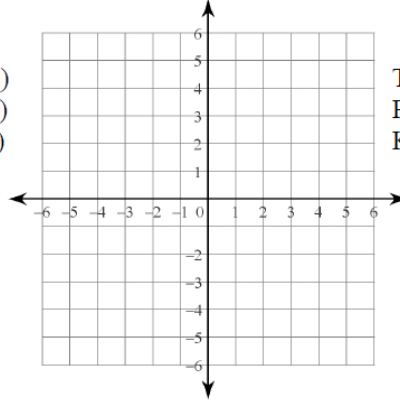
Do the next 4 dilation problems. Check your answers with a neighbor.

1) Dilate $\triangle QRS$ if $Q(-1,0)$, $R(-1,2)$, $S(-2,1)$ by a scale factor of 2 from the origin.



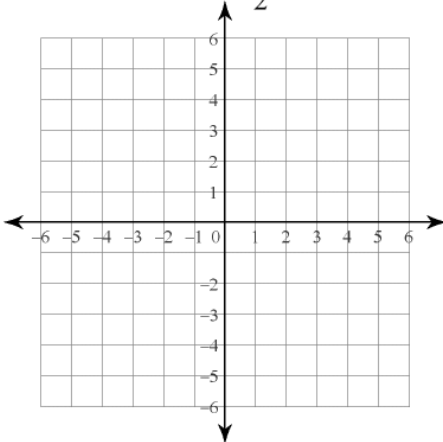
Q' (____,____)
 R' (____,____)
 S' (____,____)

2) Dilate $\triangle TRK$ if $T(-1,-2)$, $R(1,0)$, $K(0,1)$ by a scale factor of 3 from the origin.



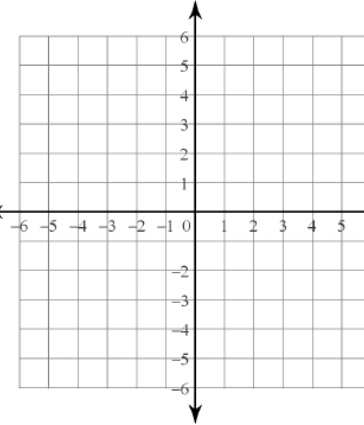
T' (____,____)
 R' (____,____)
 K' (____,____)

3) Dilate $\triangle XYZ$ if $X(-4,0)$, $Y(-4,4)$, $Z(-2,2)$ by a scale factor of $\frac{1}{2}$ from the origin.



X' (____,____)
 Y' (____,____)
 Z' (____,____)

4) Dilate $\triangle HAT$ if $H(-1,-1)$, $A(1,0)$, $T(-1,2)$ by a scale factor of 2 from the point $(1,2)$

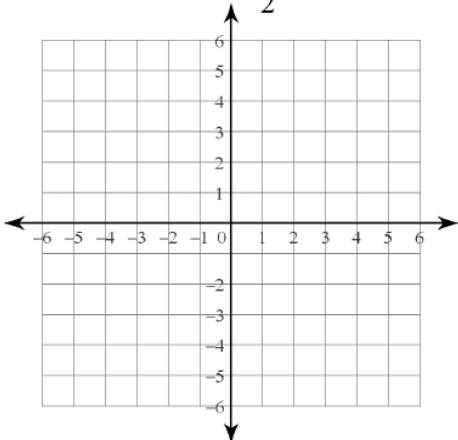


H' (____,____)
 A' (____,____)
 T' (____,____)

5) a) Discuss what your strategy was for problem 3 with your group. How was this different from problems 1) and 2).

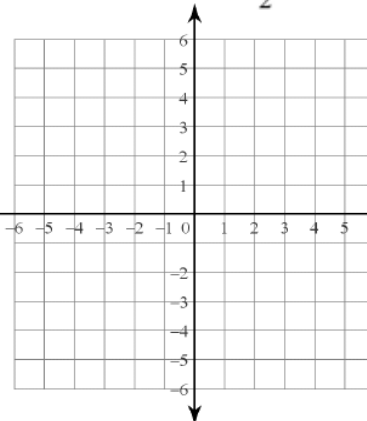
b) If you did not freak out and give up when you saw problem 4), examine what you did do for problem 4). What strategy did you use to dilate the shape from a point different from the origin? Discuss this with your group and write down a way to dilate from a point other than the origin.

6) Dilate $\triangle IBM$ if $I(1,-2)$, $B(1,4)$, $M(4,1)$ by a scale factor of $\frac{1}{2}$ from the origin.



I' (____,____)
 B' (____,____)
 M' (____,____)

7) Dilate $\triangle IBM$ if $I(1,-2)$, $B(1,4)$, $M(4,1)$ by a scale factor of $\frac{1}{2}$ from the point $(-2,1)$



I' (____,____)
 B' (____,____)
 M' (____,____)