Geometry   Dilations   Name: _____

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?

Do the following problem with the class, then write down the process on the right:

Dilate ∞ADI, A(-1,-1), D(0,2), I(3,1)   A' (____,____) How do you do a dilation from the origin?
by a scale factor of 2 from the origin.   D' (____,____)
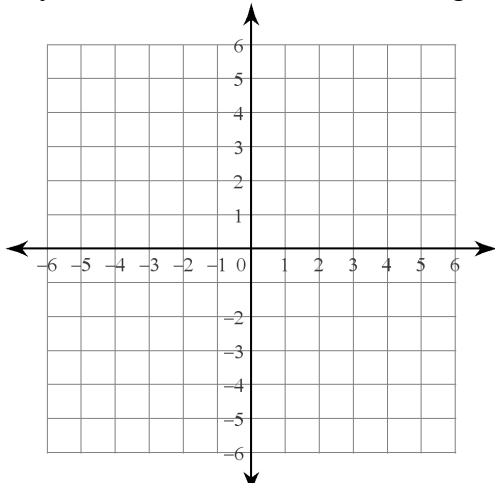   I' (____,____)
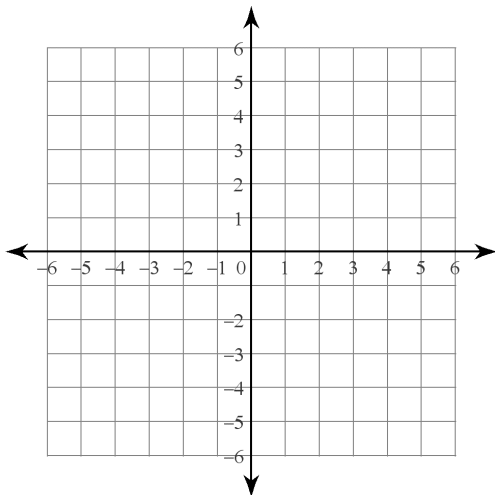
What are the important pieces of information given for a
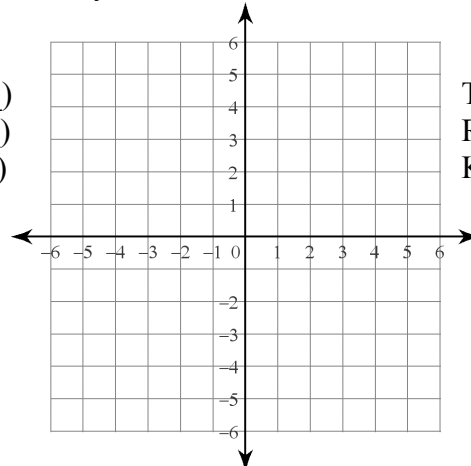dilation?

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

1) Dilate ∞QRS if Q(-1,0), R(-1,2), S(-2,1)   2) Dilate ∞TRK if T(-1,-2), R(1,0), K(0,1)
by a scale factor of 2 from the origin.   by a scale factor of 3 from the origin.

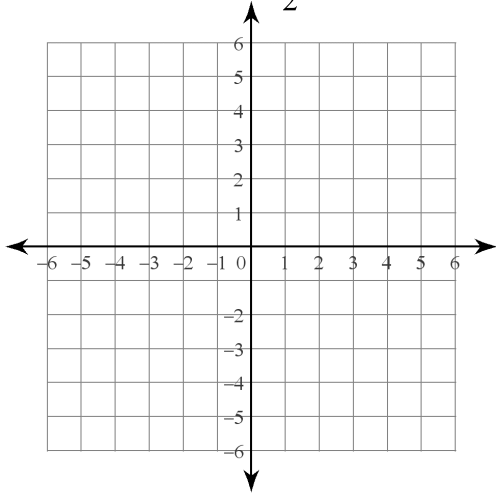Q' (____,____)   T'(____,____)
R' (____,____)   R'(____,____)
S' (____,____)   K'(____,____)
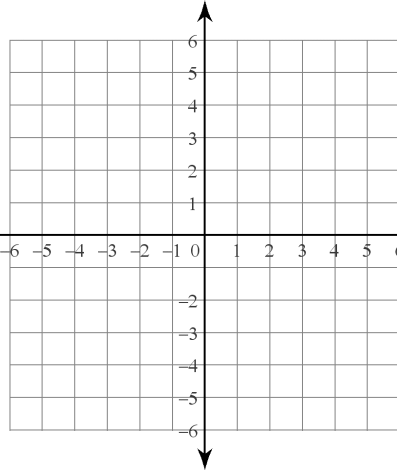
3) Dilate ∞XYZ if X(-4,0), Y(-4,4), Z(-2,-2)
by a scale factor of $\frac{1}{2}$ from the origin.

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

4) Dilate ∞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.

c) Check your answers with the class. If your strategies were correct, AWESOME! If not, how did you need to change them?

Do the following dilation problems:
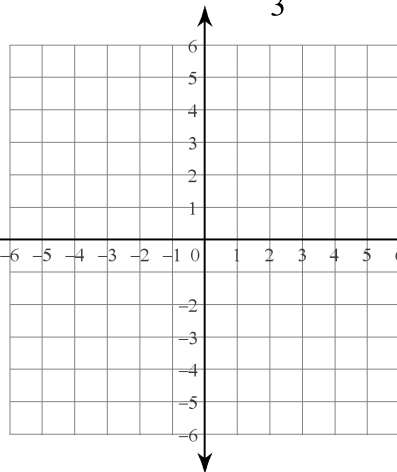6) Dilate ∞XYZ if I(1,-2), B(1,4), M(4,1)
by a scale factor of $\frac{1}{2}$ from the origin.
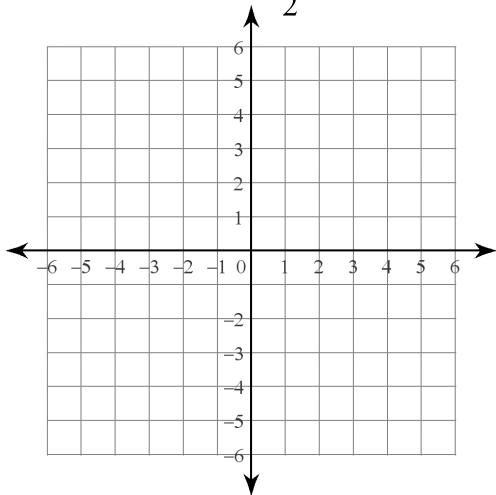
X' (____,____)
Y' (____,____)
Z' (____,____)

7) Dilate ∞IBM if I(1,-2), B(1,4), M(4,1)
by a scale factor of $\frac{1}{3}$ from the point (-2,1)

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