Warmup 2/(\# of valence electrons in Calcium • \#
of protons in Oxygen + Atomic \# of Hydrogen)

1) Which shape in the picture
does not belong? Explain
why it does not belong.
2) | Pick a different shape and by Mrs. England |
| :--- |
| come up with a reason why |
| it doesn't belong. Repeat |
| for every shape in the |
| picture. |

## ABCDEFGHIJKLMNOPQRSTUVWXYZ

Rotate 180: HINOSXZ
Rotate $90^{\circ}$ : OX (depending on how you draw them)
Reflect (vertical line): AHIMOTUVWXY
Reflect (horizontal line): BCDEHIKOX
Letters that turn into a different letter: $M / W, d / p$, $b / q, u / n$


## Which transformation is it?



Reflection

Which transformation is it?



Which transformation is it?


Which transformation is it?


## - What do you notice?

- Measure the lengths of the top sides of each trapezoid and compare them.
- If you had a protractor, what do you think would happen with the angles?



## On your first graph:

Draw the trapezoid with vertices $(-1,1),(1,1)$, $(2,-1),(-2,-1)$
Multiply both coordinates in each point by 2 and draw the new trapezoid.
Multiply both coordinates in each point (still of the original one) by 5 and draw the new trapezoid.

## On your second graph:

Draw the rectangle with vertices (1, 1); (1, 3); $(5,3) ;(5,1)$
You are going to multiply each coordinate by two and redraw it. BEFORE YOU DO THIS: picture how you think this rectangle will look.
Find the new coordinates and see if
 you were right.

Find the length of the horizontal sides of both rectangles. What do you notice?

Find the length of the vertical sides of both rectangles. What do you notice?


## NEW VOCAB WORDS

$\square$ Dilation - A transformation that creates a figure that is the same shape but different sizes

$\square$ Scale Factor - the number you are multiplying by in a dilation
$\square$ Represented using the variable " $k$ "

## NEW VOCAB WORDS

$\square$ How do I do a dilation? (centered at the origin): Just multiply the x and y coordinates of each vertex by the scale factor ( $\mathbf{k}$ )!


What was the scale factor???
(Figure $A$ is the preimage. $B$ is the image)


## On your third graph:

Draw the triangle with vertices (-3, 6); (0, 9); $(6,6)$
You will do a dilation with a scale factor of $\frac{1}{3}$. BEFORE YOU DO THIS: picture how you think this triangle will look.
Do the dilation and see if you were right.


What was the scale factor???
(Figure $A$ is the preimage. $B$ is the image)

$$
k=3
$$



What was the scale factor???
(Figure $A$ is the preimage. $B$ is the image)
$k=1.5$


What was the scale factor???
(Figure A is the preimage. B is the image)


## Scale Factor Formula

$\square$ Original $\mathbf{x}$ (scale factor) $=$ Image
$\square$ Therefore:
$\square$ Scale Factor $=\frac{\text { side length of IMAGE }}{\text { side length of ORIGINAL }}$

## Fractions!!!

$\square$ Multiply $\frac{2}{5}$ by 13 and write your answer as a mixed number.
$\square \frac{2}{5} \cdot 13=\frac{2}{5} \cdot \frac{13}{1}$
$\square=\frac{26}{5}=5 \frac{1}{5}$

## Fractions!!!

$\square$ Graph triangle $\mathbf{T}(6,3) \mathbf{R}(10,1) I(9,-4)$ and dilate it using a scale factor of $\frac{2}{3}$.


Homework

$$
\square \mathrm{p} .491(1-2)
$$

