TEACHING TRANSPARENCY



Translations		
Horizontal Translation	Vertical Translation	
Each point shifts <i>right</i> or <i>left</i>	Each point shifts up or down	
by a number of units.	by a number of units.	
The x-coordinate thanges. The x-coordinate thanges. (1, 2) $(4, 2)$ 3 units 0 2 4 $(1, 2) \rightarrow (1 + 3, 2)$ $(x, y) \rightarrow (x + h, y)$	The y-coordinate the changes. The y-coordinate the changes. (1, 2) \rightarrow (1, 2 + 2) (x, y) \rightarrow (x, y + k)	
left if $h < 0$ right if $h > 0$	down if $k < 0$ up if $k > 0$	

Reflections			
Reflection Across y-axis	Reflection Across x-axis		
Each point flips across the	Each point flips across the		
<i>y</i> -axis.	<i>x</i> -axis.		
The x -coordinate	The y -coordinate		
(-1, 2) - (1, 2) - changes.	2 (1, 2) changes.		
$1 \text{ unit } 1 \text{ unit } (1, 2) \rightarrow (-1, 2)$	$\underbrace{\overset{2 \text{ units } x}{\longleftarrow} (1, 2) \rightarrow (1, -2)}$		
$\underbrace{\longleftarrow}_{-2} 0 \xrightarrow{2} (x, y) \rightarrow (-x, y)$	$\begin{array}{c c} & 2 \text{ units} \\ \hline & -2 & (1, -2) \end{array} (X, Y) \rightarrow (X, -Y) \end{array}$		

TEACHING TRANSPARENCY

1-8 Exploring Transformations (continued)

Stretches and Compressions		
	Horizontal	Vertical
Stretch	Each point is <i>pulled away</i> from the <i>y</i> -axis.	Each point is <i>pulled away</i> from the <i>x</i> -axis.
	The x -coordinate	The y -coordinate
	$\left(\checkmark \downarrow \downarrow \downarrow (4, 0) \rightarrow (\mathbf{2(4)}, 0) \right)$	$4 \downarrow 4 \downarrow (0, 4) \rightarrow (0, 2(4))$
	$(x, y) \rightarrow (bx, y)$	$(x, y) \rightarrow (x, ay)$
	<i>b</i> > 1	<i>a</i> > 1
Compression	Each point is <i>pushed</i>	Each point is <i>pushed</i>
	toward the y-axis.	<i>toward</i> the <i>x</i> -axis.
	↑ The x -coordinate	↑ The y -coordinate
	changes.	changes.
	$(4, 0) \rightarrow \left(\frac{1}{2}(4), 0\right)$	$(0, 4) \rightarrow \left(0, \frac{1}{2}(4)\right)$
	$(x, y) \rightarrow (bx, y)$	$(x, y) \rightarrow (x, ay)$
	0 < b < 1	0 < <i>a</i> < 1