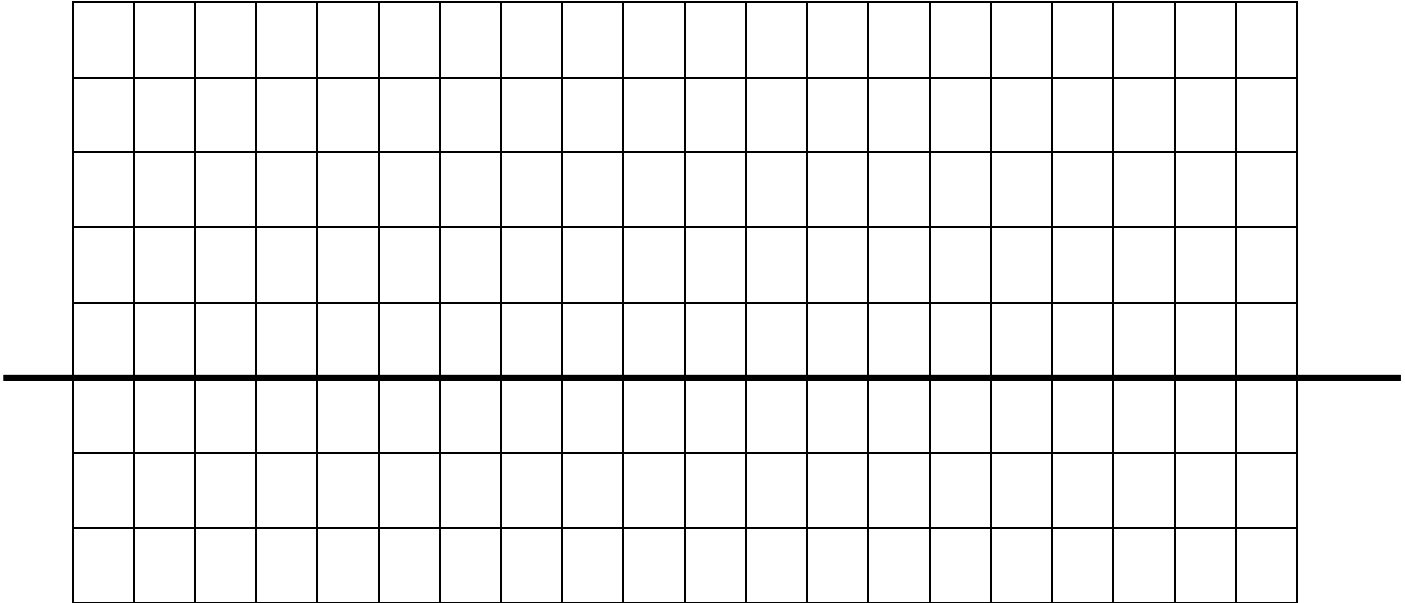
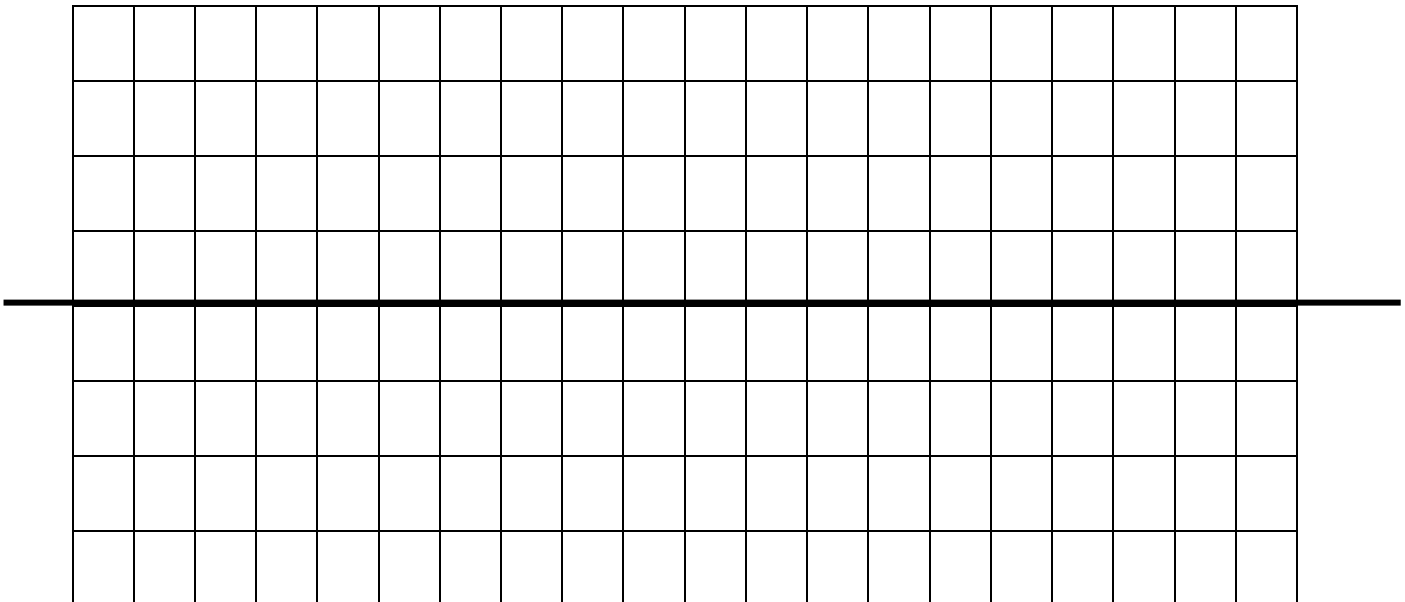


**Graph two full periods of the function and label the periods on the graph. You must give key points using your table of values. Please state the domain and the range of each graph.**

1.  $y = 1 - 4 \cos (2x + \pi)$



2.  $y = -1 + 3 \sin \left( 4x - \frac{\pi}{2} \right)$



3. Identify a, b, c, and d; describe the graph of  $y = -2 \cos\left(\frac{1}{2}x - \pi\right) + 3$ .

a= vertical \_\_\_\_\_ by \_\_\_\_\_

b= horizontal \_\_\_\_\_

c= phase shift \_\_\_\_\_ units to the \_\_\_\_\_

d= vertical shift \_\_\_\_\_ units \_\_\_\_\_

Is there a reflection? \_\_\_\_\_

**Answer Key :**

1) & 2) See Website for Solutions

3) a = -2; Vertical stretch by factor of 2, b =  $\frac{1}{2}$ ; Horizontal stretch, c =  $\pi$ ; Phase shift  $2\pi$  units to the right,  
d = 3; Vertical Shift 3 units up; Yes, there is a reflection