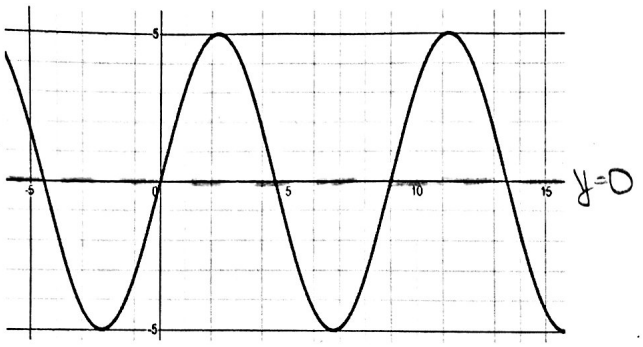
Math 3
U8 Graphing Sine WS

Name: Key

Give the amplitude, period, and midline of each function. Then write the equation of the function.

1. $y =$ $5\sin(40x)$

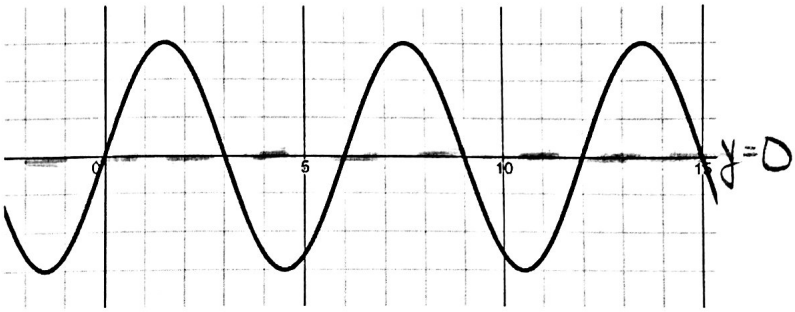


Amplitude 5 $\frac{5-(-5)}{2}=5$

Period 9 $\therefore b=\frac{360}{9}=40$

Midline $y=0$ $\frac{5+(-5)}{2}=0$

2. $y =$ $3\sin(60x)$

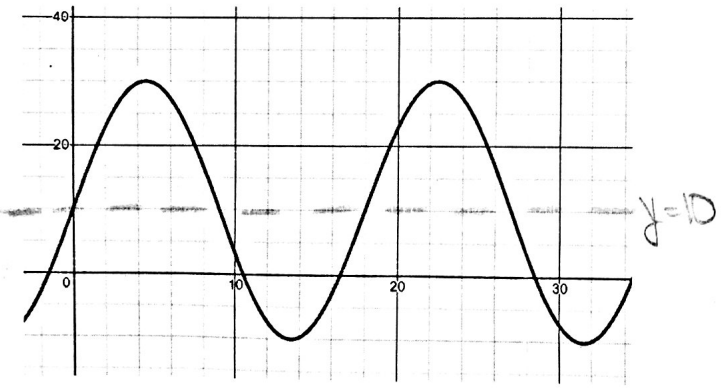


Amplitude 3 $\frac{3-(-3)}{2}=3$

Period 6 $\therefore b=\frac{360}{6}=60$

Midline $y=0$ $\frac{3+(-3)}{2}=0$

3. $y =$ $20\sin(20x)+10$

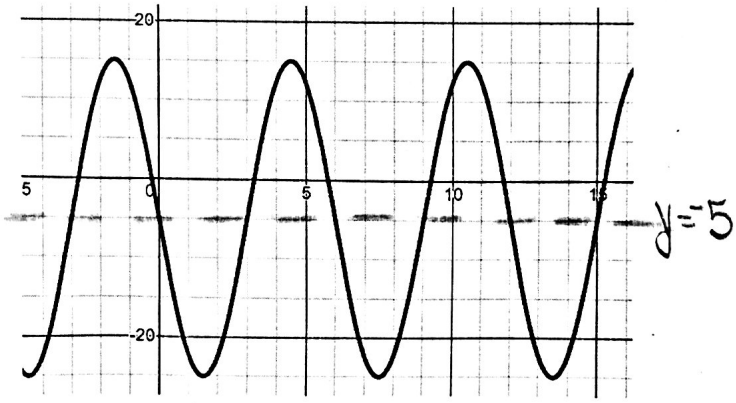


Amplitude 20 $\frac{30-(-10)}{2}=20$

Period 18 $\therefore b=\frac{360}{18}=20$

Midline $y=10$ $\frac{30+(-10)}{2}=10$

4. $y =$ $-20\sin(60x)-5$



Amplitude 20 $\frac{15-(-25)}{2}=20$

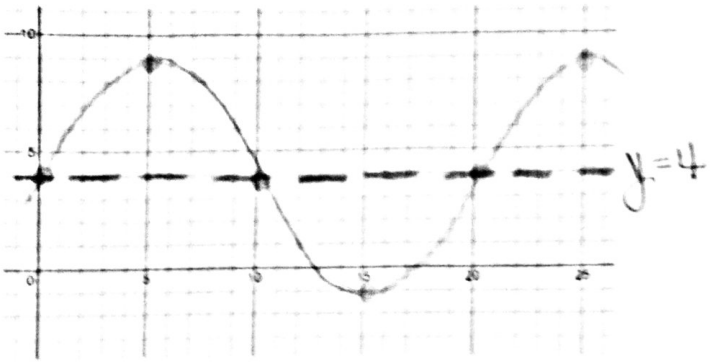
Period 6 $\therefore b=\frac{360}{6}=60$

Midline $y=-5$ $\frac{15+(-25)}{2}=-5$

* reflected over horizontal line

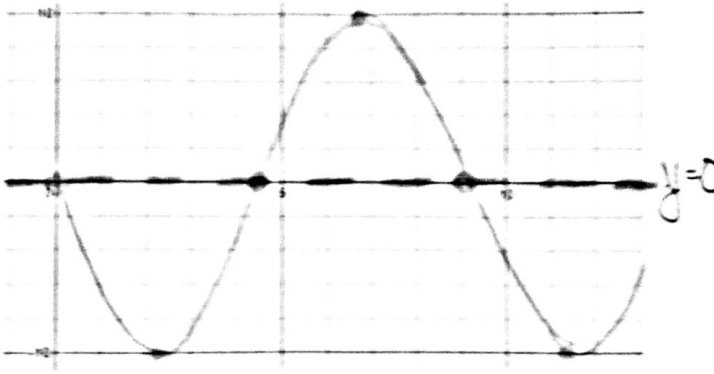
Use the given information to sketch a graph of the Sine function. Then fill in the missing information.

5. Amplitude: 5 (no reflection) Period: 20 Midline: y = 4



$y = 5\sin(18x)+4$ $\quad b=\frac{360}{20}=18$

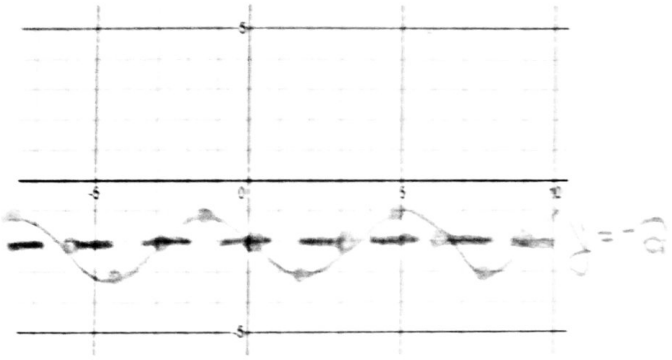
6. $y = -10\sin(40t)$ * Reflected



Amp: 10 Per: 9 Mid: y=0

Period $=\frac{360}{40}=9$

7. $y = -\sin(60t) - 2$ * Reflected

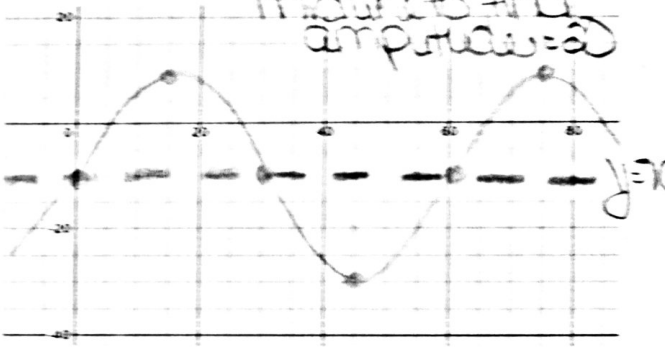


Amp: 1 Per: 6 Mid: y=-2

Period $=\frac{360}{60}=6$

8. Mid: $y = -10$ Per: 60 Relative Max @ (15,10)

* compare max to midline to amplitude



$y = 20\sin(6x) - 10$

$b=\frac{360}{60}=6$

8. Identify the amplitude, period, and midline of a Ferris wheel with center 18 feet above the ground, diameter of 20 feet, which completes one clockwise rotation every 30 seconds.

radius = 10 ft

max = 18+10 = 28

min = 18-10 = 8

Amplitude: $\frac{28-8}{2}=10$

Period: 30

Midline: y=18

* Reflected (clockwise)

9. Write a sine function that models the height of a rider from the Ferris wheel in problem 8.

* Assume start at furthest right position

$b=\frac{360}{30}=12$

$y = -10\sin(12x)+18$

10. The equation $y = 15\sin(24t) + 18$ models the height of a rider on a particular Ferris wheel. Identify each of the following.

Diameter of Wheel: 30 Height above the ground of the center: 18 Time taken for one rotation: 15

radius = 15 (amplitude)

Period $=\frac{360}{24}=15$