

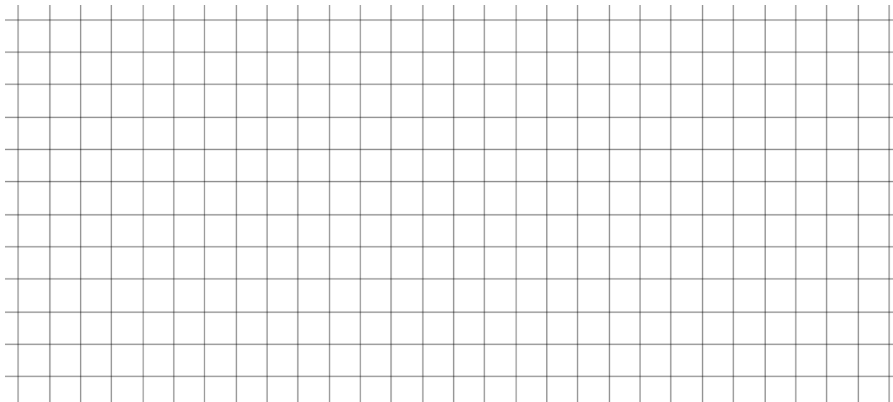
FERRIS WHEELS Part II**C LEVEL**

1. The diameter of a ferris wheel is 30 meters. The highest point of the ferris wheel is 35 meters above the ground. The ride starts at the 3 o'clock position and rotates in the counter clockwise direction. The ferris wheel makes 2 revolutions in 80 seconds. **Graph and write the equation** of the height of a passenger on the ferris wheel with respect to time.



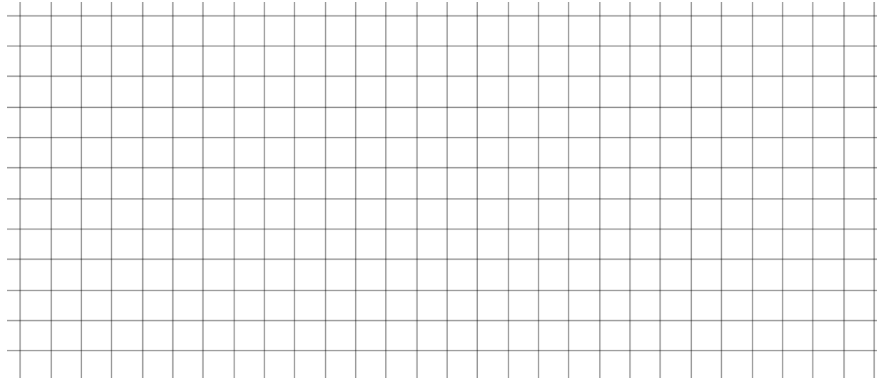
Equation: $y =$ _____

2. A ferris wheel sits 4 feet above the ground and has a diameter of 54 feet. The ride starts at the 6 o'clock position and rotates in the counter clockwise direction. The ferris wheel makes 1 revolutions in 2 minute. **Graph and write the equation** of the height of a passenger on the ferris wheel with respect to time.



Equation: $y =$ _____

3. The center of a ferris wheel to the ground is 27 feet. The highest point of the ferris wheel is 47 feet above the ground. The ride starts at the 9 o'clock position and rotates in the counter clockwise direction. The ferris wheel makes 1 revolutions in 90 seconds. **Graph** and **write the equation** of the height of a passenger on the ferris wheel with respect to time.



Equation: $y =$ _____

B LEVEL

4. The radius of a ferris wheel is 52 feet. The highest point of the ferris wheel is 107 feet above the ground. The ride starts at the 3 o'clock position and rotates in the counter clockwise direction. The ferris wheel makes 4 revolutions in 160 seconds.

- Write the equation of the height of a passenger on the ferris wheel with respect to time.
- What will be the height of a passenger 15 seconds after the ride starts?
- At what time during the first revolution will a passenger be a height of 76 ft? Find two additional times that occur during the second revolution.

5. You board a ferris wheel that is 8 feet off the ground. At the highest point of the ride, you are 158 feet above the ground. It takes 30 seconds for the ride to complete one full revolution. The ride starts at the 6 o'clock position and rotates in the counter clockwise direction.
- Write a trigonometric equation for your height above the ground at t seconds after the ride starts.
 - Find at what two times within one cycle your height is exactly at 100 feet above the ground.
6. A ferris wheel has a diameter of 52 yards and rotates every 50 seconds. The bottom of the wheel is 2 yards above the ground. The ride starts at the 12 o'clock position and rotates in the counter clockwise direction.
- Find an equation that models the height of a rider above ground with respect to time.
 - How high above the ground is the rider after 30 s?
 - Find the first four times when the rider is 15 yards above the ground.