**STATION 1: Velocity/Speed**

**Directions:** *Complete each of the following using complete sentences, CER and GUESS method.*

1. A bat flies 40 mi/hr for 3 hours. How far did it travel? *(120 mi)*

2. Runner, Usain Bolt ran the 100 meter dash in 9.46 seconds. What was his velocity? *(10.57 m/s or 23.7 mi/hr!!)*

3. A helicopter is traveling at 180 m/s. How far does it travel in 12 seconds? *(2160 m)*

4. Suppose you are in a car that is going around a curved path. The speedometer reads a constant 30 mph. Which of the following is true?

a. You are traveling at a constant velocity.

b. Your direction is constantly changing

b. You are in a state of dynamic equilibrium.

c. You are in state of static equilibrium.

5. Answer Chapter 4 Focus Questions in your notebook.

**STATION 2: Acceleration**

**Directions:** *Complete each of the following using complete sentences, CER and GUESS method.*

**1.** Driving in your car, you speed up from 30 mph to 50 mph in 5 seconds. What was the acceleration?

*(4 mi/hr/s)*

**2.** An airplane lands and slows down from 350 mi/hr to 100 mi/hr in 20 s. What is its acceleration? *(-12.5 mi/hr/s)*

**3.**  A cyclist accelerates from rest to 8 m/s in 3 seconds. What is his acceleration? *(2.67 m/s/s)*

4. What is the difference between a vector quantity and a scalar quantity?

a. Vector quantity involves both size and direction and scalar quantity involves only direction.

b. Vector quantity involves both size and direction and scalar quantity involves only size.

c. Vector quantity involves only size and scalar quantity involves both size and direction.

d. Vector quantity involves only direction and scalar quantity involves both size and direction.

5. Answer Chapter 4 Focus Questions in your notebook.

**STATION 3: *Falling/Rising* Objects**

**Directions:** *Complete each of the following using complete sentences, CER and GUESS method.*

**1.** If a plant falls off a high rise building and falls for 6s, how far did it fall? What fast was it going as it hit the ground? *(180 m, 60 m/s)*

**2.** You drop a rock off an ocean cliff and it takes 10 seconds before you see a splash. How tall is that cliff? How fast was the rock going when it hit the water? *(500 m, 100 m/s)*

**3.** A soccer player kicks a ball straight up at 50 m/s.

1. What is the velocity of the ball at the peak?
2. What is the acceleration of the ball at the peak?
3. How long does it take the ball to reach the peak?
4. How fast is the ball traveling when it falls back to his foot again?

4. Answer questions a-c as if the graph were a **velocity** vs. **time** graph.



* 1. What part of the graph shows positive acceleration? How do you know?
	2. What part of the graph shows negative acceleration? How do you know?
	3. What is the acceleration at part B? How do you know?

5. An acorn is falling out of a tree. What is its acceleration?

a. It’s acceleration due to gravity is +10 m/s/s.

b. It’s acceleration due to gravity is -10 m/s/s.

c. It’s acceleration depends on the mass of the acorn.

d. Not enough information.

**STATION 4: Mixed Practice**

1. Calculate the net force: 7 N right, 5 N left
2. A soccer player kicks a ball straight up at 20 m/s.

a. What is the velocity of the ball at the peak?

b. What is the acceleration of the ball at the peak?

1. How long does it take the ball to reach the peak?
2. How fast is the ball traveling when it falls back to his foot again?
3. What happens when a ball is dropped vertically and the same ball is launched horizontally from the same height?

a. The balls will float in midair.

b. The ball dropped vertically will hit the ground first because gravity only cares about the vertical component.

c. The ball launched horizontally will hit the ground first because gravity only cares about the horizontal component.

d. Both balls will land at the same time because gravity only cares about the vertical component.

1. A car travels at 50 mph east and passes another car that is traveling 50 mph west. Do both cars have the same velocity? Choose the correct claim and reasoning.

a. Yes, both cars have the same velocity because they are moving at the same speed.

b. Yes, both cars have the same velocity because they are moving at the same speed and direction.

c. No, both cars do not have the same velocity because they aren’t moving in the same direction.

d. No, both cars do not have the same velocity because they are moving in a state of dynamic equilibrium.

1. A helicopter is traveling at 200 m/s. How far does it travel in 14 seconds? *(2800 m)*
2. A cyclist accelerates from 4 m/s to 8 m/s in 4 seconds. What is his acceleration? *(1 m/s/s)*
3. If a plant falls off a window ledge and falls for 2s, how far did it fall? What fast was it going as it hit the ground? *(20 m, 20 m/s)*
4. Answer chapter 4 focus questions in notebook.