**FPS – Motion Notes**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_

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| I can… |
| *define and apply concepts of motion.*  *apply knowledge of distance and displacement.*  *Solve and interpret speed problems.* |

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| Bellwork |
| What is a frame of reference? |

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| ***Motion Notes*** | | |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an object’s change in position relative to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the change in the position of an object. 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ measures the total path taken. 4. Displacement is the **change** of an object’s position. Displacement must always indicate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |
| 1. A quantity that has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (magnitude) and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is called a vector. 2. A quantity that ONLY has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ quantity. | | |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the distance traveled divided by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ interval during which the motion occurred. **Speed** describes how \_\_\_\_\_\_\_\_\_ an object moves. 2. Speed measurements involve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 3. The SI units for speed are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per \_\_\_\_\_\_\_\_\_\_\_\_\_ (m/s). 4. When an object covers equal distances in equal amount of time, it is moving at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |
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| 1. Speed can be studied with graphs and equations. **Speed** can be determined from a distance-time graph. When an object’s motion is graphed by plotting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the y-axis and \_\_\_\_\_\_\_\_\_\_ on the x-axis, the slope of the graph is speed. | |  |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the speed of an object in a particular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 2. **Velocity** describes both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | | |
| **Math Skills** | | |
| Image result for clip art bicycle | Little Timmy rides his bicycle to school each day. He rides 1600 meters west. It takes him 3600 seconds (an hour). Find the kid’s velocity in meters per second (m/s). Remember to include direction. | |
| Image result for speed triangle**Given:**  **Unknown**:  **Perform conversions**:  **Use the equation for speed**:  =  **Write the velocity by *including direction***: | | |

***Speed Problem Worksheet***

**Directions:** Solve the following speed problems. Use the triangle to help solve the problems. Show all your work. Circle your answer.

1. Calculate the speed for a car that went a distance of 125 meters in 2 seconds time.
2. A baseball is thrown a distance of 20 meters. What is its speed if it takes 0.5 seconds to cover the distance?
3. How much time does it take for a bird flying at a speed of 45 meters per second to travel a distance of 1,800 meters?
4. A comet is cruising through the solar system at a speed of 50,000 meters per hour for 4 second’s time. What is the total distance traveled by the comet during this time?
5. If Steve throws the football 50 meters west in 3 seconds, what is the average velocity of the football?
6. If it takes Ashley 3 seconds to run east from the batter’s box to first base at an average velocity of 6.5 meters per second, what is the distance she covers in that time?
7. Bart ran 5000 meters south from the cops and an average velocity of 6 meters/second before he got caught. How long did it take him to run?
8. If Justin races his truck north on Highway 37 for 2560 meters in 60 seconds, what is his velocity?
9. Mike rides his motorcycle at a velocity of 20 meters/second for 500 seconds, how far did he ride?
10. Sarah backstrokes at an average speed of 8 meters per second, how long will it take her to complete the race of 200 meters length?
11. Lauren’s SUV was detected exceeding the posted speed limit of 60,000 kilometers per hour. How many kilometers per hour would she have been traveling over the limit if she had covered a distance of 10,000 meters in 300 seconds?
12. A tarantula is able to cover 0.2 meters in 5 seconds. What was the average speed of the spider?