

**GPS – Hallway Acceleration Lab**

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

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| I can… |
| *Solve and interpret speed problems.*  *Solve and interpret acceleration problems.* |

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| Pre-Lab Questions |
| 1. What is the formula for speed? 2. What are the units for speed? 3. What is the formula for acceleration? 4. What are the units for acceleration? |

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| ***Procedure*** |
| 1. Each lab group of 3 will take turns going out into the hall. Two of you will be the ***timers***, one will be the ***mover***. 2. At each 15 m mark in the hallway, one ***timer*** will stand with a stopwatch. When the ***mover*** passes that 15 m mark, each ***timer*** will stop the watch and keep it stopped to record the time. 3. The ***mover*** will start at the 0 m mark and finish at the 30 m mark down the hallway. 4. After two trials have been completed, the group will come in and report their data on the boards. 5. Each group will repeat steps 2-4. 6. Fill in the data tables provided, make calculations, graph the data, and answer the questions. |

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| ***Data Tables*** | | | |
| ***Group 1 data*** Mover name: | Meter mark | 15 | 30 |
| Time |  |  |
| ***Group 2 data*** Mover name: | Meter mark | 15 | 30 |
| Time |  |  |
| ***Group 3 data*** Mover name: | Meter mark | 15 | 30 |
| Time |  |  |

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| ***Calculations*** | | |
| 1. Image result for speed triangleFind the speed at each 15m mark using the speed formula or triangle provided. | | |
| ***Group 1 speed*** Mover name: |  |  |
| ***Group 2 speed*** Mover name: |  |  |
| ***Group 1 speed*** Mover name: |  |  |
| 1. Find the acceleration using the times you calculated. | | |
| ***Group 1 acceleration*** | **=** | |
| ***Group 2 acceleration*** | **=** | |
| ***Group 3 acceleration*** | **=** | |

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| Analysis & Conclusions |
| 1. What does the data suggest about the **difference** between acceleration and speed? 2. Did either mover have the same speed for every 5 meter mark? ***Why or why not***? 3. Did any mover ***decelerate*** (or in other words, have negative acceleration)? 4. What is the direction for each of your accelerations (remember, acceleration is a **vector**)? 5. How did the object in motion accelerate? (Speed, direction, or both) |

***Bonus:*** Record the time it takes you to walk from the 0m mark to the 30 m mark and calculate your average speed.