**GPS – Acceleration Notes**

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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 |
| How is acceleration different from velocity? |

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| ***Acceleration Notes*** |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be described as changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or changes in both.
2. Acceleration is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. An example of change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. A change in direction example would be a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shows both of these changes.Image result for free fall physics
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| Image result for acceleration triangle1. The formula for acceleration is shown below:

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| **Math Skills** |
|  | ***Little Timmy rides his bicycle north to school each day. His initial velocity is 0 m/s. After 2 minutes, his velocity is 6 m/s. Find the kid’s acceleration in meters per second squared (m/s2). Remember to include direction.*** |
| **Given:****Unknown**:**Perform conversions**:**Use the equation for speed**:**Write the velocity by including direction**: |



1. A roller coaster’s initial velocity at the top of the hill is 10 m/s. Two seconds later it reaches the bottom of the hill with a final velocity of 26m/s. What is the acceleration of the coaster?
2. A roller coaster is moving initially at 25 m/s at the bottom of a hill. Three seconds later it reaches the top of the hill finally moving at 10 m/s. What was the acceleration of the coaster?
3. A swimmer speeds up from initial velocity of 1.1 m/s to 1.3 m/s during the last 20 seconds of the race. What is the acceleration of the swimmer?
4. A cars velocity changes from 0 m/s to 30 m/s in 10 seconds. Calculate acceleration.
5. A satellite’s initial velocity is 10,000 m/s. After 60 seconds it is going 5,000 m/s. What is the acceleration?
6. A car goes from a stop to 30 m/s in 25 seconds. What is the acceleration?
7. If a speeding train hits the brakes and it takes the train 39 seconds to go from initially 54.8 m/s to final velocity of 12 m/s. What is the acceleration?

8. A roller coaster car rapidly picks up speed as it rolls down a slope. As it starts down the slope, its speed is initially 4 m/s. But 3 seconds later, at the bottom of the slope, its speed is finally 22 m/s. What is its acceleration?

9. A cyclist accelerates from 0 m/s to 8 m/s in 3 seconds. What is his acceleration?

10. A car advertisement states that a certain car can accelerate from rest to 70 m/s in 7 seconds. Find the car’s average acceleration.

11. A lizard accelerates from 2 m/s to 10 m/s in 4 seconds. What is the lizard’s average acceleration?

12. A runner covers the last straight stretch of a race in 4 s. During that time, he speeds up from 5 m/s to 9 m/s. What is the runner’s acceleration in this part of the race?

13. You are traveling in a car that is moving at a velocity of 20 m/s. Suddenly, a car 10 meters in front of you slams on its brakes. At that moment, you also slam on your brakes and slow to 5 m/s. Calculate the acceleration if it took 2 seconds to slow your car down.

13. A ball is dropped from the top of a building. After 2 seconds, its velocity is measured to be 19.6 m/s. Calculate the acceleration for the dropped ball.