PHYSICS 11

ACCELERATION

- Acceleration as a vector quantity
    - is the rate of change in velocity.
    - Is the result of change in speed, direction or both.

- Acceleration as a scalar quantity is the rate of change in speed.

- Symbol: _____

- Units: _____

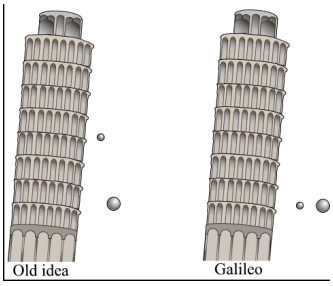
- Acceleration can be determined from a Velocity versus Time graph (V/T graph).
    - Average acceleration is the slope of a secant line on a V/T graph.
    - Instantaneous acceleration is the slope of a tangent line on a V/T graph.

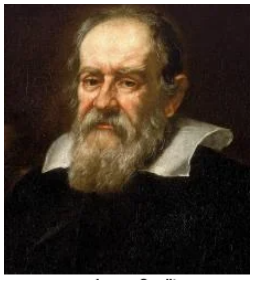
- Acceleration is a rate of change in a rate of change.

- Derivation of acceleration units:

ACCELERATION DUE TO GRAVITY

- Acceleration due to gravity has its own symbol: _____
- On Earth, close to the surface the average value of the acceleration due to gravity is _____
- Direction of the acceleration due to gravity is always down.
- Acceleration due to gravity is a constant independent of the mass and shape of the object.
- Acceleration due to gravity is dependent on the mass of the planet/celestial body and its radius. That is, the heavier the planet, the greater the acceleration due to gravity; and the smaller the radius of the planet the greater the acceleration due to gravity.





Galileo Galilei, born in Pisa, Italy 1564

FREE FALL

- Initial velocity is zero. For example, an object is dropped not thrown, an object rolls of an elevated surface.
- Assume vacuum = ignore air resistance due to friction between air particles and the object.
- Assume on Earth and close to the surface = _____
- There are no obstacles in the path of the object = the object falls freely.
- The object has no means of propulsion = no engine.