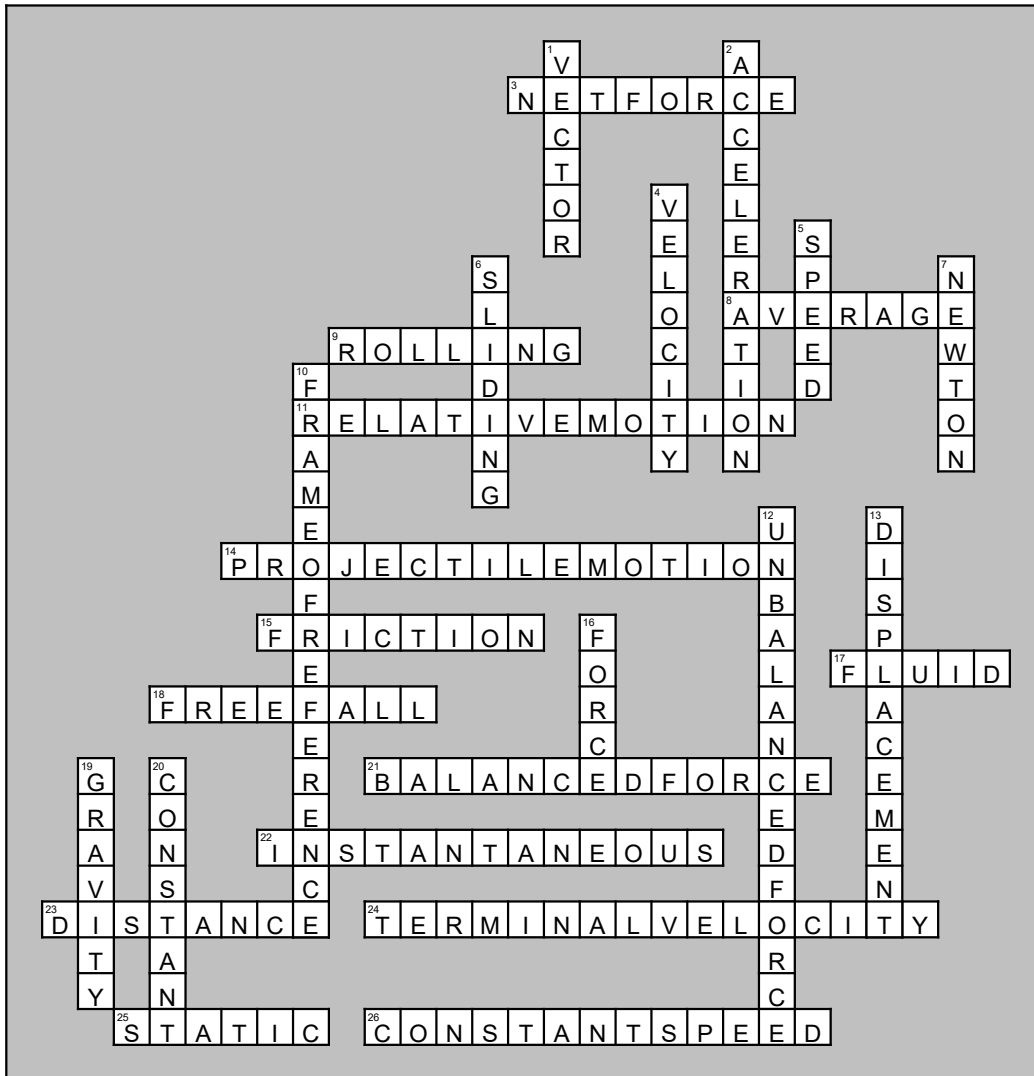


# Crossword



## Across

- Overall force acting on an object. When in the same direction, forces are combined. When in opposite directions, forces are subtracted.
- Type of speed calculated by the total distance an object moves divided by the total time taken. GPS using this to calculate distances and times of travel.
- Type of friction reduced by ball bearings or wheels.
- The movement in relation to a frame of reference. e.g. A jet moves forward on a runway ... a person standing by watching may feel as if she/he is moving backwards.
- The curved-path movement of an object subject to gravity and air resistance only.
- The force that opposes all motion.
- Type of friction that is reduced by streamlining or aerodynamics. e.g. swimmers (fish) and air planes want to reduce this.
- The movement of an object toward Earth solely based on gravity (no air resistance).
- The net force on an object is zero so there is no change in the object's motion.
- Type of speed at any given moment. e.g. The policemen told the driver, "I clocked you at 130 km/hr."
- The dimension of length, related to a path between two points. Expressed in kilometers or 1000 meters.
- When an object reaches a maximum velocity while in free fall due to the influence of air resistance.
- Type of friction that makes it harder to start moving an object than to keep it moving.
- When an object's speed remains the same over time. On a graph, the distance and time slope is represented by one straight line.

## Down

- A quantity that has both magnitude and direction. e.g. 80 km West. Velocity versus speed.
- A vector quantity involving a change in speed or direction of motion. Change in speed over time. Measured in m/s/s ... "meters per second squared."
- A vector quantity incorporating speed and direction. e.g. 12 m forward.
- The distance an object moves over the amount of time it takes to move. Measured in m/s. "Scalar" (not a vector quantity).
- Type of friction reduced by wearing ice skates, socks, or skis.
- Metric unit of force = 1 kg m / s / s. Amount of force needed to accelerate a 1 kg mass 1 m/s/s.
- A system of objects that are not moving with respect to one another allows one to accurately and completely describe motion. e.g. A person in a car is travelling 96 kilometers per hour in respect to the road, but 0 km/hr with respect to the car.
- The net force on objects that accelerate or change their motion. e.g. one team wins a tug-o-war competition over another.
- The distance an object moves PLUS the direction from the starting point. e.g. A person walks 5 m east, stops, and returns to the original starting point. Distance travelled = 10 m ... 5 m each way, but the \_\_\_ is 0 b/c the person ended right back where he/she started.
- Produces motion. An object at rest begins to move or an object that is moving accelerates due to a change in speed or direction.
- 9.8 m/s/s. Describes the downward acceleration of objects towards the Earth.
- Type of motion where acceleration remains the same over time. This occurs in free fall. On a graph, the slope of a speed versus time graph is represented by one straight line.