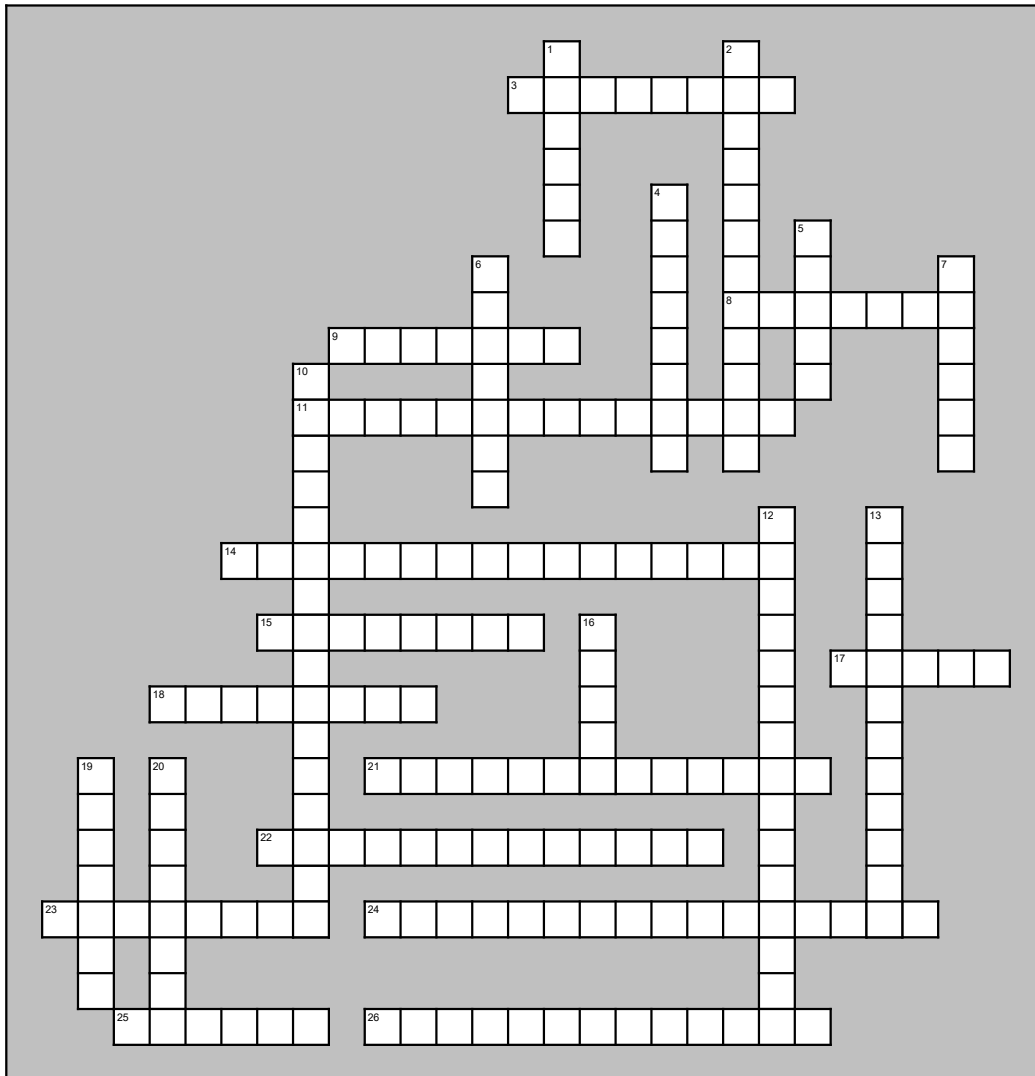


# Crossword



## Across

3. Overall force acting on an object. When in the same direction, forces are combined. When in opposite directions, forces are subtracted.
8. 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.
9. Type of friction reduced by ball bearings or wheels.
11. 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.
14. The curved-path movement of an object subject to gravity and air resistance only.
15. The force that opposes all motion.
17. Type of friction that is reduced by streamlining or aerodynamics. e.g. swimmers (fish) and air planes want to reduce this.
18. The movement of an object toward Earth solely based on gravity (no air resistance).
21. The net force on an object is zero so there is no change in the object's motion.
22. Type of speed at any given moment. e.g. The policemen told the driver, "I clocked you at 130 km/hr."
23. The dimension of length, related to a path between two points. Expressed in kilometers or 1000 meters.
24. When an object reaches a maximum velocity while in free fall due to the influence of air resistance.
25. Type of friction that makes it harder to start moving an object than to keep it moving.
26. 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

1. A quantity that has both magnitude and direction. e.g. 80 km West. Velocity versus speed.
2. 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."
4. A vector quantity incorporating speed and direction. e.g. 12 m forward.
5. The distance an object moves over the amount of time it takes to move. Measured in m/s. "Scalar" (not a vector quantity).
6. Type of friction reduced by wearing ice skates, socks, or skis.
7. Metric unit of force = 1 kg m / s / s. Amount of force needed to accelerate a 1 kg mass 1 m/s/s.
10. 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.
12. The net force on objects that accelerate or change their motion. e.g. one team wins a tug-o-war competition over another.
13. 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.
16. Produces motion. An object at rest begins to move or an object that is moving accelerates due to a change in speed or direction.
19. 9.8 m/s/s. Describes the downward acceleration of objects towards the Earth.
20. 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.