

How Fast Can You Go

You are always moving, even when you are standing still. Below are some speeds to ponder. All values are expressed in meters per second.

You are Traveling

▪ Earth's rotation, at North Pole	0 m/s
▪ Earth's rotation, at New York City	354 m/s
▪ Earth's rotation, at the Equator	463 m/s
▪ Earth orbiting Sun	29,780 m/s
▪ Sun orbiting Milky Way Galaxy	230,000 m/s
▪ Milky Way moving through space	631,000 m/s
▪ Your total speed in New York City	891,134 m/s

Solar System Objects

Planets closer to the Sun travel faster:

▪ Mercury orbiting Sun	47,870 m/s
▪ Venus orbiting Sun	35,020 m/s
▪ Earth orbiting Sun	29,780 m/s
▪ Mars orbiting Sun	24,077 m/s
▪ Jupiter orbiting Sun	13,070 m/s
▪ Saturn orbiting Sun	9,690 m/s
▪ Moon orbiting Earth	1,022 m/s

Milky Way Galaxy

In addition to its average movement through space of 631,000 m/s, the Milky Way is being pulled and pushed in various directions:

▪ Travelling towards Andromeda	130,000 m/s
▪ Travelling towards Great Attractor	700,000 m/s
▪ Travelling away from the Local Void	270,000 m/s

The Local Group of galaxies, which includes the Milky Way, is also being pulled towards the Shapley Supercluster (of galaxies) and pushed away from the Dipole Repelled (i.e. a large void in space). Note that large masses "pull" using gravity, while large voids "push" using the absence of gravity.

Traveling on Earth

▪ Fast walking	2 m/s
▪ Fast running	12 m/s
▪ Automobile	30 m/s
▪ Japanese Bullet Train	90 m/s
▪ Passenger Aircraft, 737	260 m/s
▪ Concord Supersonic Aircraft	600 m/s
▪ Bullet	760 m/s

Going to Space

The escape velocity is the minimum speed needed for a free, non-propelled object (e.g. bullet) to escape from the gravitational influence of a massive body. It is slower the farther away from the body the object is, and slower for less massive bodies.

▪ Earth	11,186 m/s
▪ Moon	2,380 m/s
▪ Mars	5,030 m/s
▪ Jupiter	60,200 m/s
▪ Milky Way (from Sun's orbit)	500,000 m/s

References

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