

# MOVING THROUGH SPACE

**BIG  
Question**

What does it  
take to explore  
space?

**Share What You Know**











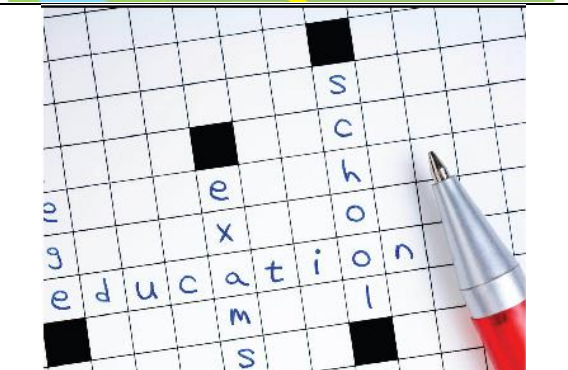

- 1 **Make** a picture of the night sky.
- 2 **Think** about what it would be like to travel to the moon or to a star.
- 3 **Describe** how you would feel as you left Earth far behind you.



Build Background: Use this interactive resource to learn about space exploration.  
[NGRoach.com](http://NGRoach.com)



Word	Picture	Definition	Sentence
Accelerate		Move faster	A racecar accelerates at the finish line.
Average		An amount usual for a group	Bears have an average of two cubs
Distance		The amount of space between two things	We can fly a long distance
Height		The measure of how tall someone or something is	These boys are two different heights
Measure		Find out something's size, weight or amount	The scales measures the weight of the orange.

Word	Picture	Definition	Sentence
Motion		Movement	A racecar's motion is very fast.
Rate		The speed something happens	Turtles move at a slow rate.
Scale		A comparison of size	The scale of this map shows that 1 inch is equal to 1 mile
Solve		To figure out	When you solve a problem, it is done
speed		How fast something moves	A cheetah is the fastest animal on land

Ask and Answer Questions

Ask a Question ?

Answer a Question .



Ask a Question

\_\_\_\_\_

\_\_\_\_\_ ?

Answer a Question

\_\_\_\_\_

\_\_\_\_\_ .

ASKING AND ANSWERING QUESTIONS

ASKING AND ANSWERING QUESTIONS

??Question words ??



## Read a Math Article

### Genre

A **math article** is nonfiction. It gives number facts about people, places, or events.

### Text Feature

**Graphs** show data, or information that uses numbers. A **bar graph** is one kind of graph. Each bar represents one piece of information.



The name of the animal is listed on the vertical axis. The animal's speed is on the horizontal axis.



### Set a Purpose

Learn about the **speeds** of different animals and objects in our universe.

### How Fast Is Fast?

You may be **fast on your feet**, but if you want to win races, never race a cheetah (or even an ostrich, for that matter).

If you ran very hard, you might reach a **speed** of 24 kilometers per hour (15 miles per hour). That's not nearly fast enough to keep up with an ostrich.

An ostrich is the world's fastest two-legged runner. It has a top speed of about 72 kilometers per hour (45 miles per hour). In a race, though, the cheetah would certainly be **way out in front**.

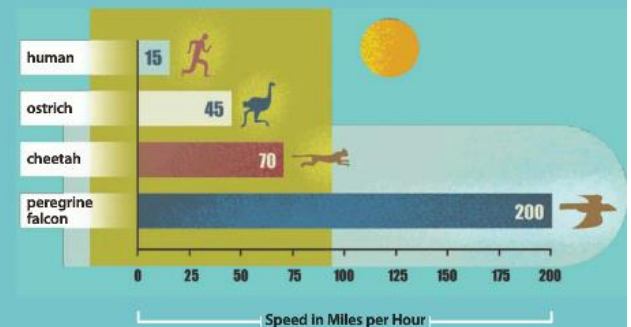
A cheetah can reach a speed of about 113 kilometers per hour (70 miles per hour). That's more than a mile a minute. No animal on Earth can run faster than that.

But a cheetah can't run as fast as a peregrine falcon can **swoop**.

A peregrine falcon can dive through the sky at about 322 kilometers per hour (200 miles per hour). That's three times as fast as a car **zooming** along a highway.

A peregrine falcon is magnificent. It can dive faster than any creature can run. But it can't fly as fast as an airplane.

### ANIMAL SPEEDS



Fast -> Faster -> Fastest

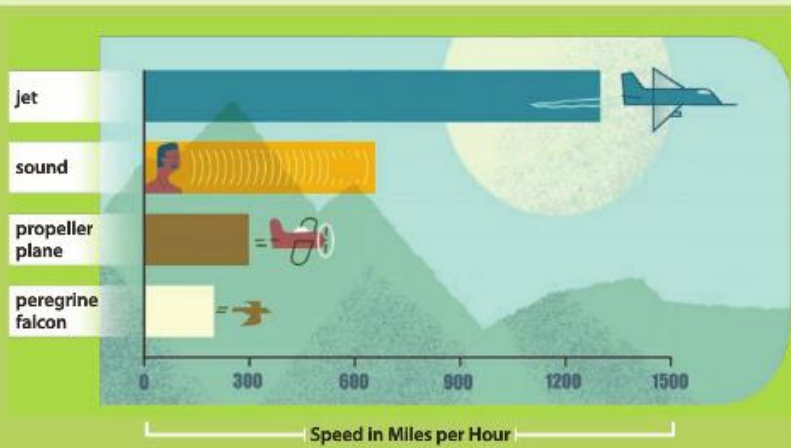
Comparison Chart

## Flight Times

Some propeller planes can fly more than 483 kilometers per hour (300 miles per hour). With a propeller pulling you through the air, you can travel faster than the fastest falcon.

With a jet engine, you can fly faster than the fastest propeller plane. In fact, you can fly even faster than the speed of sound.

Sound travels in waves. **At high altitudes**, where jets fly, sound waves travel about 1,062 kilometers per hour (660 miles per hour). Some very fast jets can fly twice the speed of sound.



If you shouted to someone who was traveling faster than sound, your voice would not go fast enough to catch up to him or her. The person would never hear you.

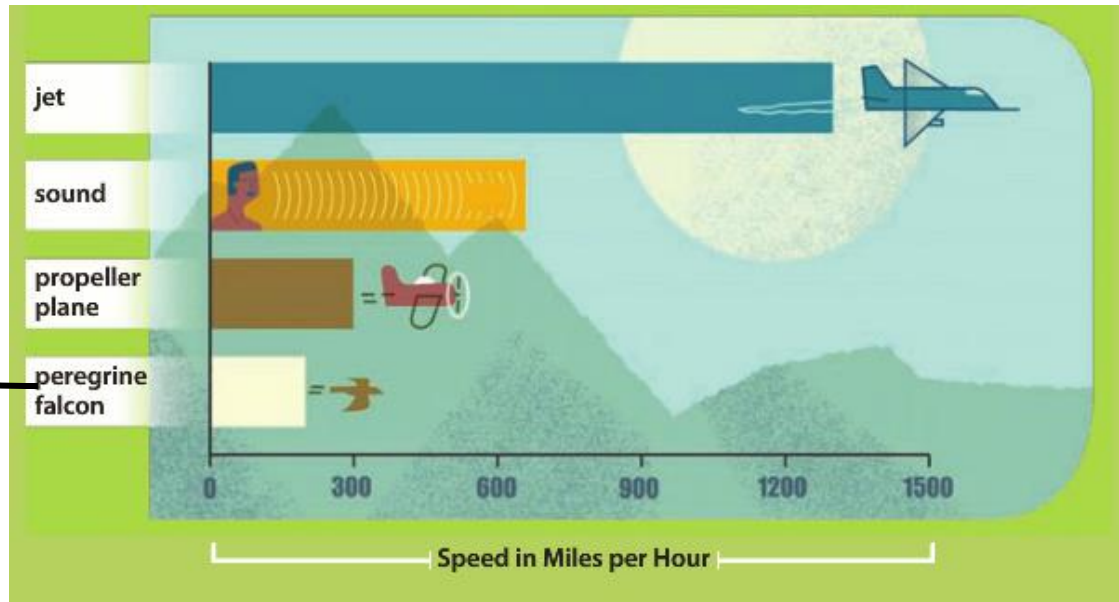
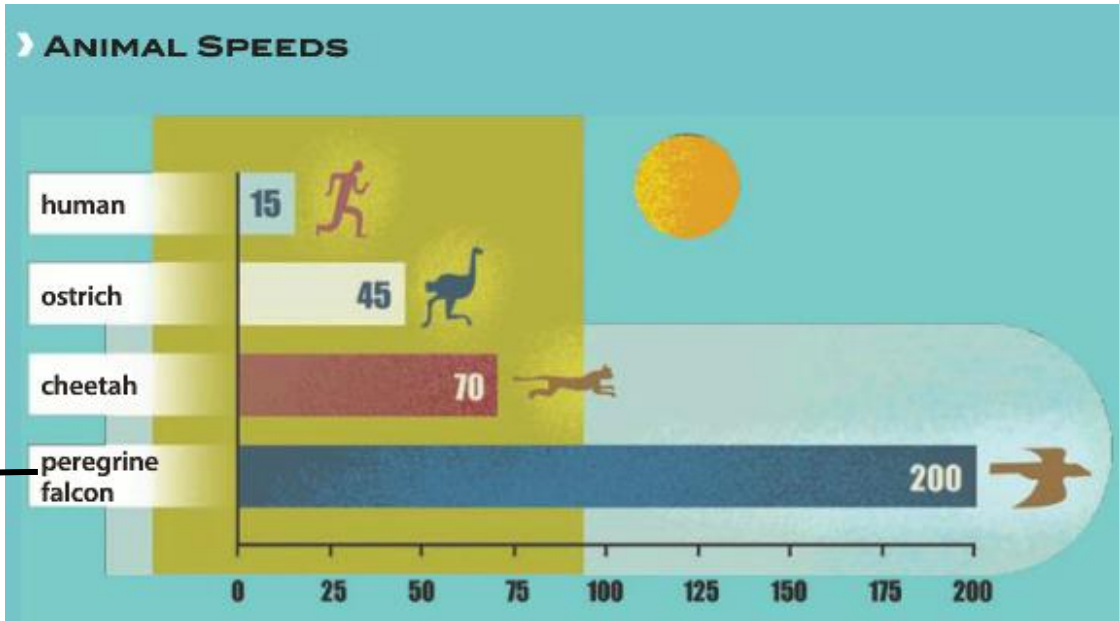
### **Faster Still**

If you want to travel to the moon, you're going to need something that's much faster than a jet. You'll need a rocket ship.



To escape Earth's gravity and travel into space, a rocket ship must go faster than any jet. To travel to the moon, a rocket ship must reach a speed of about 40,234 kilometers per hour (25,000 miles per hour). That's more than thirty times as fast as sound.



# Compare and Contrast speed



Complete the chart using the graphs

SPEED	Animal 	Other 
Fast	Human	
Faster		Sound
Fastest		

Complete the chart using the graphs above:

# Compare and Contrast

Make a comparison chart for "What's Faster Than a Speeding Cheetah?"

In this column, name the things you will compare.	Tell how it moves.	Tell how fast it is.	Tell what speed record it set.
Animal or Object	How It Moves	Fastest Speed	Record
ostrich	runs on two legs	72 km (45 mi) per hour	fastest animal with 2 legs
cheetah	runs on four legs	113 km (70 mi) per hour	fastest land animal
peregrine falcon	_____	_____	Fastest air animal
jet plane	_____	_____	Faster than sound

Word Bank:

ostrich    cheetah    peregrine falcon    land    air    sound    legs

Fill in the blanks:

1. A \_\_\_\_\_ is fast, but a \_\_\_\_\_ is faster.
2. An \_\_\_\_\_ is the fastest animal with two \_\_\_\_\_.
3. A jet plane can move faster than \_\_\_\_\_.
4. Cheetahs and ostriches are fast on \_\_\_\_\_.
5. Falcons and jet planes are fast in the \_\_\_\_\_.



## Space Speeders

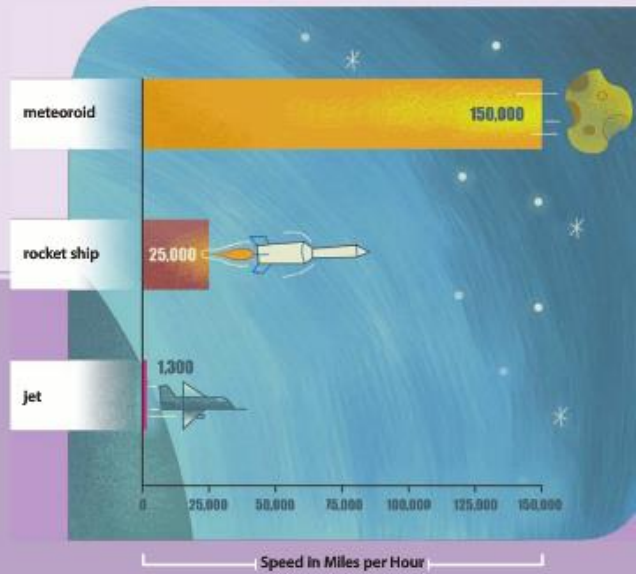
You can turn off your rockets and **coast** after you're in space. That's because there's little to no drag in space. Drag is a force that acts against objects when they travel through air. Drag slows down moving objects. Now, speeding through space at 40,234 kilometers per hour (25,000 miles per hour) is **mighty** fast.

What's that zooming by, going so much faster that you feel like you are standing still? It's a meteoroid!

A meteoroid is a space rock. Some meteoroids **streak** through space at 241,402 kilometers per hour (150,000 miles per hour). That's six times faster than your rocket ship is traveling.

As you circle around the moon and head back to Earth, you might be thinking that the meteoroid you saw was the fastest thing you could ever see.

### FASTER AND FASTER



### DRAG ON A BALL



Most scientists believe that nothing can travel through space faster than light. Who would have thought that the fastest traveling thing in the whole universe could come out of something small enough to hold in your hand?



A beam of light could circle Earth more than seven times in one second!

### HOW LONG WOULD IT TAKE TO TRAVEL FROM EARTH TO THE MOON (239,000 MILES)?

AT THIS SPEED...	IT WOULD TAKE ABOUT
Young Runner (15 miles per hour)	1 $\frac{3}{4}$ years
Ostrich (45 miles per hour)	7 $\frac{2}{3}$ months
Cheetah (70 miles per hour)	4 $\frac{2}{3}$ months
Peregrine Falcon (200 miles per hour)	7 weeks
Propeller Plane (300 miles per hour)	4 $\frac{2}{3}$ weeks
Supersonic Jet (1,400 miles per hour)	1 week
Rocket Ship (25,000 miles per hour)	9 $\frac{1}{2}$ hours
Meteoroid (150,000 miles per hour)	1 $\frac{1}{2}$ hours
Light (186,000 miles per second)	1 $\frac{1}{3}$ seconds

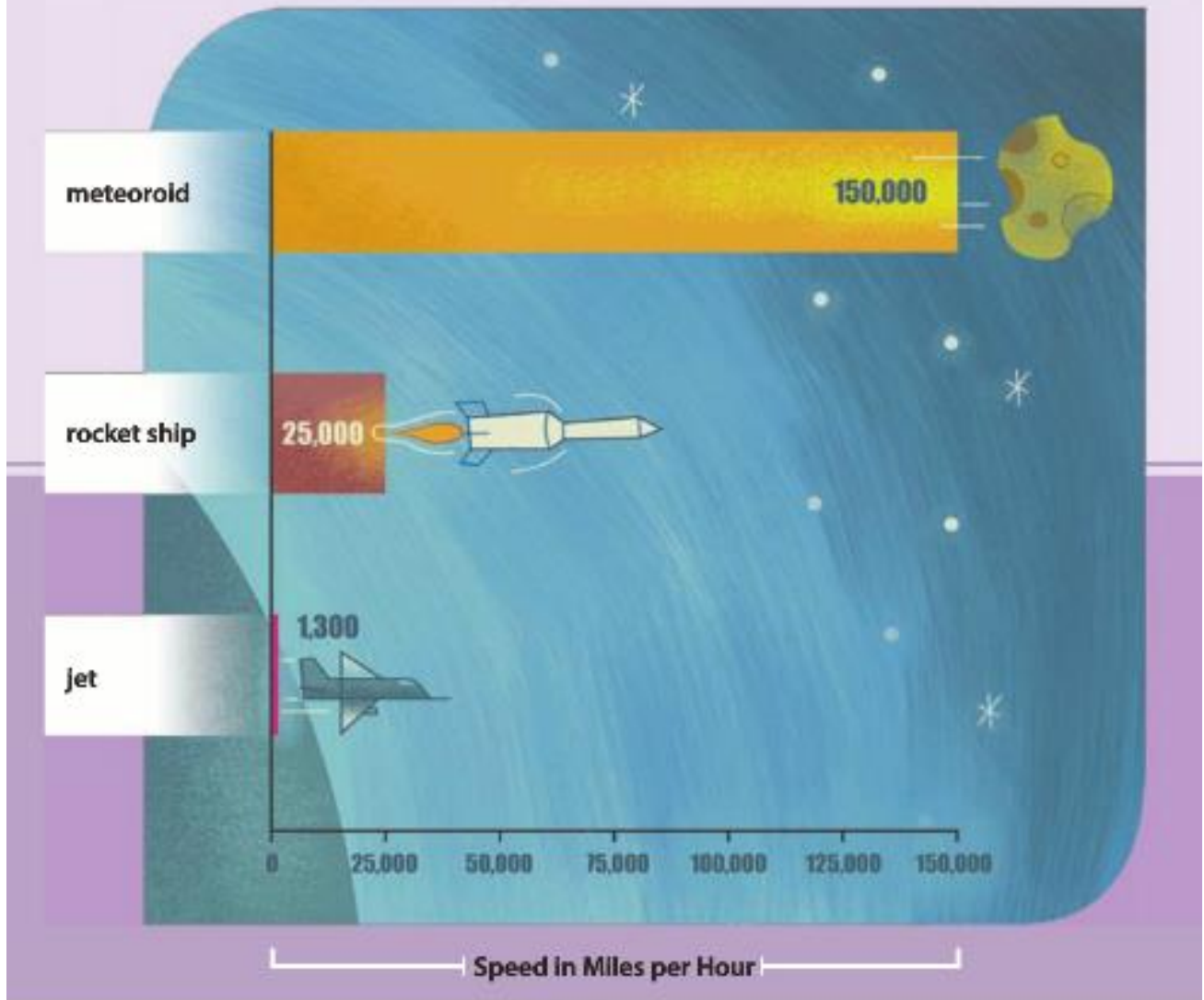
## WHO IS THE FASTEST??

Slowest



Fastest

## FASTER AND FASTER



Compare and contrast

Object Name	How it moves	Fastest Speed	Picture

Complete the chart - put the adverb in the correct category

Grammar: Adverbs

# In the Dark Sky

## Grammar Rules Adverbs

Adverbs often describe a verb. Adverbs usually answer one of these questions: *how?* *when?* or *where?*

How	When	Where
quietly slowly	soon yesterday	far there

Underline each adverb in the paragraph. Then categorize the adverbs.

Yesterday, Tana and I waited patiently for it to get dark outside. We had our telescope and our journals. Suddenly, it became dark. We eagerly looked through the telescope. I could see far into the sky. When I told Tana what I saw, she quickly took the telescope from me. The telescope made some items look as if they were nearby. Later, we wrote about our observations in our journals.

How	When	Where
_____	yesterday _____	_____
_____	_____	_____
_____	_____	_____

Make your own sentences using the following adverbs:

Yesterday, \_\_\_\_\_.

Suddenly, \_\_\_\_\_.

Draw a line from the word to the definition

Accelerate	To figure out
Average	An amount usual for a group
Distance	Find out somethings size, weight or amount
Height	Movement
Measure	A comparison of size
Motion	Move faster
Rate	The amount of space between two things
Scale	The measure of how tall someone or something is
Solve	The speed something happens
Speed	How fast something moves

*Make 4 of your own sentences using a vocabulary word*

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_