What is Gravity? (by NASA Space Place)

Gravity is the force by which a planet or other body draws objects toward its center. The force of gravity keeps all of the planets in orbit around the sun.

What else does gravity do?

Why do you land on the ground when you jump up instead of floating off into space? Why do things fall down when you throw them or drop them? The answer is gravity: an invisible force that pulls objects toward each other. Earth's gravity is what keeps you on the ground and what makes things fall.

Anything that has mass also has gravity. Objects with more mass have more gravity. Gravity also gets weaker with distance. So, the closer objects are to each other, the stronger their gravitational pull is.

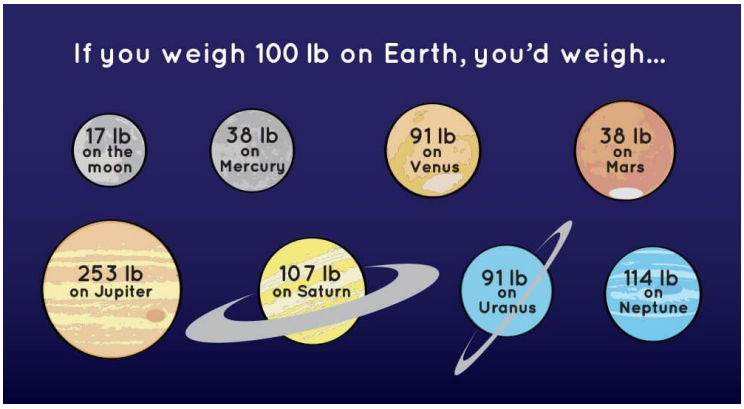
Earth's gravity comes from all its mass. All its mass makes a combined gravitational pull on all the mass in your body. That's what gives you weight. And if you were on a planet with less mass than Earth, you would weigh less than you do here.

You exert the same gravitational force on Earth that it does on you. But because Earth is so much more massive than you, your force doesn't really have an effect on our planet.

Gravity in our universe

Gravity is what holds the planets in **orbit** around the sun and what keeps the moon in orbit around Earth. The gravitational pull of the moon pulls the seas towards it, causing the ocean tides. Gravity creates stars and planets by pulling together the material from which they are made.

Gravity not only pulls on mass but also on light. Albert Einstein discovered this principle. If you shine a flashlight upwards, the light will grow imperceptibly redder as gravity pulls it. You can't see the change with your eyes, but scientists can measure it.



https://spaceplace.nasa.gov/what-is-gravity/en/

Gravity Exploration

Name _____

Part A: How much would you weigh on other planets and the moon?

The more mass a planet has, the more gravity it has. Planets which have more mass than Earth would have more gravity than Earth. A person would weigh more on these planets than they do on Earth.

Location	Weight on Earth		Gravity		Calculated Weight
Moon		X	0.17	=	
Mercury		X	0.38	=	
Venus		X	0.86	=	
Mars		X	0.38	=	
Jupiter		X	2.87	=	
Saturn		X	1.32	=	
Uranus		X	0.93	=	
Neptune		X	1.23	=	

Part B: How far could you jump on other planets and the moon?

Determine how far you can jump on the Earth. To do this, place a piece of tape on the floor as a starting line. Jump as far as you can off of both feet. Have your partner mark where you land not where you end up! Measure the distance and record in the table. Do this five times, then find the average.

Jump 1	Jump 2	Jump 3	Jump 4	Jump 5	Average

Location	Average Length on Earth		Gravity		Length
Moon		÷	0.17	=	
Mercury		÷	0.38	=	
Venus		÷	0.86	=	
Mars		÷	0.38	=	
Jupiter		÷	2.87	=	
Saturn		÷	1.32	=	
Uranus		÷	0.93	=	
Neptune		÷	1.23	=	

Conclusion:

1. Complete each statement:

A person would weigh more on _____ than on _____, because_____

_____

_____.

A person could jump further on _____ than on _____, because _____

_____

_____.

The force of gravity between two objects depends on _____

_____

_____..

2. Create three questions that could be answered after doing this lab activity. Be sure to include the answers!

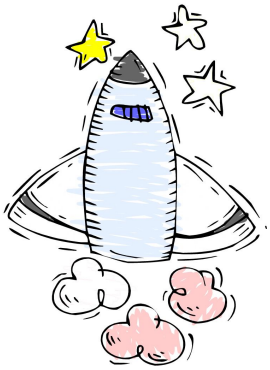
(1)

(2)

(3)

Name: _____

OUTER SPACE VOCABULARY WORDSEARCH



Circle hidden outer space words in the puzzle below. They may be written horizontally or vertically.

D	A	Y	Z	T	T	B	T	P	H	A	S	E	S	Y	W	Z	N	F	H
C	G	D	M	X	Y	Y	U	S	E	X	R	E	V	O	L	V	E	Y	H
C	J	H	E	U	Z	N	O	E	H	X	E	T	S	X	P	K	Z	J	J
O	M	G	M	R	I	M	Q	A	F	U	M	T	Z	I	O	N	R	W	U
N	W	U	X	A	S	V	T	S	U	A	G	E	Y	O	X	I	Q	C	P
S	M	J	M	N	X	E	A	O	B	R	X	M	N	Z	F	G	Z	R	I
T	A	W	P	U	A	N	M	N	L	B	U	F	Q	I	R	H	X	A	T
E	E	H	J	S	E	U	A	S	E	C	L	I	P	S	E	T	N	T	E
L	M	G	O	F	E	S	R	B	C	E	Q	X	A	U	E	P	E	E	R
L	E	H	M	O	O	N	S	G	K	L	R	W	T	N	D	P	P	R	I
A	R	V	U	I	G	W	K	L	F	E	R	O	T	A	T	E	T	S	W
T	C	A	X	I	S	H	A	D	O	W	V	Z	S	S	A	T	U	R	N
I	U	G	R	A	V	I	T	Y	H	U	S	V	J	R	V	I	N	I	K
O	R	U	Z	A	T	M	O	S	P	H	E	R	E	W	P	G	E	Y	J
N	Y	O	L	N	L	X	U	E	A	R	T	H	S	P	H	E	R	E	N
U	G	V	G	B	C	L	J	S	A	T	E	L	L	I	T	E	H	B	A

night	phases	revolve
craters	moon	constellation
Earth	Uranus	rotate
Mercury	satellite	shadow
gravity	day	Mars
eclipse	axis	Saturn
Venus	seasons	atmosphere
Neptune	sphere	sun
Jupiter		