Name:

Gravity Exploration Worksheet

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

The more mass a planet has compacted within its size, the stronger its gravitational constant. Earth has a gravitational constant of 9.8 N/kg. Planets that have more matter compressed within their volumes than Earth would have stronger gravitational constants at their surfaces. As a result, a person would weigh more on these planets than they do on Earth. On the moon a person would weigh less. Find your weight on the moon and each of the planets in the solar system.

Weight on Earth (N)* Weight in lbs = _______	**X**	**Gravitational constant compared to Earth**	**=**	**Calculated Weight on… (N)**	**Location**
You can convert you weight in pounds to newtons by multiplying pounds by 4.45N/lb. ________________ For instance, a person weighing 100lb on Earth would also weigh 445N on Earth	X	0.17	=		Moon
	X	0.38	=		Mercury
	X	0.86	=		Venus
	X	0.38	=		Mars
	X	2.87	=		Jupiter
	X	1.32	=		Saturn
	X	0.93	=		Uranus
	X	1.23	=		Neptune

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

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Determine how far you can jump from a standing start on Earth. To do this, place a piece of tape on the floor as a starting line. Jump as far as you can, keeping both feet together. Have your partner mark where your feet hit the ground (not where you end up!). Measure this distance in centimeters and record in the table. Do this five times, then find the average.

Jump #1	Jump #2	Jump #3	Jump #4	Jump #5	Average Jump

Average Jump on Earth (cm)	**÷**	**Gravitational constant compared to Earth**	**=**	**Calculated Jump on…(cm)**	**Location**
	÷	0.17	=		Moon
	÷	0.38	=		Mercury
	÷	0.86	=		Venus
	÷	0.38	=		Mars
	÷	2.87	=		Jupiter
	÷	1.32	=		Saturn
	÷	0.93	=		Uranus
	÷	1.23	=		Neptune

Conclusion: Complete each statement with the moon and/or your favorite planets.

1. A person would weigh more on ________________ than on ________________, because ____
____
____.

2. A person could jump further on ______________ than on ________________, because ____
____
____.

3. The force of gravity between two objects depends on ____________________
____
____
____.

4. While a person's weight would be different on the moon and planets, would the amount of matter making up the person (mass) be the same or different? Why?

Name: