Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade 8 Science Group \_\_\_\_\_

**Mass, Weight, and Gravity**

*Read the information below. Use the information to answer the questions which follow.*

|  |
| --- |
|  All objects are made of matter. The amount of matter in an object is called its **mass**. An elephant has a greater mass than a mouse because an elephant is made up of more matter. However, size is not a good way to tell how much mass an object has. For example, a beach ball is larger than a bowling ball, but a bowling ball has more matter, and therefore, greater mass. The mass of an object does not change unless matter is added to the object or taken away from it. Objects stay on Earth rather than floating in the air because of gravity. **Gravity** is a force that pulls all things on earth towards the center of the earth. The weight of an object is a measure of the amount of force with which gravity is pulling on an object. Mass and weight are related. The greater the mass of an object, the greater the force of gravity pulling on it. A bowling ball has a larger mass than a beach ball. A bowling ball, therefore, weighs more than a beach ball. The mass of an object is the same everywhere. Weight changes if the force of gravity changes. The moon’s force of gravity is one-sixth that of the earth. In outer space, there is no force of gravity. |

1. You are holding a cotton ball and a golf ball. They are the same size. Which contains more matter? Which has a greater mass?

|  |  |
| --- | --- |
|  |  |

1. How can the mass of an object be changed?

|  |
| --- |
|  |

1. You have a box of sand and a can of water. Each has a mass of 1kg. Which weighs more?

|  |
| --- |
|  |

1. A block of steel weighs more than a block of wood. Which has a greater mass?

|  |
| --- |
|  |

1. On earth, an astronaut weighs 60kg. How much will she weigh on the moon?

|  |
| --- |
|  |

1. The gravity of Jupiter is 2.5 times that of the earth. How much would the 60-kg astronaut weigh if she could land on Jupiter?

|  |
| --- |
|  |

1. How much mass would the 60-kg astronaut have on Jupiter/

|  |
| --- |
|  |

1. Does a satellite have mass when it is in outer space? Explain.

|  |
| --- |
|  |

1. Does a satellite have weight when it is in outer space? Explain.

|  |
| --- |
|  |

1. What must airplanes and rockets do to fly through the air?

|  |
| --- |
|  |