

# Gravity

Name \_\_\_\_\_ Class \_\_\_\_\_

1. Write **mass** or **weight** next to each statement below to show what it is describing.

a)	The amount of 'stuff' in an object.	
b)	The force due to gravity acting on a mass.	
c)	Measured in newtons.	
d)	Measured in kilograms.	
e)	This value changes depending on the gravitational field strength acting on an object.	
f)	This value stays the same when the location of the object changes.	

2. Give the direction in which a gravitational force acts.

\_\_\_\_\_

3. The gravitational field strength on Earth is approximately 10N/kg.

a) Write down the equation which links gravitational field strength, mass and weight.

\_\_\_\_\_

b) Calculate the weight of the objects below on Earth. Show your working.

mass = 1kg



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

weight = \_\_\_\_\_N

mass = 0.02kg



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

weight = \_\_\_\_\_N

mass = 0.06kg



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

weight = \_\_\_\_\_N

4. The mass of the Moon is smaller than the mass of Earth.

a) Suggest how the weight of an astronaut would be affected if they travelled to the Moon.

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b) Explain your answer.

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c) An astronaut has a mass of 80kg. On the Moon, they have a weight of 128N. Calculate the gravitational field strength on the Moon.

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gravitational field strength = \_\_\_\_\_ N/kg

# Gravity Answers

Name \_\_\_\_\_ Class \_\_\_\_\_

1. Write **mass** or **weight** next to each statement below to show what it is describing.

a)	The amount of 'stuff' in an object.	<b>mass</b>
b)	The force due to gravity acting on a mass.	<b>weight</b>
c)	Measured in newtons.	<b>weight</b>
d)	Measured in kilograms.	<b>mass</b>
e)	This value changes depending on the gravitational field strength acting on an object.	<b>weight</b>
f)	This value stays the same when the location of the object changes.	<b>mass</b>

2. Give the direction in which a gravitational force acts.

**Gravity acts towards the centre of mass of an object.**

3. The gravitational field strength on Earth is approximately 10N/kg.

a) Write down the equation which links gravitational field strength, mass and weight.

**weight = mass x gravitational field strength**

b) Calculate the weight of the objects below on Earth. Show your working.

mass = 1kg



$$\text{weight} = 1\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 10\text{N}$$

mass = 0.02kg



$$\text{weight} = 0.02\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 0.2\text{N}$$

mass = 0.06kg



$$60\text{g} = 0.06\text{kg}$$

$$\text{weight} = 0.06\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 0.6\text{N}$$

4. The mass of the Moon is smaller than the mass of Earth.

a) Suggest how the weight of an astronaut would be affected if they travelled to the Moon.

**The astronaut's weight would decrease.**

b) Explain your answer.

**The Moon has a smaller gravitational field strength compared to Earth because it has a smaller mass than Earth. The astronaut would experience a smaller force due to the gravitational pull of the moon. This means they would have a smaller weight.**

c) An astronaut has a mass of 80kg. On the Moon, they have a weight of 128N. Calculate the gravitational field strength on the Moon.

**gravitational field strength = weight ÷ mass**

$$= 128 \div 80$$

$$= 1.6$$

gravitational field strength = **1.6**N/kg

# Gravity

Name \_\_\_\_\_ Class \_\_\_\_\_

1. Draw an arrow on the diagram below to show the direction of the force of gravity on the mouse.



2. Draw **one** line from each variable to the correct unit of measurement.

gravitational field strength

N

mass

kg

weight

N/kg

3. The mass of some objects is shown below.

The gravitational field strength on Earth is approximately 10N/kg.

Calculate the weight of the objects on Earth.

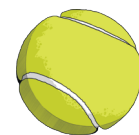
Use the equation:

weight = mass × gravitational field strength

mass = 1kg

mass = 0.02kg

mass = 0.06kg



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

weight = \_\_\_\_\_ N [www.regentstudies.com](http://www.regentstudies.com)

weight = \_\_\_\_\_ N

4. The mass of the Moon is smaller than the mass of Earth.

a) Choose **two** answers from the box below to complete the sentences below.

greater than	equal to	smaller than
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The gravitational field strength on Earth is \_\_\_\_\_ the gravitational field strength on the Moon.

If an astronaut travelled to the Moon, their weight would be \_\_\_\_\_ their weight on Earth.

b) An astronaut has a mass of 80kg. On the Moon, they have a weight of 128N. Calculate the gravitational field strength on the Moon.

Use the equation:

$$\text{gravitational field strength} = \text{weight} \div \text{mass}$$

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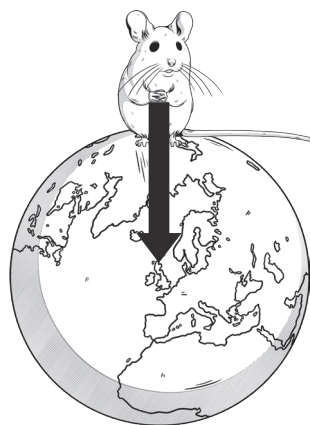
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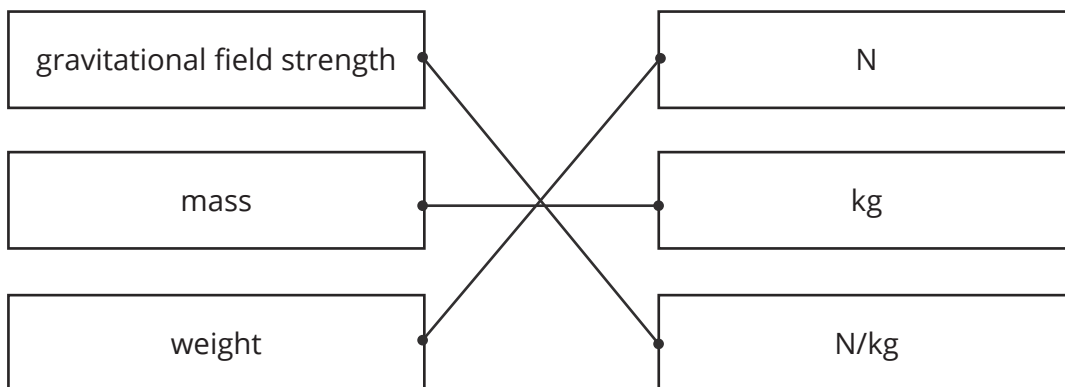
$$\text{gravitational field strength} = \text{_____} \text{ N/kg}$$

# Gravity Answers

1. Draw an arrow on the diagram below to show the direction of the force of gravity on the mouse.



2. Draw **one** line from each variable to the correct unit of measurement.



3. The mass of some objects is shown below.  
The gravitational field strength on Earth is approximately 10N/kg.  
Calculate the weight of the objects on Earth.  
Use the equation:  
weight = mass  $\times$  gravitational field strength

$$\text{mass} = 1\text{kg}$$



$$\text{weight} = 1\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 10\text{N}$$

$$\text{mass} = 0.02\text{kg}$$



$$\text{weight} = 0.02\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 0.2\text{N}$$

$$\text{mass} = 0.06\text{kg}$$



$$\text{weight} = 0.06\text{kg} \times 10\text{N/kg}$$

$$\text{weight} = 0.6\text{N}$$

4. The mass of the Moon is smaller than the mass of Earth.

a) Choose **two** answers from the box below to complete the sentences below.

greater than	equal to	smaller than
--------------	----------	--------------

The gravitational field strength on Earth is **greater than** the gravitational field strength on the Moon.

If an astronaut travelled to the Moon, their weight would be **smaller than** their weight on Earth.

b) An astronaut has a mass of 80kg. On the Moon, they have a weight of 128N. Calculate the gravitational field strength on the Moon.

Use the equation:

$$\text{gravitational field strength} = \text{weight} \div \text{mass}$$

$$\text{gravitational field strength} = 128 \div 80$$

$$= 1.6$$

$$\text{gravitational field strength} = \mathbf{1.6N/kg}$$