

# Why weight changes from planet to planet

Grade 7 science (Year 8 · Class 7) · Test

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_ Mark: \_\_\_\_ / 20

This test checks the difference between mass and weight, the equation  $W = m \times g$  and gravity on other planets. Use  $g = 9.8 \text{ N/kg}$  on Earth unless the question gives another value, and show your working.

**Level:** Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-PS2-4

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

## Question 1 Mass and weight (2 marks)

State the unit of mass and the unit of weight, and say which one changes when an object moves from Earth to the Moon.

## Question 2 Sack of grain (3 marks)

A sack of grain has a mass of 12 kg ( $g = 9.8 \text{ N/kg}$ ).

- Write the formula you will use. (1 mark)
- Calculate the weight of the sack on Earth. (2 marks)

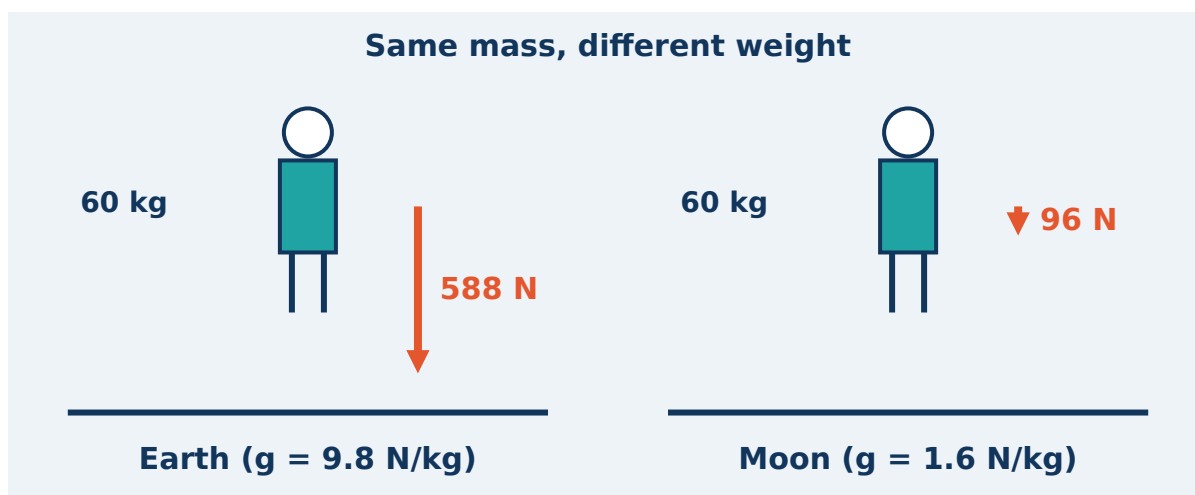
## Question 3 Weight on Mars (3 marks)

The gravitational field strength on Mars is  $3.7 \text{ N/kg}$ . An explorer has a mass of 70 kg.

- Calculate the explorer's weight on Mars. (2 marks)
- State the explorer's mass on Mars. (1 mark)

## Question 4 Earth and Moon (3 marks)

The diagram shows the same person on Earth and on the Moon.



*A person on Earth and on the Moon.*

- State the mass of the person on the Moon. (1 mark)
- Explain why the arrow is shorter on the Moon. (2 marks)

### Question 5 Finding a mass (2 marks)

An object weighs 58.8 N on Earth. Calculate its mass.

### Question 6 Why the Moon is weaker (3 marks)

Explain why the gravitational field strength on the Moon is smaller than on Earth and describe what an astronaut would notice when lifting a rock.

### Question 7 Bathroom scale (2 marks)

A scale shows "55 kg". State whether it displays a mass or a weight and explain what it really measures.

### Question 8 Spring scale reading (2 marks)

A 0.80 kg book hangs from a spring scale on Earth. Calculate the reading on the scale ( $g = 9.8 \text{ N/kg}$ ).