

Science

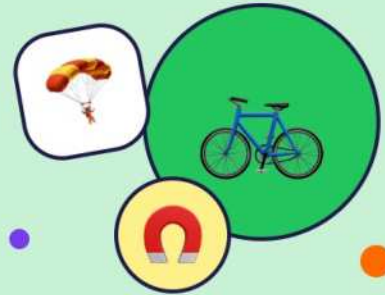
Grade 7

Forces and motion

Explore pushes, pulls, friction and gravity.



I can identify forces and predict how they change motion.

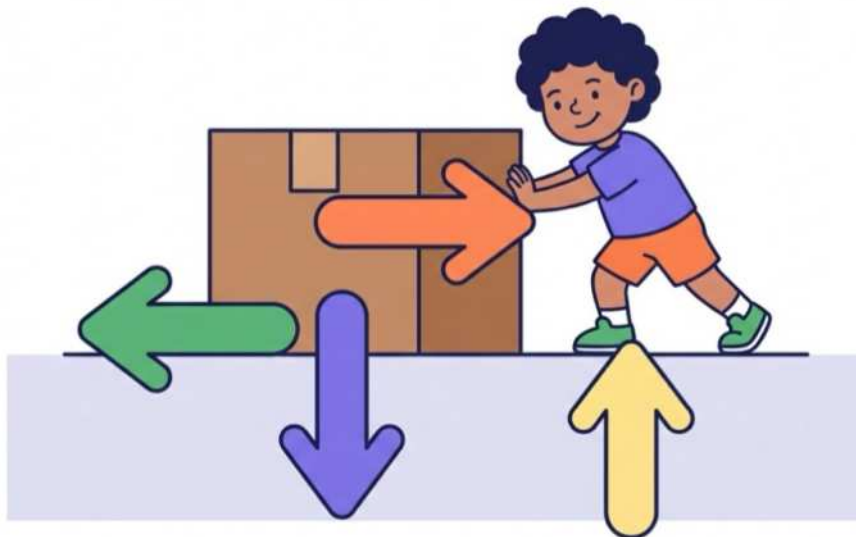


1



Match up

Draw a line to match each pair.

☐

Gravity

☐

Friction

☐

Air resistance

☐

Magnetism

☐

Upthrust



● A. attracts iron and steel

● B. pulls objects towards Earth

● C. pushes up on floating objects

● D. slows moving surfaces

● E. slows things moving through air

2

**Pick the answer**

Circle the right answer.

1. A parachute works by increasing...

A air resistance

B gravity

C mass

2. If the forces on an object are balanced, it...

A always speeds up

B stays still or keeps moving at the same speed

C always stops

3. Force is measured in...

A kilograms

B metres

C newtons

3

**Fill the gaps**

Write the missing answer.

1. Speed = distance ÷ _____

2. A cyclist travels 30 m in 5 s. Speed = _____ m/s

3. Weight = mass × _____ strength

4

**True or false**

Circle true or false.

1. Friction acts against the direction of movement.

True

False

2. Mass and weight are the same thing.

True

False

3. An astronaut has the same mass on the Moon as on Earth.

True

False

4. An object can only keep moving if a force keeps pushing it.

True

False

5. In a vacuum, a hammer and a feather fall at the same rate.

True

False

5 Speed calculations

Use speed = distance $\div$ time to fill in the empty boxes.

Distance	Time	Speed
100 m	20 s	
60 m		3 m/s
	4 s	8 m/s
150 km	3 h	
	2 h	45 km/h

6 Contact or non-contact?

Write each word in the right box.

friction

gravity

air resistance

magnetism

a push

electrostatic force

upthrust

tension in a rope

Contact force

Non-contact force

7 Force problems

Circle the right answer.

1. A 50 kg student stands on Earth ($g = 10 \text{ N/kg}$). What is the student's weight?

A 50 N

B 500 N

C 5 N

2. Which change reduces friction?

A using rougher tyres

B oiling a bike chain

C walking on sand

3. Two forces act on a box: 30 N to the right and 10 N to the left. The resultant force is...

A 40 N to the right

B 20 N to the right

C 20 N to the left

4. Gravity on the Moon is weaker than on Earth. Your weight there is...

A smaller

B bigger

C the same

8



A skydiver's fall

Number the boxes to put them in the right order.

☐

The parachute opens and air resistance suddenly increases.

☐

The skydiver jumps and speeds up because gravity is bigger than air resistance.

☐

The skydiver lands safely.

☐

Air resistance grows until it equals gravity, so the speed stays constant.

☐

The skydiver slows down to a new, lower steady speed.

9



Think and write

Explain why it is harder to walk on sand than on a pavement.

How did it go?



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Science

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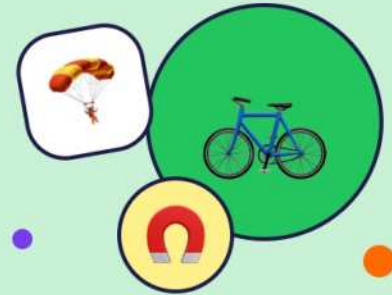
Answer key

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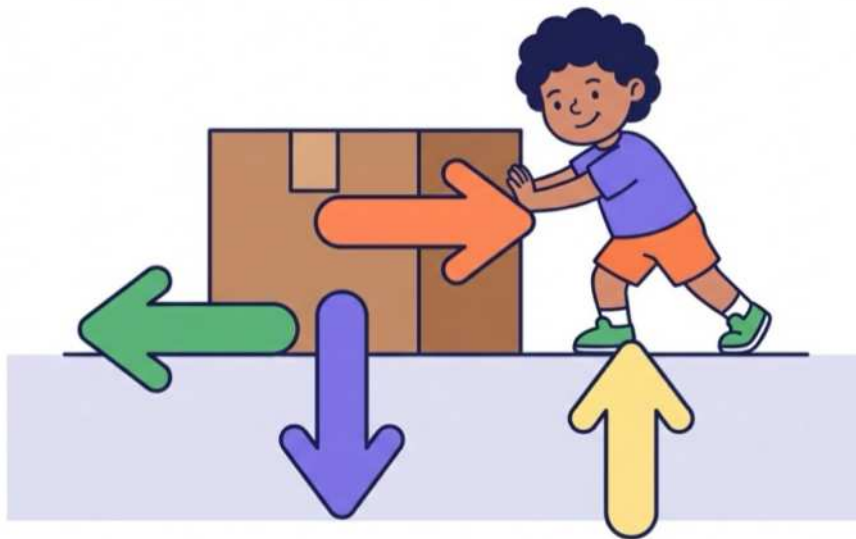


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**B** Gravity**D** Friction**E** Air resistance**A** Magnetism**C** Upthrust● **A.** attracts iron and steel● **B.** pulls objects towards Earth● **C.** pushes up on floating objects● **D.** slows moving surfaces● **E.** slows things moving through air

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C newtons

3 Fill the gaps

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1. Speed = distance ÷ time

2. A cyclist travels 30 m in 5 s. Speed = 6 m/s

3. Weight = mass × gravitational field strength

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a push

electrostatic force

upthrust

tension in a rope

Contact force

friction, air resistance, a push, upthrust,
tension in a rope

Non-contact force

gravity, magnetism, electrostatic force

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