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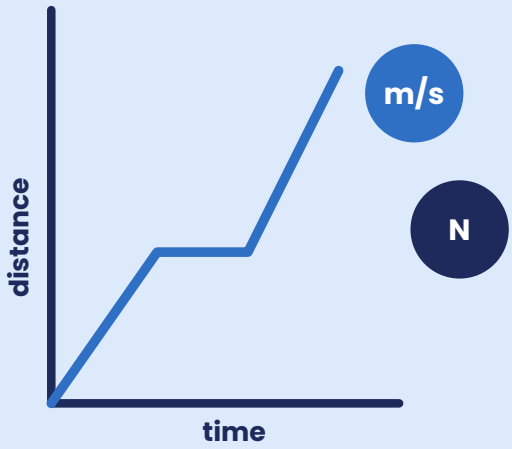
Year 7 • KS3 Physics

Forces & Motion

Homework Worksheet

Practise forces, balanced and unbalanced forces, speed calculations and distance-time graphs.



Forces | **Friction** | **Balanced** | **Speed** | **Distance** | **Graphs**

KEY IDEAS IN THIS WORKSHEET **YEAR 7**

Name: _____ Class: _____

Date set: _____ Date due: _____

What's inside

Section A	Forces	**12 marks**
Section B	Balanced and unbalanced forces	**9 marks**
Section C	Speed	**9 marks**
Section D	Distance-time graphs	**9 marks**

Instructions

- Answer all questions in the spaces provided.
- Show your working in calculations.
- Marks for each question are shown in [ ].
- Use the word boxes and diagrams to help you.

Total score

/ 39

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Forces and Motion Worksheet

Year 7 • KS3 Physics • Forces, balanced and unbalanced forces, speed and distance-time graphs. Show your working in calculations.

Section A Forces [12 marks]

Word box push | pull | friction | gravity | weight | air resistance | balanced | unbalanced

1 Use words from the box to complete the sentences. You may use a word more than once.

(a) A force is a ..... or a ..... . [2]

(b) The force that slows things down when surfaces rub together is ..... . [1]

(c) The force that pulls objects towards the Earth is ..... . On an object it is called its ..... . [2]

(d) When forces are ..... an object stays still or moves at a steady speed. [1]

2 What unit is force measured in? What instrument measures it? [2]

.....

.....

3 Name the force in each situation. [4]

Situation	Force
A skydiver falling with the parachute open slows down	
A book stays on a table (force from the table)	
A magnet picks up a paper clip	
A football falls to the ground	

Section B Balanced and unbalanced forces [9 marks]

4 Describe what happens to the object in each case. The object starts at rest. [3]

Forces on the object	What happens
5 N right and 5 N left	
10 N right and 4 N left	
3 N up and 8 N down	

5 A car engine pushes forward with 600 N. The friction and air resistance total 600 N. Describe the car's motion. **[2]**

.....

.....

6 Explain why a car slows down when the driver takes their foot off the accelerator. **[2]**

.....

.....

7 Give **one** way friction is useful and **one** way it is a problem. **[2]**

Useful: .....

Problem: .....

Section C Speed [9 marks]

Equations speed = distance ÷ time | distance = speed × time | time = distance ÷ speed

8 Calculate the missing values. **[4]**

Distance	Time	Speed
100 m	20 s	
	5 s	8 m/s
300 km		60 km/h
1500 m	300 s	

9 Sam walks 3 km in 1 hour 30 minutes. Calculate her speed in km/h. **[3]**

.....

.....

speed = ... km/h

10 A train travels at 80 km/h for 2 hours. How far does it go? **[2]**

.....

distance = ... km

Section D Distance-time graphs [9 marks]

11 Describe the motion shown by each line on a distance-time graph.

(a) a straight sloping line [1]

(b) a horizontal line [1]

(c) a steeper sloping line [1]

12 A cyclist travels 200 m in 40 s, stops for 20 s, then travels 100 m in 20 s. Calculate her speed in each of the three parts of the journey. [3]

13 Describe how you could measure the speed of a trolley rolling down a ramp. [3]

END OF WORKSHEET **Total: _____ / 39**