

# TEACHER NOTES

## Science: Physics

### Motion & Forces, Working Scientifically

## Contextual Summary

This resource is for students at key stage 3 and relates to the 'Motion and Forces' part of the Science National Curriculum, focusing on the up-thrust effects that water has on objects. The tasks link to their journey on board the Red Funnel vehicle ferry.

The pre-visit task requires students to carry out practical activities to experience the up-thrust effects of water. This can lead onto a practical activity involving Archimedes Principle.

During their ferry journey students will be encouraged to look for different types of boats and relate the shape of hull to the function of the boat.

The post-visit task requires students to investigate the effects of salt water or fresh water upon a laden boat. This is then extended to show how the use of the Plimsoll line has helped in the safety of shipping vessels around the world.

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Tasks are designed to appeal to students at key stage 3 working at lower or higher abilities.

## Task Implementation

There are pre-visit practical activities based on floating and sinking. The activities encourage students to consider how a large, heavy metal ferry can float.

The on-site resource is designed to be completed during the journey. Students are requested to look for different types of boats and try to study the shape of their hull. This information then relates the shape of the hull to the function of the boat.

The post-visit task requires students to investigate the effects of salt water or fresh water upon a laden boat. Students can then relate this to the use of the Plimsoll Line on shipping vessels.

## Ability Levels

There are two variants of this resource for students of higher and lower ability in key stage 3. Teachers can support as necessary.

### Key skills practised in this unit:

- ✓ Working scientifically
- ✓ Recognising and controlling variables
- ✓ Recording data
- ✓ Making conclusions.



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RED FUNNEL

### SUBJECT

Science: Physics

### UNIT

Motion & Force (Floating & Sinking)

### OPPORTUNITIES FOR USE

- ✓ Pre-Visit
- ✓ On-Site Activity
- ✓ Post-Visit

### CURRICULUM / SYLLABUS

- ✓ National Curriculum 2014
- ✓ Curriculum for Excellence

Applies to Resources numbered:

107071  
107072

## Relationship to Curriculum

This resource links to the required teaching as specified by the National Curriculum 2014 for key stage 3 Science.

## Learning Opportunities

### Pre-Visit, On-Site & On-Board

- ▶ Students complete the Science resource linked to this teacher note:

Resource ID: **107071** (KS3 low-mid ability)

**107072** (KS3 mid-high ability)

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- ▶ Students will be able to relate their experiences on board the ferry to the forces section of the Key Stage 3 national curriculum

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- ▶ The worksheets and experiences will enable students to have a greater understanding of floating and sinking allowing them to relate to other unfamiliar examples.

## Learning Outcomes

- ✓ Students will investigate practically the up-thrust effects of water on objects.
- ✓ They will measure the up-thrust of water.
- ✓ Students will carry out practical investigation into Archimedes' Principle.
- ✓ They will investigate the effect of different densities of water on laden vessels.

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