



NUCLEAR  
ADVENTURES  
SCHOOLS

# NUCLEAR ADVENTURES

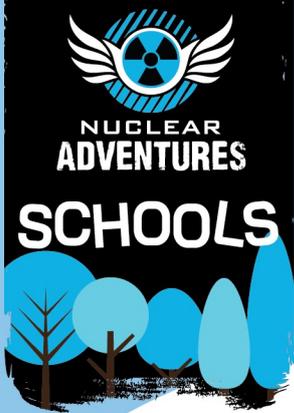
## KS2 LEARNING RESOURCES

### HIGH ROPES CHALLENGE



LOtC Quality Badge





NAME :

# HIGH ROPES CHALLENGE

Let's have a think about high ropes and what wonderful words we can use to describe the thrill!

## ACTIVITY 1: ADVENTURE VOCABULARY CHALLENGE

Look at pictures of high ropes courses (your teacher will show you or you can use a picture online). Work in pairs to think of exciting words that describe:

- How it might feel to climb up high (e.g., "tingly," "breathtaking")
- What you might see from above (e.g., "panoramic," "towering")
- The sounds you might hear (e.g., "rustling," "creaking")

Create a "**High Ropes Word Bank**" to use in your writing.

Extra Challenge: Try to think of at least 10 words for each category!

**HIGH ROPES WORD BANK**

*How does it feel?*


**HIGH ROPES WORD BANK**

*What do you see?*


**HIGH ROPES WORD BANK**

*What do you hear?*






NAME :

# HIGH ROPES CHALLENGE

Lets pretend we're high ropes helpers!

### ACTIVITY 3: WRITE A SAFETY POSTER

Imagine you are a high ropes instructor. You need to make a safety poster for new climbers.

On a piece of paper, include:

- A **title** (e.g., "Stay Safe on the Ropes!")
- 3–5 important **safety tips**
- A **warning or advice** sentence
- **Pictures** to make your poster eye-catching.

Tip: Use strong verbs and clear instructions, e.g., "Hold on tightly," "Wear your harness correctly."



### ACTIVITY 4: HIGH ROPES NEWSPAPER ARTICLE

Imagine a friend or classmate has just completed the high ropes course.

Write a newspaper article including:

- A **headline**
- A short **introduction** (who, what, when, where)
- **Quotes** from participants ("I felt like I could fly!")
- A **closing paragraph** describing the excitement of the day

Tip: Remember, newspaper writing is in the past tense.







# TEACHER NOTES

Activity 1: Adventure Vocabulary Challenge

**Curriculum Links:**

**Vocabulary, Grammar, and Punctuation:** Develop adventurous and precise word choices (National Curriculum: English – KS2, Years 3–6).

**Writing – Composition:** Plan writing by discussing and collecting ideas.

Activity 2: Adventure Story Starter

**Curriculum Links:**

**Writing – Composition:** Draft and write narratives, creating settings, characters, and plots.

**Vocabulary, Grammar, and Punctuation:** Use adventurous adjectives, expanded noun phrases, and descriptive language.

Activity 3: Write a Safety Poster

**Curriculum Links:**

**Writing – Purpose and Audience:** Write for different purposes (instructions, persuasion).

**Spelling, Punctuation, and Grammar (SPaG):** Use imperative verbs and clear sentence structures.

Activity 4: High Ropes Newspaper Article

**Curriculum Links:**

**Writing – Composition:** Write non-fiction texts including reports, recounts, and newspapers.

**SPaG:** Use past tense consistently, use direct speech with inverted commas, and organise writing into paragraphs.

Activity 5: Ropes Centre Review (Optional Fun Activity)

**Curriculum Links:**

**Writing – Composition:** Express ideas and opinions clearly for a specific purpose.

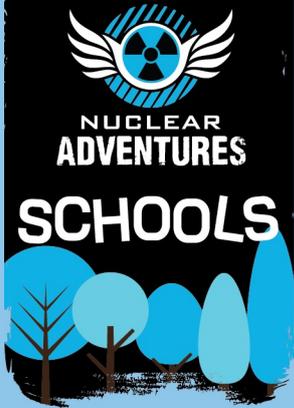
**SPaG:** Use conjunctions and connectives to link ideas.

✔ Teacher Notes:

These activities can be done as homework or in class over 1–2 sessions.

They prepare children for writing tasks linked to experiences, imagination, and reporting.

Encourage sharing work in class to build confidence and excitement for the trip.



NAME :

# HIGH ROPES CHALLENGE

Let's have a look at different forces and think about how we can see them in action in everyday life.

## 1. FRICTION INVESTIGATIONS

When you move across ropes, wood, or climbing walls, friction helps stop you slipping.

### Investigation 1

Rub your hands together quickly.  
What do you notice?

- They get warmer
- They feel smoother
- They make a noise



Why did that happen?



### Investigation 2

Slide a book along different surfaces (e.g., table, carpet, jumper, tarmac ground, grass, etc).

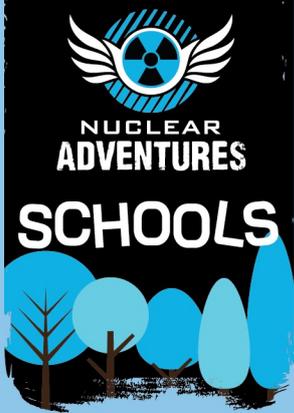
Which surface has the most friction?

## 2. WARM-UP TASK: WHAT IS A FORCE?

A force is a push or a pull.

Complete these sentences:

- When you climb a rope, you ..... on the rope to get yourself up.
- When you jump off a platform, ..... pulls you back down to the ground.



NAME :

# HIGH ROPES CHALLENGE

OK, time to look at some of the safety equipment we'll come across at Nuclear Adventures and the forces we'll experience while on the high ropes course.

### 3. GRAVITY EXPLORATION

Gravity is the force that pulls objects towards the Earth.

#### Gravity investigation

Hold two objects (e.g., a pencil and a book).

Drop them at the same time.

Predict which will land first?

Why?.....

.....

.....

Result:.....

Why?.....

.....

.....

### 5. VOCABULARY BOX

Match each word to its definition:

- GRAVITY - FRICTION - FORCE - AIR RESISTANCE

- ..... - A push or pull.
- ..... - A force that pulls things towards Earth.
- ..... - A force that slows objects moving through air.
- ..... - A force between two surfaces that slows movement.

### 4. SAFETY SCIENCE

At the high ropes centre, equipment uses forces to keep you safe.

Match the item to its job:

A. Helps you grip the ropes using friction.



Rope

B. Holds your body securely and spreads the force.



Gloves

C. Connects you to the safety system.



Harness

### 6 AIR RESISTANCE CHALLENGE

When you zip-line or jump, the air pushes against you.

#### Paper Drop Test

Drop a flat sheet of paper.

Scrunch it into a ball and drop it again.

Questions:

Which one falls faster?

\_\_\_\_\_

Why?

\_\_\_\_\_



NAME :

### 7. DESIGN CHALLENGE

- Draw a high ropes course you might enjoy.
- Include at least three features (e.g., ladder, rope bridge, zip line).
- Label where the forces act (gravity, friction, air resistance, pushes/pulls).

# TEACHER NOTES



Science Focus: Forces – Gravity, Friction & Air Resistance

**Curriculum Link:**

*Pupils should identify the effects of air resistance, water resistance and friction that act between moving surfaces (Years 5 & 6 – Forces).*

## 1. Friction Investigation

Rub your hands together quickly - ☒ They get warmer

Why? Friction between your hands creates heat.

Friction Challenge

Which surface has the most friction? DEPENDS ON MATERIALS AT HAND

**Curriculum Link:**

*Identify the effects of friction acting between moving surfaces.*

*Take measurements, using a range of scientific equipment (Working Scientifically).*

## 2. Warm-Up Task: What Is a Force?

A force is a push or a pull.

When you climb a rope, you PULL on the rope to get yourself up.

When you jump off a platform, GRAVITY pulls you back down to the ground.

**Curriculum Link:**

*Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.*

## 3. Gravity Exploration

Gravity is the force that pulls objects towards the Earth.

Why? GRAVITY PULLS ALL OBJECTS DOWNWARDS, THOUGH AIR RESISTANCE AFFECTS SOME OBJECTS MORE THAN OTHERS.

**Curriculum Link:**

*Recognise that gravity acts on objects and pulls them towards the ground.*

*Plan different types of scientific enquiries to answer questions (Working Scientifically).*

## 4. Safety Science

Answers:

- Harness: B
- Rope: C
- Gloves: A

**Curriculum Link:**

*Recognise that some mechanisms (including pulleys) allow a smaller force to have a greater effect.*

*Apply knowledge of forces to real-world safety systems.*

## 5. Vocabulary Box - Match each word to its definition:

Answers

Force - A. A push or pull

Gravity - B. A force that pulls things towards Earth

Air Resistance - C. A force that slows objects moving through air

Friction - D. A force between two surfaces that slows movement

**Curriculum Link:**

*Use scientific vocabulary to describe and explain forces.*

*Develop accuracy in spelling scientific terms (English cross-curricular).*

## 6. Air Resistance Challenge

Paper Drop Test

Which one falls faster? SCRUNCHED PAPER

Why? LESS SURFACE AREA USING AIR RESISTANCE TO SLOW IT DOWN

**Curriculum Link:**

*Identify the effects of air resistance on a moving object.*

*Report and present findings from enquiries, including oral and written explanations (Working Scientifically).*

## 7. Design Challenge

**Curriculum Link:**

*Identify ways forces act at different points on a structure.*

*Use labelled diagrams to communicate scientific ideas (Working Scientifically).*