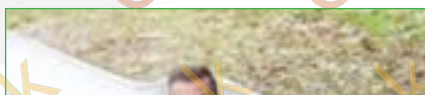Education Destination

ROBIN HILL COUNTRY PARK

Motion & Force at Robin Hill

Describing force and motion at the park!

Student Introduction

▶ Motion and acceleration can be measured at Robin Hill Country Park!

▶ Can you calculate acceleration?

TASK

✓ Enjoy the different activities at Robin Hill.
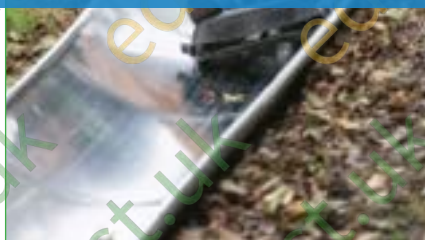
✓ Complete the tasks on page 1 and 2.

A C C E L E R A T I O N !

Accelerating Down the Toboggan Run!

Calculate the acceleration of different people sliding down the Toboggan

Background

» As you slide down the toboggan run your speed will increase, you will accelerate.

» **Acceleration** is the rate at which you change speed.

» To calculate acceleration you use the formula:

Acceleration (m/s²) = change in velocity (m/s) ÷ time taken for the change (s)

STEP 2 — Practise your calculations.

» Chris was stationary at the top of the toboggan run.

» His velocity at the end of the toboggan run was 8 m/s

» It took Chris 40 seconds to travel down the toboggan run from the top of the hill.

What was his acceleration?

acceleration (m/s²) = change in velocity (m/s) ÷ time taken for the change (s)

acceleration = 8 ÷ 40

acceleration = 0.2 m/s²

Q. It took Jessie 30 seconds to travel down the toboggan run.
She was stationary at the top of the toboggan run and her velocity was 10 m/s at the end.
Calculate her acceleration.

STEP 2

The table below shows information about some of the activities found at Robin Hill. Use this information to **calculate the acceleration** of the different objects

Activity	Velocity at start (m/s)	Velocity at end (m/s)	Time taken (s)	Calculation: Acceleration = change in velocity / time taken for change	Acceleration m/s²
Colossus	0	15	5		
Cows Express					
Children's	0	3	60		
Mill Billy Slide					
Pitch & Putt	0	4	2		

STEP 3

You can change the formula around to find a different value:

Time taken for change = change in velocity ÷ acceleration

The toboggan was stationary at the top of the hill and reached a maximum velocity of 15 m/s. The acceleration for this toboggan ride was 0.5 m/s²

What would be the time taken to travel down the toboggan run?
Show your working out. Don't forget to include the units.