

GRAPHS OF REAL-LIFE SITUATIONS

Students interpret a number of graphs representing distance, time and speed values relating to rides at THORPE PARK. Older and higher ability students go on to construct linear functions arising from ride data and plot corresponding graphs.

LEARNING OBJECTIVES (KS3)

Students should learn to:

- convert units of measure for speed, distance and time
- use (formulae) to calculate speed, distance and time
- interpret distance - time graphs representing real-life scenarios.

RESOURCES REQUIRED

- Rulers
- Pens and pencils
- Additional paper for notes and sketches
- Interactive whiteboard or projector to display graphs for class discussion
- Calculators

EXTENSION ACTIVITIES (KS3)

- As a class, brainstorm different real-life situations that could be easily represented in graph form.
- Higher ability students can complete activity 1 on Key Stage 4 worksheet 1. This requires them to sketch their own distance-time graph.
- On the day of your visit to THORPE PARK, ask students to sketch their own distance-time graphs for some of the rides that they go on.

EXTENSION ACTIVITIES (KS4)

- On the day of your visit to THORPE PARK, ask students to sketch their own speed-time graphs for some of the rides that they go on.
- When you are back in the classroom, display students' sketched graphs and ask the rest of the class to guess which ride is represented in each.
- Ask students to define the following terms: distance, time, speed, acceleration.

LEARNING OBJECTIVES (KS4)

Students should learn to:

- interpret speed-time graphs and other graphs representing real-life problems
- plot distance-time and speed-time graphs.



ANSWERS (KEY STAGE 3)

Activity 1

using the conversion factors on the worksheet.

- A** 2min 16s
- B** 0.85km
- C** 36.14 m/s
- D** 72km/h

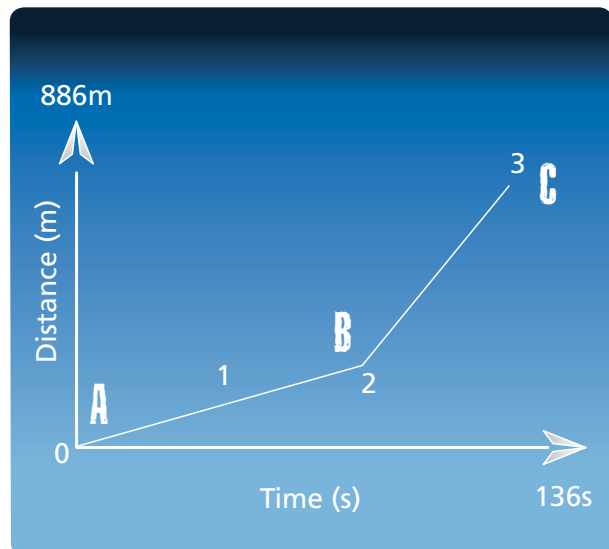
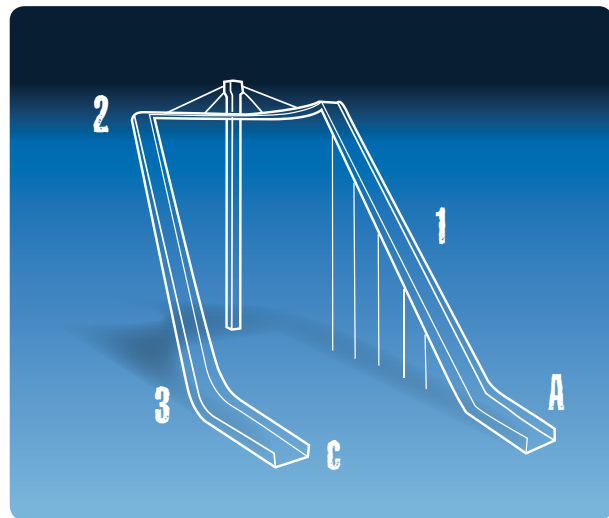
Activity 2

- A** 7.96 m/s
- B** 6.51 m/s
- C** 521.4 m
- D** 121s



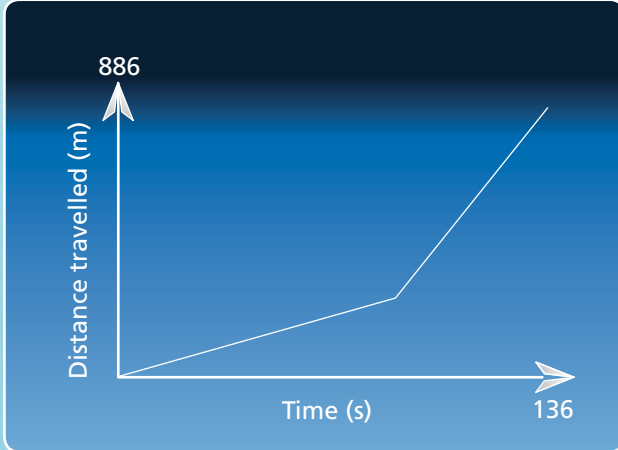
Activity 3

- A** B - C
- B** A - B or B - C
- C** See graph below. All graphs in this resource are sketch graphs. Discussion is needed with students as to the shape of the graph. Will changes happen instantaneously in real life? (No.) Would more precise graphs be straight lines? (No, there would be curves at starts and ends of sections.)

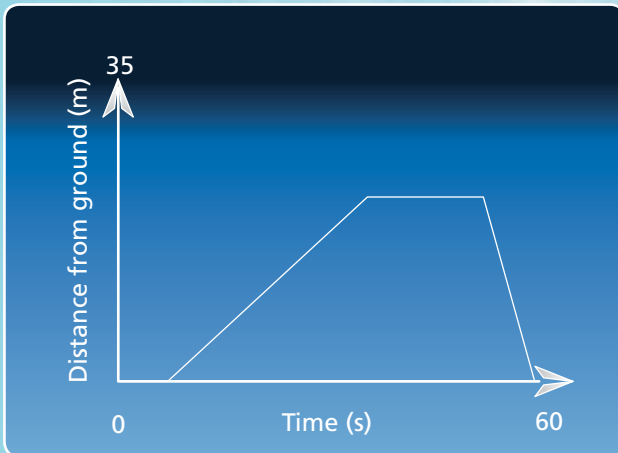


ANSWERS (KEY STAGE 4)

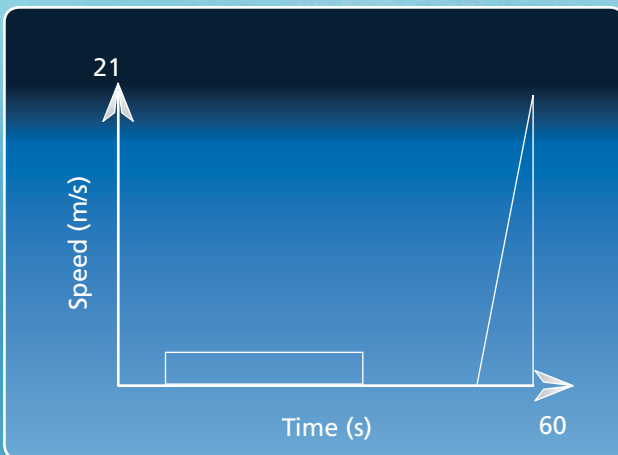
Activity 1*



Activity 2 a) Distance – time graph for Detonator



b) Speed – time graph for Detonator



As a simplified model, students can give vertical lines where we have used diagonals.

*All graphs are sketch graphs.

Activity 3

Discussion is needed with students over the straight lines shown in the graphs since changes in real life will not be instantaneous or necessarily at a constant rate.

- A** iii) **B** i) **C** ii) **D** iv)

