

# Maths for Formula One

## Learning Objectives:

- To be able to extract mathematical information from diagrams and line graphs.
- To recognise that maths skills are embedded in many aspects of work and life
- To calculate time, speed and distance accurately.
- To be able to convert units of measure and time.

## Starter

Split class into groups. Tell them that this lesson is all about Formula 1. Each group must list the maths skills needed by different groups of people:

- Formula 1 drivers
- Formula 1 commentators
- Formula 1 technical team (managers/pitstop staff)
- Formula 1 spectators

## Introduction

If you have internet access, play this YouTube video (a fraction over 3 minutes long). While students are watching get them note any other maths-related skills they spot.

<http://www.youtube.com/watch?v=3ogRH7WWO0s>

## Group work

Hand out copies of the worksheets (or project them on an IWB). Students to work in groups to answer the questions.

## Plenary

- What maths skills did students use to work out the answers?
- Which was the trickiest question and why?
- List three things you have learned today.

## Answers

1. 112 km      2. 1 960 seconds      3. 70 seconds      4. 2.5 m per second each second

5. a) 1.5 km per minute, b) 1 500 m per minute, c) 25m per second

6. 125m      7. 30m per second      8. 75m      9. 2km per minute

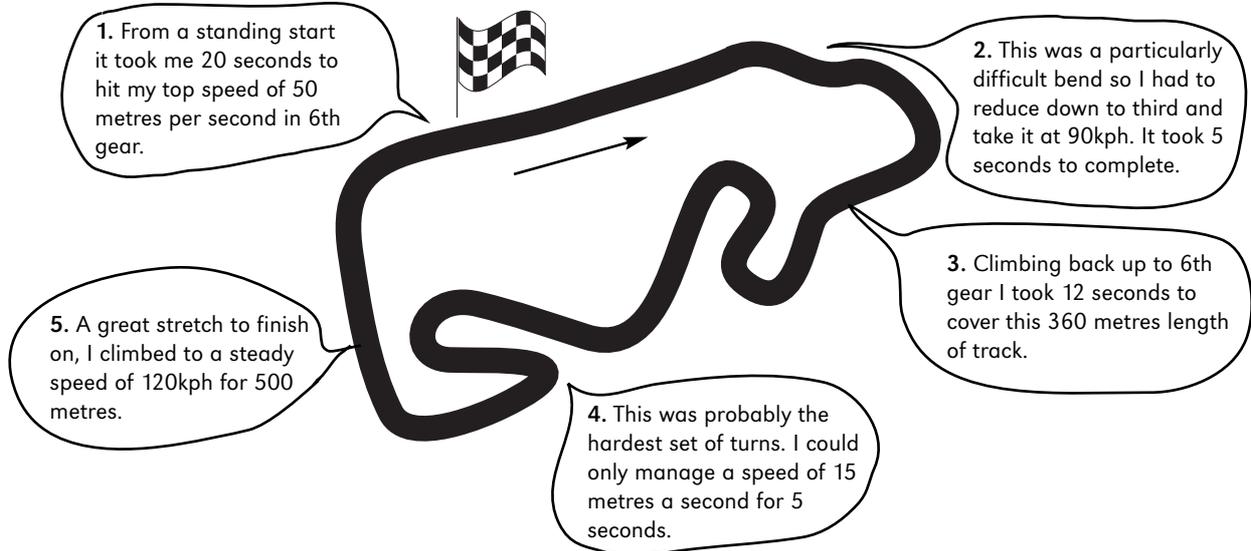
10. 0.5km      11. 15 seconds      12. a) 60 seconds      b) 65 seconds

13. A pit stop      14. a) 469 seconds      b) 493 seconds

# A tour around a racing track 1

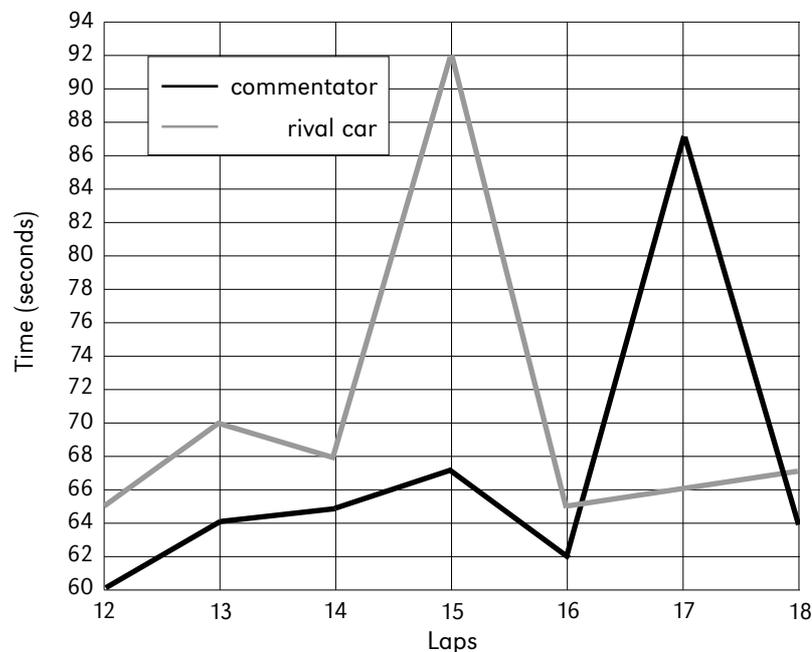
Use this information about a tour round a racing track to answer the questions on pages 44–45.

This diagram provides a commentary of a driver's experience of 1 lap of a 4km racing track:



The race lasted 28 laps and took the commentator 32 minutes 40 seconds to complete.

This chart shows the lap times of part of the race for the commentator and another competitor:



### Key measures:

Speed = distance ÷ time

Distance = speed × time

Time = distance ÷ speed

Acceleration = change in velocity ÷ time

# A tour around a racing track 2

## Acceleration example:

If a car took 10 seconds to change from a speed of 30km per hour to 80 km per hour the acceleration is:

$$80 - 30 = 50 \div 10 = 5 \text{ km per second each second .}$$

1. How long was the race in kilometres?
2. How many seconds did the commentator take to complete the race?
3. On average, how many seconds did the commentator take to complete a lap?
4. Work out the acceleration in Part 1 of the track.
5. For Part 2 convert the speed to:
  - a. kilometres per minute (i.e. how far the car will travel in a minute)
  - b. metres per minute
  - c. meters per second (i.e. how far the car will travel in a second).
6. Use your answer to question 5c to work out how many metres the commentator travelled in this section of the track.
7. What is the speed in metres per second in Part 3 of the lap?
8. How far did the commentator drive during Part 4?
9. For Part 5 convert the speed to kilometres per minute.
10. Convert the distance travelled in Part 5 to kilometres.
11. Using your answers to questions 9 and 10 work out how long Part 5 of the lap took in seconds.

# A tour around a racing track 3

12. Use the line graph to work out how long the fastest lap takes for:

a. the commentator.

b. the rival car.

13. Why do you think lap 15 was unusually long for the rival car and lap 17 was unusually long for the commentator?

14. How long did it take to complete the six laps for:

a. the commentator?

b. the rival car?

