

YEAR 09

Physics Homework

Revision of Forces and Speed

1. A racing car is traveling around a circuit that is 6.3 km long.
a) Over one lap of the track the average speed of the car was 52.5 m/s. Calculate how long it took the car to complete the lap **in minutes**.

..... minutes

- b) The horizontal forces that act on the racing car as it moves are the driving force and the drag.



Compare the sizes of the driving force and the drag when:

- i. The car is decelerating.
The driving force is
- ii. The car is accelerating.
The driving force is
- iii. The car is moving at a steady speed.
The driving force is

2. Mercury is the closest planet to the Sun.

a. i. Mercury is about 0.000006 light years from the Sun.

What is a light year?

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ii. How many seconds does it take light from the Sun to reach Mercury? Give your answer to the nearest second.

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(Hint: the speed of light is equal to 300,000 km/s)

b. An astronaut has a mass of 80 kg.

The gravitational field strength 'g' on Mercury is 3.7 N/kg.

Calculate the weight of the astronaut if he was standing on Mercury.

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