Driving reaction times

Aim To measure your reaction time as a 'driver' of a car

Equipment

Metre ruler, access to a calculator, access to the Internet

Method

1 Form groups of three.

2 Copy the table below into your workbooks.

3 Place a desk close to a wall, leaving a small gap between them. Place a chair on top.

4 One student holds the chair securely. Another (the 'driver') sits on it. The 'driver' places their right heel on the desk, their toes against the wall, in the position of a car accelerator.

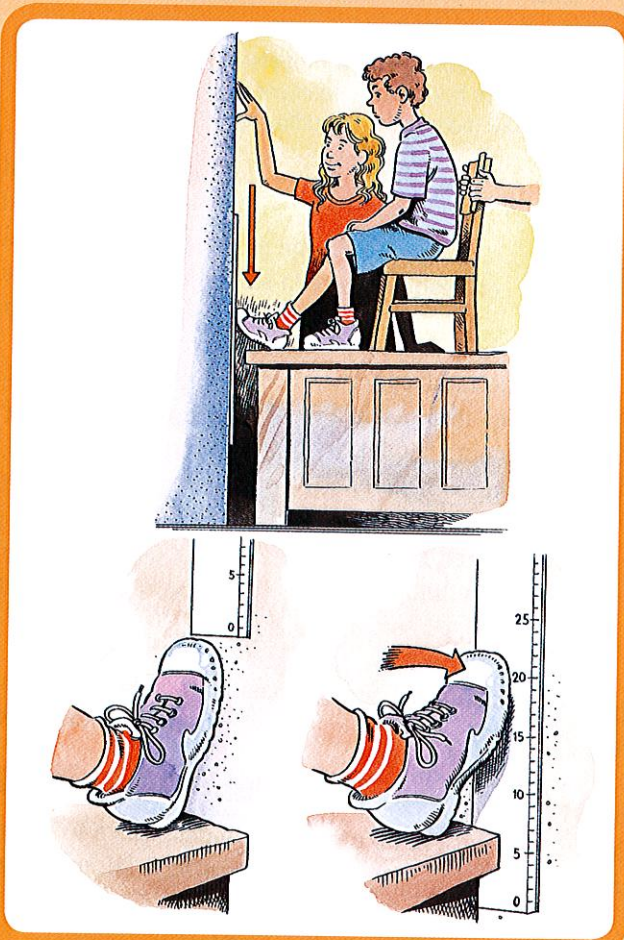| Without distractions			With distractions		
Ruler drops (cm)	Average drop (cm)	Average reaction time (s)	Ruler drops (cm)	Average ruler drop (cm)	Average reaction time (s)

5 The third student holds a metre ruler against the wall. This is the 'brake' pedal. Align the ruler so that the 'zero' is level with the top of the driver's toes.

6 Without warning, let the ruler go.

7 The driver must pivot their foot onto the ruler and stop it falling.

8 Read off the position of the toes now and enter the reading in the table.

9 Repeat at least three times. Each student must have a turn as 'driver'.

10 Repeat the test, but now distract the driver (touch their neck, tickle them etc.).

11 Use this formula and *your own* data to calculate *your* reaction time:

$$t = \sqrt{\frac{d}{490}}$$

where t = reaction time (s)

and d = average ruler drop (cm)

Check that you are doing the calculation correctly. If d = 10 cm the time should come out as 0.14 s. If not, find out what you are doing wrong with your calculator.

12 Copy the new table shown on the next page into your workbook.

Fig 5.1.16   Measuring reaction time