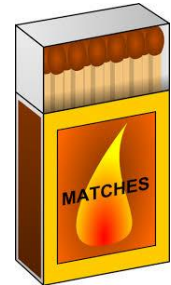
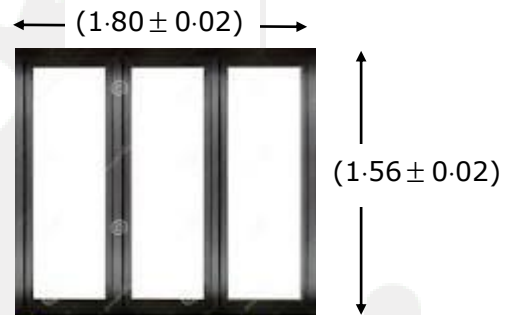


Calculators are permitted but working must be shown.**Essential knowledge:**

- Write down the minimum and maximum value for each statement.
(a) (120 ± 5) cm (b) (36.8 ± 0.4) °C (c) $30\text{mph} \pm 10\%$
- Write down the following in tolerance form.
(a) Max = 22° (b) Max = 3.4 cm
Min = 20° Min = 3.0 cm
- A matchmaking company sells them in boxes of 48 ± 3 matches. A random sample of boxes has their contents counted: 52, 47, 45, 46, 50, 43, 54, 51
How many of the boxes are out with company tolerance?

**Unit level:**

- A patio door frame has the dimensions shown in metres. Calculate the minimum and maximum areas of the door frame.
- John is planning to drive to Aberdeen. Because of heavy traffic and speed limiting cameras, he reckons he can average 45 ± 5 miles per hour. What is the difference between the fastest time and the slowest time, in minutes, if the distance to Aberdeen is 130 miles?
- Normal body temperature is between 36.1°C and 37.2°C . Write this in tolerance form.

**Assessment level:**

- A nursery is growing plants to be sold in a garden centre. The garden centre will refuse any batch if more than 15% of them are out with a tolerance of (7.1 ± 1.6) cm. Based on the sample shown, will this batch be accepted?

5.8	7.0	6.2
8.4	5.3	8.8
6.8	6.5	6.1
7.6	5.3	6.0
8.5	7.6	6.3
6.7	7.4	5.6

- A caliper measures the diameter of a walnut as 17.5mm. If the caliper has a tolerance of ± 2 mm, what is the percentage error for the diameter of this walnut? **Round your answer to 3 significant figures.**

