

Step 1 Understanding the Problem

From the question and diagram,

- Number of boxes on weighing scale =
- Length of weighing scale needle =
- Mass of five boxes =
- Total mass measured on the scale =
- $\pi = \frac{22}{7}$

Question (a):

Step 2 Devising a plan

- Determine the by using the ratio of mass of to total mass measured on the scale.
- Then, using the angle, calculate the by using the formula:

$$\text{Area of sector} = \frac{\text{}}{\text{}} \times \pi \times \text{}^2$$

Step 3 Carrying out the plan

$$\begin{aligned} \text{Angle subtended by the needle} &= \frac{\text{}}{\text{}} \times 360^\circ \\ &= \text{}^\circ \end{aligned}$$

$$\begin{aligned} \text{Area of sector subtended by the needle} &= \frac{\text{}}{\text{}} \times \text{} \times \text{}^2 \\ &= \text{} \text{ cm}^2 \end{aligned}$$

Question (b):

Step 2

Devising a plan

- Determine the angle formed by eight boxes:
 - Calculate the mass of
 - Calculate the mass of
 - Determine the angle subtended by using the ratio of to 6 kg.
- Determine the formed using the angle obtained and the formula:

$$\text{Length of arc} = \frac{\text{}}{\text{}} \times \text{$$

Step 3

Carrying out the plan

$$\begin{aligned} \text{Mass of one box} &= \text{} \div \text{} \\ &= \text{} \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Mass of eight boxes} &= 8 \times \text{} \\ &= \text{} \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Angle subtended by the needle} &= \frac{\text{}}{\text{}} \times 360^\circ \\ &= \text{}^\circ \end{aligned}$$

$$\begin{aligned} \text{Minor arc length formed} &= \frac{\text{}}{\text{}} \times 2 \times \text{} \times \text{} \\ &= \text{} \text{ cm} \end{aligned}$$

Step 4

Look back and Reflect

Have you rechecked all your calculation?