Grade 7

Length

Example 1

Convert the following:
(a) 3.5 km to m
(b) 2 575 mm to m
(c) $2\frac{1}{2}$ m to cm

Solution

(a) 1 km = 1 000 m
   To convert km to m, we multiply by 1 000.
   Therefore, 3.5 km = (3.5 × 1 000) m = 3 500 m.

(b) 1 m = 1 000 mm

   To convert mm to m, we divide by 1 000.
   Therefore, 2 575 mm = ($\frac{2\ 575}{1\ 000}$) m = 2.575 m.

(c) 1 m = 100 cm

   To convert m to cm, we multiply by 100.
   Therefore, $2\frac{1}{2}$ m = ($\frac{5}{2}$ × 100) cm = 250 cm.

Example 2

Fill in the blanks using = (equal), < (less than), > (greater than).
(a) 0.1 m_____ 10 cm   (b) 0.25 cm_____ 25 mm

Solution

(a) 1 m = 100 cm
   So 0.1 m = (0.1 × 100) cm = 10 cm
   Therefore 0.1 m = 10 cm

(b) 1 cm = 10 mm
   So 0.25 cm = (0.25 × 10) mm = 2.5 mm
   Therefore 0.25 cm < 25 mm

Arithmetic operations involving length

Example 1

Evaluate 8 km + 300 m − 800 m, giving your answer in km.

Solution

We first convert 300 m and 800 m into km.

$300 \text{ m} = (\frac{300}{1\ 000}) \text{ km} = 0.3 \text{ km}$ $800 \text{ m} = (\frac{800}{1\ 000}) \text{ km} = 0.8 \text{ km}$

We then perform the operations starting from left to right, that is, addition followed by subtraction.

8 km + 300 m - 800 m = 8 km + 0.3 km - 0.8 km = 7.5 km

Example 2

Evaluate 0.5 km − 300 m + 70 cm, giving your answer in m.

Solution

We first convert 0.5 km into m and 70 cm into m.
We then perform the operations starting from left to right, that is, subtraction
followed by addition.

$0.5 \text{ km} = (0.5 \times 1\ 000) \text{ m} = 500 \text{ m}$ and $70 \text{ cm} = (\frac{70}{100}) \text{ m} = 0.7 \text{ m}$

$$0.5 \text{ km} - 300 \text{ m} + 70 \text{ cm} = 500 \text{ m} - 300 \text{ m} + 0.7 \text{ m}$$
$$= 200 \text{ m} + 0.7 \text{ m}$$
$$= 200.7 \text{ m}$$

Word problems involving length

Example

Hemisha walks a distance of 670 m from home to reach the bus stop. She then takes a bus
and travels 10 km 450 m. If the market is 15 km away from her house, find the distance left to
reach the market. Give your answer in km.

Solution

We first convert 670 m and 10 km 450 m into km.
670 m = (670 ÷ 1 000) km = 0.67 km
10 km 450 m = 10 km + (450 ÷ 1 000) km = (10 + 0.45) km = 10.45 km
So, the total distance covered by Hemisha by bus and on foot = (10.45 + 0.67) km = 11.12 km
Therefore, distance left to cover to reach the market = 15 km − 11.12 km = 3.88 km

1. Circle the correct answer.

(a) Convert 4.55 km to m.

    A. 455 m   B. 4 555 m   C. 4 550 m   D. 455 m

(b) 5 cm 7 mm + 8 cm 4 mm =

    A. 13 cm 74 mm   B. 14 cm 01 mm   C. 13 m 11 mm   D. 14 m 10 mm

(c) John's bedroom is 12 m long. Yash's bedroom is 4 m longer than John's while Akhil's bedroom is 5 m shorter than Yash's bedroom. What is the length of Akhil's bedroom?

    A. 16 m   B. 17 m   C. 13 m   D. 11 m

(d) A lorry is 12 m 65 cm long and when a trailer is attached to it, the total length is 20 m. The length of the trailer is

    A. 32 m 65 cm   B. 7 m 35 cm   C. 8 m 35 cm   D. 7 m 65 cm

(e) Carina bought 23 m 75 cm of ribbon. She cuts 10 pieces each of 2 m 30 cm from it. Find the length of ribbon left.

    A. 20 m 30 cm   B. 3 m 75 cm   C. 3 m 45 cm   D. 75 cm

2. Reema bought 9 m 75 cm of metallic fencing. She used 6 m 95 cm from it to make an enclosure. Find the length of metallic fencing left in metres.

3. Kiren's house is 7 km 300 m away from school and Anne's house is 11 km 432 m away from school. Whose house is further from the school and by how much?

4. The total length of three sticks is 18.27 m. If the lengths of two sticks are 4 m 28 cm and 7 m 46 cm, calculate the length of the third stick.

5. Kartik's pencil box is 16 cm long. Hanshika's pencil box is 4 cm shorter than Kartik's. Sumayya's pencil box is 2 cm longer than Kartik's. What is the difference between the longest and shortest pencil box?