

Metric Measures

Important Points

Measurement of Length

- 1 The basic unit of length is metre .
- 2 We measure smaller object using a smaller unit known as centimeter.
- 3 For longer distance we use a bigger unit known as kilometre
4. In short we write centimetre as cm and Kilometre is as km.
- 5 The most commonly used metric measure of length are millimetre(mm) , centimetre (cm) ,metre (m) and kilometre (km) .
6. $1 \text{ km} = 1000\text{m}$
 $1\text{m} = 100 \text{ cm}$
 $1 \text{ cm} = 10 \text{ mm}$

Measurement of weight

- 1 The basic unit of weight is gram (g) .
- 2 The weight of smaller objects is expressed in milligram
- 3 The weight of heavy objects are expressed in kilogram (kg) .
- 4 The most commonly used metric measure of weight is milligram (mg) gram (g) and kilogram (kg) .
- 5 $1 \text{ kg} = 1000 \text{ g}$
 $1 \text{ g} = 1000 \text{ mg}$

Measurement of capacity

- 1 The standard unit of capacity is litre .
 - 2 The amount of liquid in a container is measured by its volume .
 - 3 To measure large amount of liquid we use kilo litre and litre .
 - 4 To measure smaller amount of liquid we use ml .
 - 5 In short we write kilolitres as (kl) ,litres as (l) and millilitre as (ml) .
- $1 \text{ kl} = 1000 \text{ l}$
 $1 \text{ l} = 1000 \text{ ml}$

Conversions

To convert a bigger unit into a smaller unit ,we multiply .

To convert a smaller unit into bigger unit ,we divide .

Exercise-1 Do it in your book

Exercise-2

1. (a) $7 \text{ cm} = 7 \times 10 \text{ mm} = 70 \text{ mm}$
(b) $15 \text{ cm } 3 \text{ mm} = (15 \times 10) \text{ mm} + 3 \text{ mm} = 150 \text{ mm} + 3 \text{ mm} = 153$
(c) $1.5 \text{ cm} = 1.5 \times 10 \text{ mm} = 15 \text{ mm}$
(d) $7 \text{ m } 4 \text{ cm} = 7 \times 1000 \text{ mm} + 4 \times 10 \text{ mm} = 7000 \text{ mm} + 40 \text{ mm}$
 $= 7040 \text{ mm}$
(e) $8 \text{ dm } 4 \text{ cm } 2 \text{ mm} = 8 \times 100 \text{ mm} + 4 \times 10 \text{ mm} + 2 \text{ mm}$
 $= 800 \text{ mm} + 40 \text{ mm} + 2 \text{ mm} = 842 \text{ mm}$
practice (f) in rough copy
2. (a) $12 \text{ dm} = 12 \times 10 \text{ cm} = 120 \text{ cm}$
(b) $15.8 \text{ m} = 15.8 \times 100 \text{ cm} = 1580 \text{ cm}$
(c) $5 \text{ km} = 5 \times 100000 \text{ cm} = 500000 \text{ cm}$
(d) $4 \text{ m } 3 \text{ dm } 2 \text{ cm} = 4 \times 100 \text{ cm} + 3 \times 10 \text{ cm} + 2 \text{ cm}$
 $= 400 \text{ cm} + 30 \text{ cm} + 2 \text{ cm} = 432 \text{ cm}$
(e) $13 \text{ dm } 5 \text{ cm} = 13 \times 10 \text{ cm} + 5 \text{ cm} = 130 \text{ cm} + 5 \text{ cm} = 135 \text{ cm}$
(f) $6 \text{ km } 42 \text{ m } 12 \text{ cm} = 6 \times 100000 \text{ cm} + 42 \times 100 \text{ cm} + 12 \text{ cm}$
 $= 600000 \text{ cm} + 4200 \text{ cm} + 12 \text{ cm} = 604212 \text{ cm}$
3. (a) $7 \text{ km} = 7 \times 1000 \text{ m} = 7000 \text{ m}$
(b) $42.65 \text{ km} = 42.65 \times 1000 \text{ m} = 42650 \text{ m}$
(c) $9.52 \text{ km} = 9.52 \times 1000 \text{ m} = 9520 \text{ m}$
(d) $3 \text{ km } 255 \text{ m} = 3 \times 1000 \text{ m} + 255 \text{ m} = 3000 \text{ m} + 255 \text{ m} = 3255 \text{ m}$
practice (e) and (f) in rough copy
4. (a) $6 \text{ m} = 6 \times 10 \text{ dm} = 60 \text{ dm}$
(b) $3.8 \text{ m} = 3.8 \times 10 \text{ dm} = 38 \text{ dm}$
(c) $17.3 \text{ m} = 17.3 \times 10 \text{ dm} = 173 \text{ dm}$
(d) $7 \text{ m } 4 \text{ dm} = 7 \times 10 \text{ dm} + 4 \text{ dm} = 70 \text{ dm} + 4 \text{ dm} = 74 \text{ dm}$
(e) $3 \text{ km } 4 \text{ m} = 3 \times 10000 \text{ dm} + 4 \times 10 \text{ dm} = 30000 \text{ dm} + 40 \text{ dm}$
 $= 30040 \text{ dm}$

Exercise-3

1. 50 mm = $(50 \div 10)$ cm = 5 cm
2. 142 mm = $(142 \div 10)$ cm = 14 cm 2 mm
3. 625 cm = $(625 \div 100)$ m = 6 m 25 cm
4. 1000 mm = $(1000 \div 10)$ cm = 100 cm
5. 921 dm = $(921 \div 10)$ m = 92 m 1 dm
6. 1000 dm = $(1000 \div 10)$ m = 100 m
7. 8000 m = $(8000 \div 1000)$ km = 8 km
8. 9257 m = $(9257 \div 1000)$ km = 9 km 257 m

practice 4,6 and 9 in rough copy

Exercise-4

1. (a) 12 kg = (12×1000) g = 12000 g
(b) 7 kg 256 g = $(7 \times 1000 + 256)$ g = $(7000 + 256)$ g = 7256 g
2. (a) 19 g = (19×1000) mg = 19000 mg
(b) 25 g 25 mg = $(25 \times 1000 + 25)$ mg = $(25000 + 25)$ mg = 25025 mg

practice (c) in rough copy

practice (c) in rough copy

3. (a) 2387 g = $(2387 \div 1000)$ kg = 2 kg 387 g

practice (b) and (c)

4. (a) 4200 mg = $(4200 \div 1000)$ g = 4 g 200 mg
(b) 3255 mg = $(3255 \div 1000)$ g = 3 g 255 mg

practice (c) in rough copy

Exercise-5

1. (a) $15 \text{ kl} = (15 \times 1000) \ell = 15000 \ell$

(b) $8 \text{ kl } 8 \ell = (8 \times 1000 + 8) \ell = (8000 + 8) \ell = 8008 \ell$

2. (a) $28 \ell = (28 \times 1000) \text{ ml} = 28000 \text{ ml}$

(b) $7 \ell \ 270 \text{ ml} = (7 \times 1000 + 270) \text{ ml} = (7000 + 270) \text{ ml} = 7270 \text{ ml}$

practice (c) in rough copy

3. (a) $62000 \ell = (62000 \div 1000) \text{ kl} = 62 \text{ kl}$

(b) $7280 \ell = (7280 \div 1000) \text{ kl} = 7 \text{ kl } 280 \ell$

practice (c) in copy

4. (a) $2534 \text{ ml} = (2534 \div 1000) \ell = 2 \ell \ 534 \text{ ml}$

(b) $90508 \text{ ml} = (90508 \div 1000) \ell = 90 \ell \ 508 \text{ ml}$

(c) $345678 \text{ ml} = (345678 \div 1000) \ell = 345 \ell \ 678 \text{ ml}$

Exercise-6

1. (a) $15\text{ m } 25\text{ cm} + 8\text{ m } 65\text{ cm}$
 $= 23\text{ m } 90\text{ cm}$

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 15 \quad 25 \\ + 8 \quad 65 \\ \hline 23 \quad 90 \end{array}$$

(c) $42\text{ km } 175\text{ m} + 69\text{ km } 675\text{ m}$
 $= 111\text{ km } 850\text{ m}$

$$\begin{array}{r} \text{km} \quad \text{m} \\ 42 \quad 175 \\ + 69 \quad 675 \\ \hline 111 \quad 850 \end{array}$$

(d) $8\text{ l } 455\text{ ml} + 16\text{ l } 285\text{ ml}$
 $= 24\text{ l } 740\text{ ml}$

$$\begin{array}{r} \text{l} \quad \text{ml} \\ 8 \quad 455 \\ + 16 \quad 285 \\ \hline 24 \quad 740 \end{array}$$

(f) $33\text{ l } 333\text{ ml} + 66\text{ l } 666\text{ ml}$
 $= 99\text{ l } 999\text{ ml}$

$$\begin{array}{r} \text{l} \quad \text{ml} \\ 33 \quad 333 \\ + 66 \quad 666 \\ \hline 99 \quad 999 \end{array}$$

practice (b) and (e) in rough copy

(g) $128 \text{ km } 256 \text{ m} + 64 \text{ km } 128 \text{ m}$
 $= 192 \text{ km } 384 \text{ m}$

$$\begin{array}{r} \text{km} \quad \text{m} \\ 128 \quad 256 \\ + 64 \quad 128 \\ \hline 192 \quad 384 \end{array}$$

(h) $85 \text{ m } 67 \text{ cm} + 37 \text{ m } 27 \text{ cm}$
 $= 122 \text{ m } 94 \text{ cm}$

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 85 \quad 67 \\ + 37 \quad 27 \\ \hline 122 \quad 94 \end{array}$$

2. (a) $32 \text{ kg } 100 \text{ g} - 17 \text{ kg } 400 \text{ g}$
 $= 14 \text{ kg } 700 \text{ g}$

$$\begin{array}{r} \text{kg} \quad \text{g} \\ \textcircled{31} \quad \textcircled{1100} \\ ~~32~~ \quad ~~100~~ \\ - 17 \quad 400 \\ \hline 14 \quad 700 \end{array}$$

(b) $10 \text{ l } 250 \text{ ml} - 5 \text{ l } 650 \text{ ml}$
 $= 4 \text{ l } 600 \text{ ml}$

$$\begin{array}{r} \text{l} \quad \text{ml} \\ \textcircled{9} \quad \textcircled{1250} \\ ~~10~~ \quad ~~250~~ \\ - 5 \quad 650 \\ \hline 4 \quad 600 \end{array}$$

(d) $27 \text{ m } 40 \text{ cm} - 19 \text{ m } 25 \text{ cm}$
 $= 8 \text{ m } 15 \text{ cm}$

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 27 \quad 40 \\ - 19 \quad 25 \\ \hline 8 \quad 15 \end{array}$$

(e) $81 \text{ kg } 350 \text{ g} - 73 \text{ kg } 450 \text{ g}$
 $= 7 \text{ kg } 900 \text{ g}$

$$\begin{array}{r} \text{kg} \quad \text{g} \\ \textcircled{80} \quad \textcircled{1350} \\ ~~81~~ \quad ~~350~~ \\ - 73 \quad 450 \\ \hline 7 \quad 900 \end{array}$$

(f) $88 \text{ l } 672 \text{ ml} - 74 \text{ l } 900 \text{ ml}$
 $= 13 \text{ l } 772 \text{ ml}$

$$\begin{array}{r} \text{l} \quad \text{ml} \\ \textcircled{87} \quad \textcircled{1672} \\ ~~88~~ \quad ~~672~~ \\ - 74 \quad 900 \\ \hline 13 \quad 772 \end{array}$$

(g) $92 \text{ m } 66 \text{ cm} - 88 \text{ m } 46 \text{ cm}$
 $= 4 \text{ m } 20 \text{ cm}$

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 92 \quad 66 \\ - 88 \quad 46 \\ \hline 4 \quad 20 \end{array}$$

practice (c) and (h) in rough copy

Q 3 Shilpa bought 2 l 250 ml milk and Mamta bought 4l 450 ml milk .

How much milk did they buy altogether ?

Q4. A pack of juice contain 2 l 200ml of juice .Rahul

drank 750 ml of juice . How much juice is left in the pack

Q5 My mother purchased 2kilogram 400 gram potatoes and 1 kg 550 gram tomatoes .

How much vegetables did she buy in total ?

3. Total quantity of milk = 2 l 250 ml + 4 l 450 ml	$\begin{array}{r} \text{l} \quad \text{ml} \\ 2 \quad 250 \\ + 4 \quad 450 \\ \hline 6 \quad 700 \end{array}$
$= 6 \text{ l } 700 \text{ ml}$	
4. Quantity of juice = 2 l 200 ml	
Quantity of juice drank by Rahul = 750 ml	
\therefore Quantity of juice left in the pack = 2 l 200 ml - 750 ml	
$= 2200 \text{ ml} - 750 \text{ ml}$	
$= 1450 \text{ ml} = 1 \text{ l } 450 \text{ ml}$	
5. Total weight of vegetables bought = 2 kg 400 g + 1 kg 550 g	
$= 3 \text{ kg } 950 \text{ g}$	

Q 6 A shopkeeper bought 9 kg 500 gram apples to sell he sold 4 kg 750 grams during the day .How many apples are left with hiim ?

Q7 Jeet travelled 5 km 250 by car ,3 km 450 km by bus and walked 600 m to reach the station. How much time did he travel in all ?

6. Weight of apples bought by the shopkeeper = 9 kg 500 g
 Weight of apples sold = 4 kg 750 g

$$\begin{array}{r} \text{kg} \quad \text{g} \\ 9 \quad 500 \\ - 4 \quad 750 \\ \hline 4 \quad 750 \end{array}$$

∴ Weight of apples left with the shopkeeper
 = 9 kg 500 g - 4 kg 750 g
 = 4 kg 750 g

7. Total distance travelled by Jeet = 5 km 250 m + 3 km 450 m + 600 m
 = 9 km 300 m

$$\begin{array}{r} \text{km} \quad \text{m} \\ 5 \quad 250 \\ + 3 \quad 450 \\ + 0 \quad 600 \\ \hline 9 \quad 300 \end{array}$$

5 / 11

So, total distance travelled by Jeet is 9 km 300 m.

Q 8. Ritu bought 32m of red ribbon . She used 18 m 75 cm in a dress .How much ribbon is left ?

Q 9 The weight of a watermelon is 3 kg 525 g and the weight of a papaya is 2 kg 750 g . Which fruit is heavier and by how much ?

8. Length of the ribbon bought by Ritu = 32 m
 Length of the ribbon used = 18 m 75 cm

$$\begin{array}{r} \text{m} \quad \text{cm} \\ 32 \quad 00 \\ - 18 \quad 75 \\ \hline 13 \quad 25 \end{array}$$

∴ Length of the ribbon left = 32 m - 18 m 75 cm
 = 13 m 25 cm

So, length of the ribbon left with Ritu is 13 m 25 cm.

9. The weight of a watermelon = 3 kg 525 g
 The weight of a papaya = 2 kg 750 g

$$\begin{array}{r} \text{kg} \quad \text{g} \\ 3 \quad 525 \\ - 2 \quad 750 \\ \hline 0 \quad 775 \end{array}$$

Difference in weights = 3 kg 525 g - 2 kg 750 g
 = 775 g

So, watermelon is heavier than papaya by 775 g.

Exercise-7

1. (a) m cm

$$\begin{array}{r} \textcircled{2} \\ 50 \text{ } 80 \\ \times \quad 3 \\ \hline 152 \text{ } 40 \end{array}$$

$$50 \text{ m } 80 \text{ cm} \times 3 = 152 \text{ m } 40 \text{ cm}$$

(b) kg g

$$\begin{array}{r} \textcircled{2} \textcircled{6} \\ 4 \text{ } 290 \\ \times \quad 7 \\ \hline 30 \text{ } 030 \end{array}$$

$$4 \text{ kg } 290 \text{ g} \times 7 = 30 \text{ kg } 30 \text{ g}$$

(c) km m

$$\begin{array}{r} \textcircled{1} \textcircled{1} \\ 9 \text{ } 120 \\ \times \quad 9 \\ \hline 82 \text{ } 080 \end{array}$$

$$9 \text{ km } 120 \text{ m} \times 9 = 82 \text{ km } 80 \text{ m}$$

(d) l ml

$$\begin{array}{r} \textcircled{1} \textcircled{1} \textcircled{7} \\ 12 \text{ } 190 \\ \times \quad 8 \\ \hline 97 \text{ } 520 \end{array}$$

$$12 \text{ l } 190 \text{ ml} \times 8 = 97 \text{ l } 520 \text{ ml}$$

(e) kg g

$$\begin{array}{r} \textcircled{1} \textcircled{1} \\ 13 \text{ } 113 \\ \times \quad 6 \\ \hline 78 \text{ } 678 \end{array}$$

$$13 \text{ kg } 113 \text{ g} \times 6 = 78 \text{ kg } 678 \text{ g}$$

(f) kg g

$$\begin{array}{r} \textcircled{2} \textcircled{1} \textcircled{4} \\ 14 \text{ } 290 \\ \times \quad 5 \\ \hline 71 \text{ } 450 \end{array}$$

$$14 \text{ kg } 290 \text{ g} \times 5 = 71 \text{ kg } 450 \text{ g}$$

2. (a) Converting 89 m 84 cm into cm.

$$89 \text{ m } 84 \text{ cm} = (8900 + 84) \text{ cm} = 8984 \text{ cm}$$

Now divide 8984 cm by 8.

$$8984 \text{ cm} \div 8 = 1123 \text{ cm}$$

Now converting it into m.

$$1123 \text{ cm} = (1123 \div 100) \text{ m} = 11 \text{ m } 23 \text{ cm}$$

$$\text{Thus, } 89 \text{ m } 84 \text{ cm} \div 8 = 11 \text{ m } 23 \text{ cm}$$

$$\begin{array}{r} 1123 \\ 8 \overline{) 8984} \\ \underline{-8} \\ 09 \\ \underline{-8} \\ 18 \\ \underline{-16} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

(b) Converting 17 kg 983 g into g.

$$17 \text{ kg } 983 \text{ g} = (17000 + 983) \text{ g} = 17983 \text{ g}$$

Now, divide 17983 g by 7.

$$17983 \text{ g} \div 7 = 2569 \text{ g}$$

Now converting it into kg.

$$2569 \text{ g} = (2569 \div 1000) \text{ kg} = 2 \text{ kg } 569 \text{ g}$$

$$\text{Thus, } 17 \text{ kg } 983 \text{ g} \div 7 = 2 \text{ kg } 569 \text{ g}$$

$$\begin{array}{r} 2569 \\ 7 \overline{) 17983} \\ \underline{-14} \\ 39 \\ \underline{-35} \\ 48 \\ \underline{-42} \\ 63 \\ \underline{-63} \\ 0 \end{array}$$

(c) Converting 36 l 504 ml into ml.

$$36 \text{ l } 504 \text{ ml} = (36000 + 504) \text{ ml} = 36504 \text{ ml}$$

Now, divide 36504 ml by 8.

$$36504 \text{ ml} \div 8 = 4563 \text{ ml}$$

Now, converting it into l.

$$4563 \text{ ml} = (4563 \div 1000) \text{ l} = 4 \text{ l } 563 \text{ ml}$$

$$\text{Thus, } 36 \text{ l } 504 \text{ ml} \div 8 = 4 \text{ l } 563 \text{ ml}$$

$$\begin{array}{r} 4563 \\ 8 \overline{) 36504} \\ \underline{-32} \\ 45 \\ \underline{-40} \\ 50 \\ \underline{-48} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

(d) Converting 60 cm 8 mm into mm.

$$60 \text{ cm } 8 \text{ mm} = (60 \times 10 + 8) \text{ mm} = (600 + 8) \text{ mm} = 608 \text{ mm}$$

Now, divide 608 mm by 2.

$$608 \text{ mm} \div 2 = 304 \text{ mm}$$

Now converting it into cm.

$$304 \text{ mm} = (304 \div 10) \text{ cm} = 30 \text{ cm } 4 \text{ mm}$$

$$\text{Thus, } 60 \text{ cm } 8 \text{ mm} \div 2 = 30 \text{ cm } 4 \text{ mm}$$

$$\begin{array}{r} 304 \\ 2 \overline{) 608} \\ \underline{-6} \\ 008 \\ \underline{-8} \\ 0 \end{array}$$

Practice e, f. in rough copy .

Q 3 Ruchi travelled 149 km 415m in a week .How much distance does she travel in a day

Q 4 . A bag of rice weighs 7 kg 690 g . What will be the total weight of 7 such bags ?

Q 5 14 containers can hold 36l 218 ml of oil . What is a capacity of one container ?

3. Distance travelled by Ruchi in a week

$$= 149 \text{ km } 415 \text{ m}$$

Distance travelled by Ruchi in 1 day

$$= 149 \text{ km } 415 \text{ m} \div 7$$

$$= 149415 \text{ m} \div 7$$

$$= 21345 \text{ m}$$

$$= 21 \text{ km } 345 \text{ m}$$

So, Ruchi travelled 21 km 345 m distance in a day.

4. Weight of one bag of rice = 7 kg 690 g

Total weight of 7 bags of rice

$$= 7 \text{ kg } 690 \text{ g} \times 7$$

$$= 53 \text{ kg } 830 \text{ g}$$

So, the total weight of 7 bags of rice will be 53 kg 830 g

5. Total capacity of 14 containers

$$= 36 \text{ l } 218 \text{ ml} \quad 1.$$

Capacity of one container = $36 \text{ l } 218 \text{ ml} \div 14$

$$= 36218 \text{ ml} \div 14$$

$$= 2587 \text{ ml}$$

$$= 2 \text{ l } 587 \text{ ml}$$

So, the capacity of one container is 2l 587 ml.

