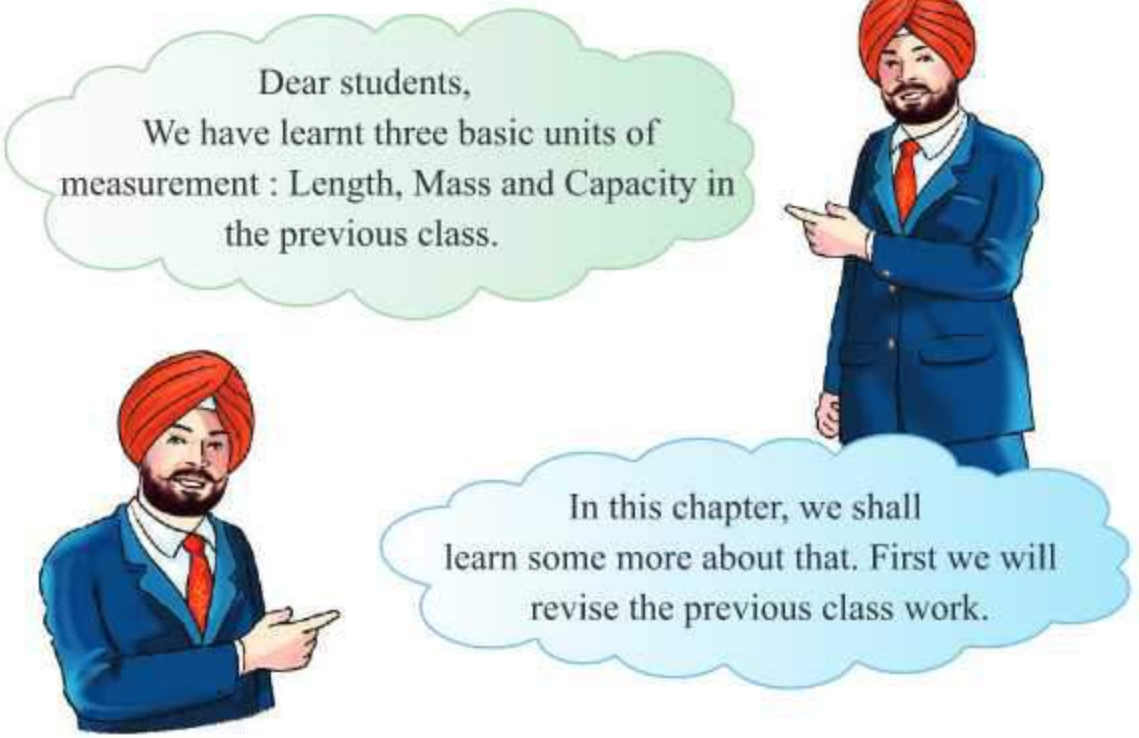
Chapter -6

Measurement

Objectives :

1. To give knowledge about standard units of Length, Mass and Capacity.
2. To make them able to use Length, Mass and Capacity in daily life activities.
3. To develop intellectual faculty of students.
4. To enable them to do four fundamentals operations on length, mass and capacity.
5. To enable them to find time gaps / interval in simple situation.
6. To prepare them for competitive exams.



Recap

1. **How many pieces of 2 m can be cut from a 30 m long rope ? How many times will you cut the rope ?**

2. **Observe the following table and fill ups :**

Centimeters	200		400	500	300	600		800	
Meters	2	6			3		4		9

Kilograms	3			5		2	7	8	4
Grams	3000	6000	4000		8000				

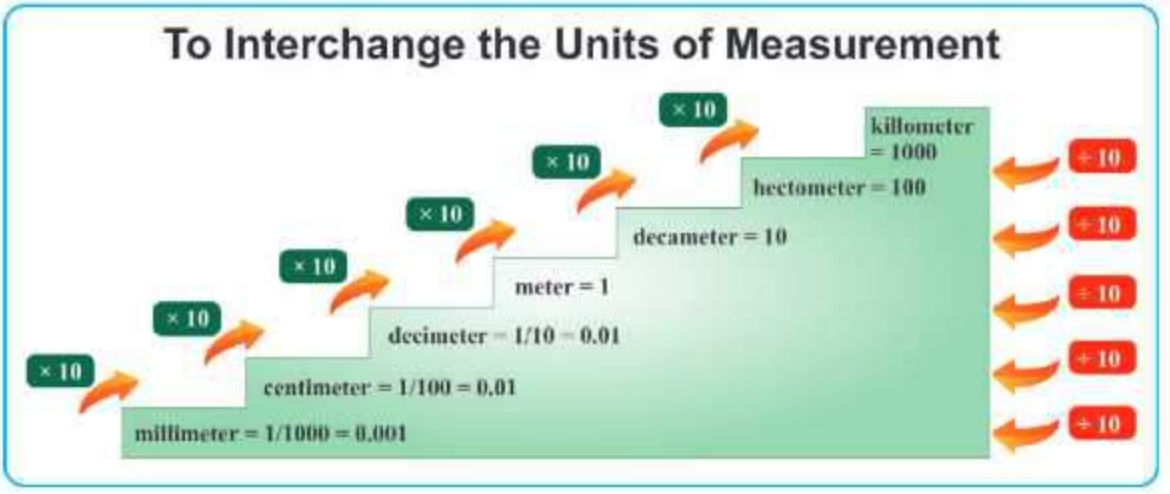
Mililitre	4000			7000			2000		5000
Litre	4	3	14		8	23		9	

6.1 Length :

We have learnt about some standard unit of measurement 'length.' Now we will learn about its all standard units.

kilometer (km)	hectometer (hm)	decameter (dam)	meter (m)	decimeter (dm)	centimeter (cm)	millimeter (mm)
1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

- Look at the following diagram carefully that shows how lengthy units are converted into small units and small units are converted into lenghty units.



Learn this with following wording :

Kal Happy Dakiye Nu Mehngi

Kilometer Hectometer Decameter Meter

Dress Costly Mili

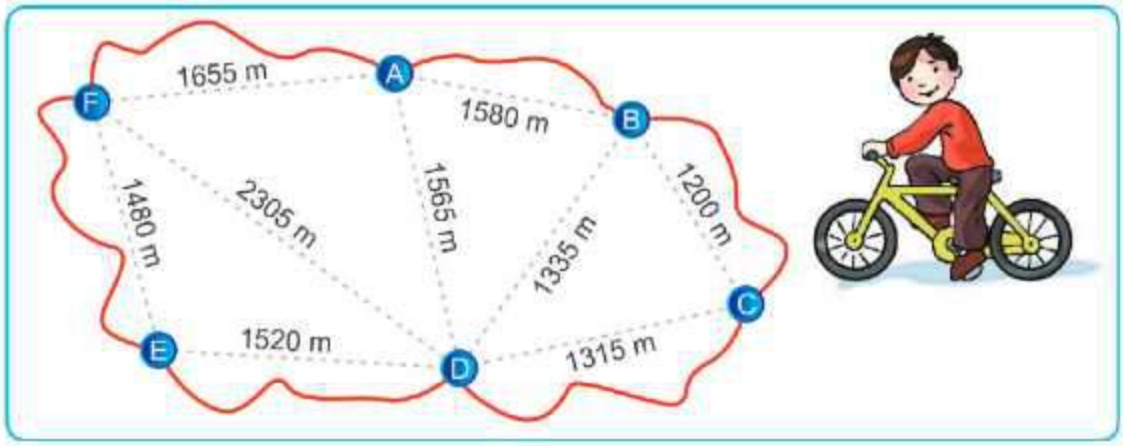
Decimeter Centimeter Milli meter

Maths in daily life.

Activity

There is a far distant village. Its map is as follows :

Raju was cycling in the village.

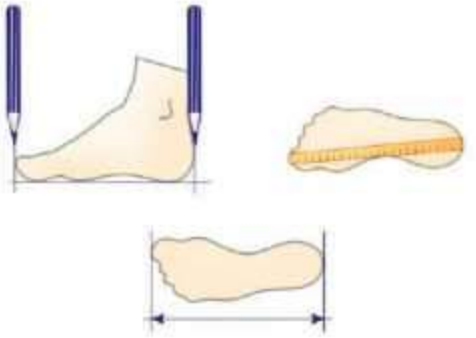


Find the distance covered by Raju :

1. From D to A (passes through B) = ...
2. From B to E (passes through C and D) = ...
3. From A to D (passes through B and C) = ...
4. From A to D (passes through F and E) = ...
5. From B to F (passes through D and E) = ...
6. From C to A (passes through D and F) = ...

Practical Activity

Put your foot on a plain paper and draw an outline with a pencil. Now measure the length of printed foot with a scale and note it down. Now go in a playground. Put your foot one after another and count the number of steps. Measure the distance covered by you. Compare the covered distance with other students.



Length of Manjot's foot = 22 cm

Total steps covered in the playground = 348 steps

So distance covered by Manjot = 348 × 22 ..... cm

= ..... m ..... cm

Example 1 : Write the following in the given measurement :

(a) 6.15 m = ... cm

(b) 4.823 km = ... m

(c) 0.58 da.m = ... cm

(d) 47 mm = ... m

(e) 257 cm = ... h m

Solution : (a) $6.15 \text{ m} = \frac{615}{100} \text{ m}$

$= \frac{615}{100} \times 100 \text{ cm}$ [As 1 m = 100 cm]

$= 615 \text{ cm}$

(b) $4.823 \text{ km} = \frac{4823}{1000} \text{ km}$

$= \frac{4823}{1000} \times 1000 \text{ m}$ [As 1 km = 1000 m]

$= 4823 \text{ m}$

(c) $0.58 \text{ da.m} = \frac{58}{100} \text{ da.m.}$

$= \frac{58}{100} \times 1000 \text{ cm}$ [1 da.m. = 1000 cm]

$= 580 \text{ cm}$

(d) $47 \text{ mm} = \frac{47}{1000} \text{ m}$ [1 mm = $\frac{1}{1000}$ m]

$= 0.047 \text{ m}$

(e) $257 \text{ cm} = \frac{257}{10000} \text{ hm}$ [1 cm = $\frac{1}{10000}$ hm]

$= 0.0257 \text{ hm}$

Exercise-6.1

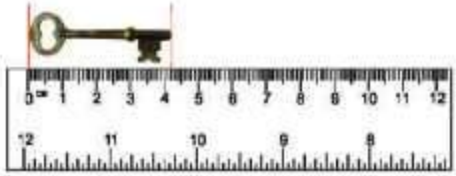
1. Find the length :

8 cm 5 mm = 8.5 cm

(a)

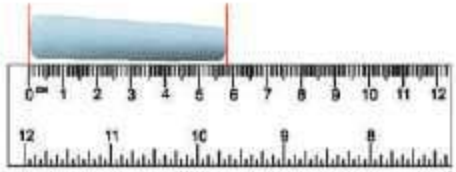
__ cm __ mm = __.__ cm

(b)



__ cm __ mm = __.__ cm

(c)



__ cm __ mm = __.__ cm

(d)

2. Measure the length of line segments in cm and draw on your notebooks.

(a) _____ (b) _____

(c) _____ (d) _____

(e) _____ (f) _____

3. Fill in the blanks :

(a) 3.45 m = ... m ..... cm

(b) 5.75 m = ... m ..... cm

(c) 10.850 km = ... km ..... m

(d) ..... m = 4 m 25 cm

(e) ..... km = 7 km 375 m

4. Convert the following :

(a) 4.5 cm into mm

(b) 270 m into km

(c) 5.82 km into m

(d) 0.65 m into cm

(e) 18 mm into m

6.2 Weight

Daily Life Example : The concept of weight starts with the birth of a baby and ends in grave. Everything is measured in weight i.e., the weight of the baby, weight of school bag, weight of bag, etc.

Example 1 : Harvesting of wheat was going on. Jyoti used to gather straws from fields with her mother every morning, an hour before her school time. Even after her school, she used to collect straws for an hour. In this way, she was able to collect 5 kg wheat each day and her mother could collect 25 kg each day. Explain how much grain (wheat) Jyoti and her mother could gather in a week.

Solution :

In a day, Jyoti collects wheat = 5 kg

In a day, her mother collects wheat = 25 kg

In a day, both collect wheat = 30 kg

In a week, both collected wheat = 30 × 7

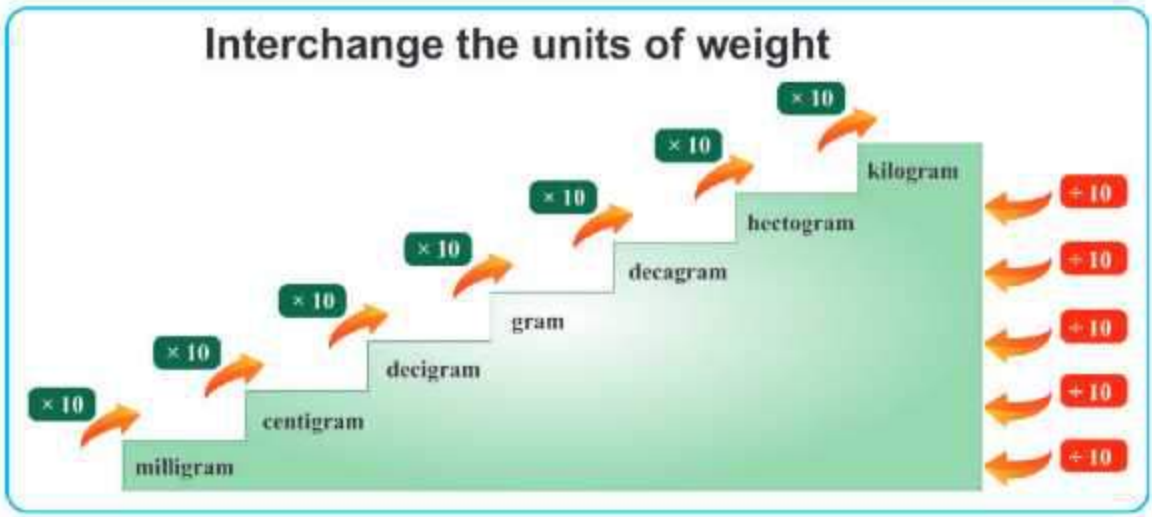
= 210 kg

So, Jyoti and her mother collected 210 kg in a week.

Now we shall discuss about relation between units.

kilogram (kg)	hectogram (hg)	decagram (da g)	gram (g)	decigram (dg)	centigram (cg)	milligram (mg)
1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

- In above table, relation between different units is mentioned.
- In the following table, there is a formula for conversion of larger units into smaller units and smaller units into larger units.



Kal Happy Dakiye Nu Green

kilogram hectogram decagram gram

Dress Costly Mili

decigram centigram milligram

Let us Learn

Example 1 : Fill in the blanks :

(a) 2500 g = ... kg

(b) 4 gm = ... mg

(c) 4 kg = ... g

(d) 3 kg 250 g = ... g

(e) 8590 g = ... kg

Solution : (a) $2500\text{ g} = \frac{2500}{1000}\text{ kg}$ $\left[1\text{ g} = \frac{1}{1000}\text{ kg}\right]$

$= 2.500\text{ kg}$

(b) $4\text{ g} = 4 \times 1000\text{ mg}$ [1 g = 1000 mg]

$= 4000\text{ mg}$

(c) $4\text{ kg} = 4 \times 1000\text{ g}$ [1 kg = 1000 g]

$= 4000\text{ g}$

(d) $3\text{ kg }250\text{ g} = (3 \times 1000 + 250)\text{ g}$

$= (3000 + 250)\text{ g}$

$= 3250\text{ g}$

(e) $8590\text{ g} = \frac{8590}{1000}\text{ kg}$

$= 8.590\text{ kg}$

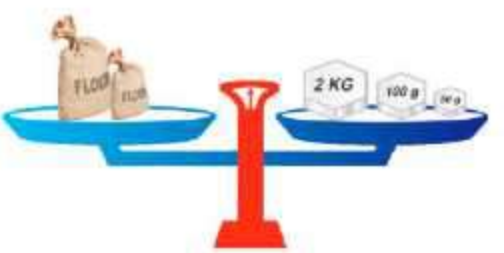
Exercise-6.2

1. Find the weight :

1 kg. 500 g = 1.500 kg

__ kg ____ g = __.__ kg

kg g = . kg



kg g = . kg

2. Tick (✓) the required weights for the following :

Weight	 1 kg	 500 gm	 200 gm	 100 gm	 50 gm
(*a*) 1.600 kg					
(*b*) 0.850 kg					
(*c*) 1.050 kg					
(*d*) 1.700 kg					
(*e*) 1.250 kg					

3. Fill in the blanks :

(a) 2.850 kg = ... kg ..... g

(b) 15.790 g = ... g ..... mg

(c) ..... kg = 12 kg 625 g

(d) ..... kg = 7 kg 75 g

(e) ..... g = 10 g 800 mg

4. Convert :

(a) 3.275 g into mg

(b) 8050 g into kg

(c) 4.2 kg into g

(d) 865 mg into g

(e) 520 g into kg

6.3 Capacity :

Dear students, the water contained in a glass is the capacity of the glass.

Students, the amount of space in a vessel is the capacity of the vessel.

For eg.
This bucket can hold 20 litres of water. The capacity of this bucket is 20 litres

In the previous classes we have read about the standard units of capacity. Now let us discuss the standard units of capacity in detail and their.

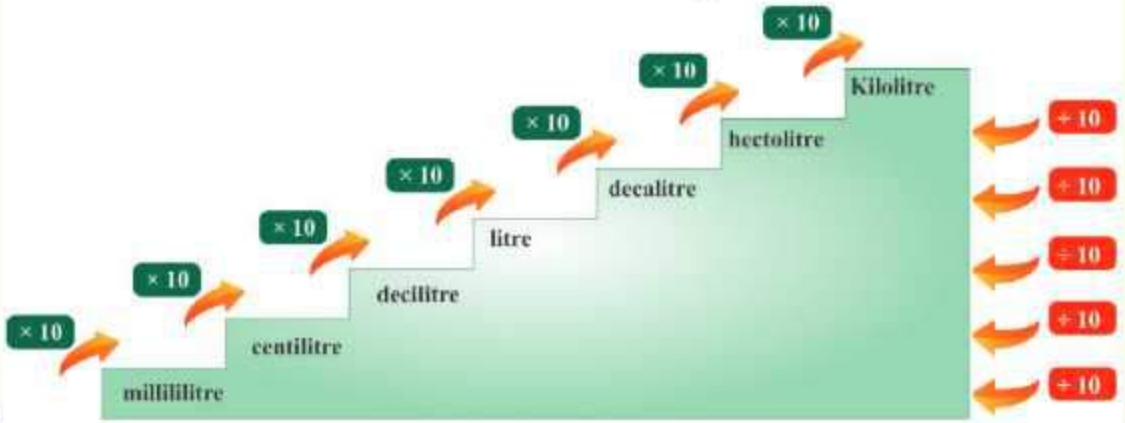
kilolitres (l)	hectolitres (hl)	decalitres (da l)	litre (l)	decilitres (dl)	centilitres (cl)	millilitres (ml)
1000 l	100 l	10 l	1l	$\frac{1}{10}$ l	$\frac{1}{100}$ l	$1\frac{1}{1000}l$

The standard unit of capacity is litre.

Look at the following for conversion of larger and smaller units.

To Interchange the different units of capacity covert.

To convert the units of capacity



This can be remembered with the following Rhyme.

Kal Happy Dakiye Nu Lal

kilolitre hectolitre decalitre litre

Dress Costly Mili

decilitre centilitre millilitre

Let us Learn

Example 1 : Fill in the blanks of the following :

(a) 10 ml = ... l

(b) 12 kl = ... l

(c) 5 l 465 ml = ... ml

(d) 8356 dl = ... hl

(e) 5627 l = ... hl

Solution : (a) $10 \text{ ml} = \frac{10}{1000}\ l$ $\quad [1 \text{ m}l = \frac{1}{1000}\ l]$

$= \frac{1}{100}\ l$

(b) $12\ kl = 12 \times 1000\ l$ $[1\ kl = 1000\ l]$

$= 12000\ l$

(c) $5\ l\ 465\ ml = [5 \times 1000 + 465]\ ml$ $[1\ l = 1000\ ml]$

$= [5000 + 465]\ ml$

$= 5465\ ml$

(d) $8356\ dl = \frac{8356}{1000}\ hl$ $[1\ dl = \frac{1}{1000}\ hl\ ]$

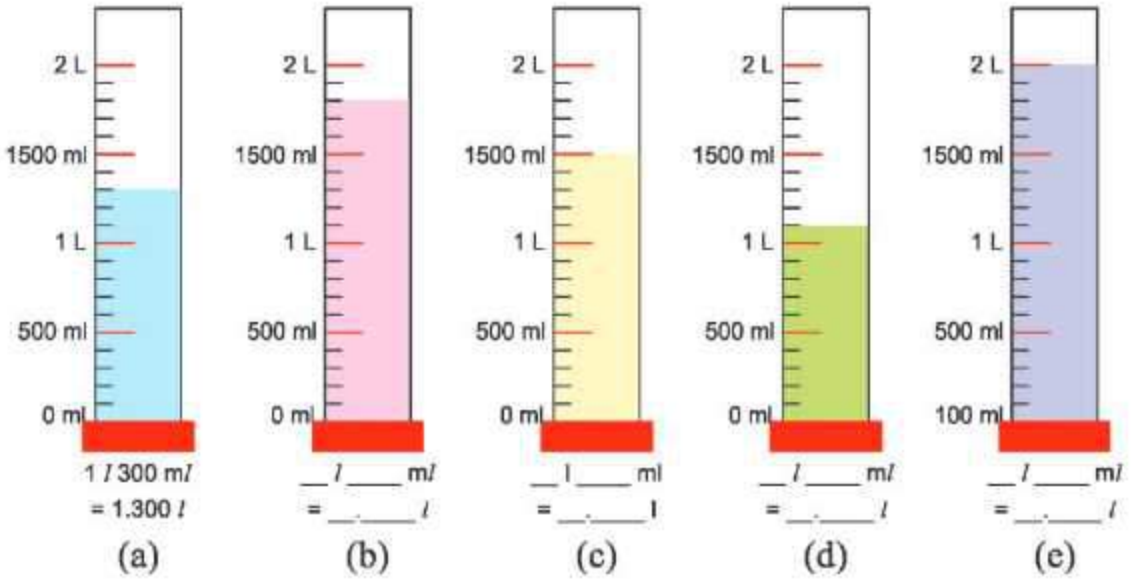
$= 8.356\ hl$

(e) $5267\ l = \frac{5267}{100}\ hl$ $[1\ l = \frac{1}{100}\ hl]$

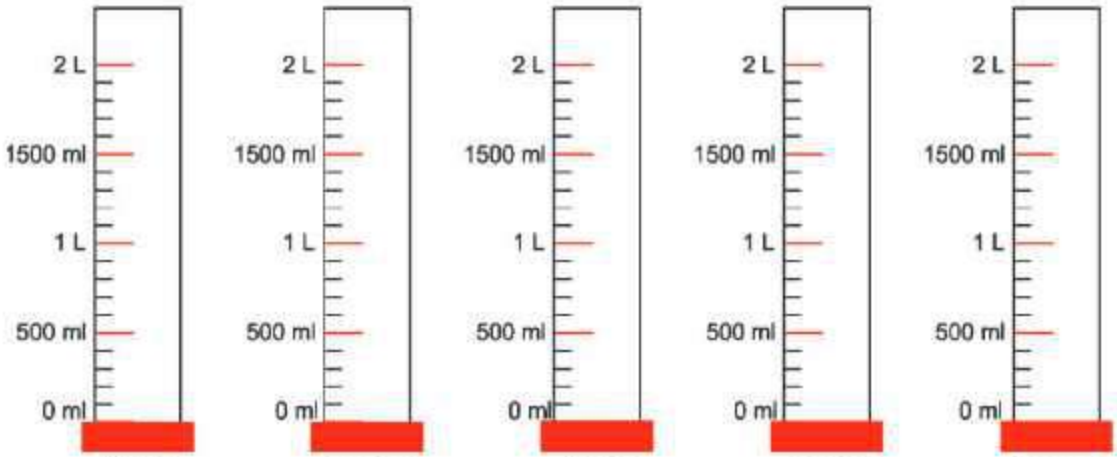
$= 52.67\ hl$

Exercise-6.3

1. Find the amount of liquid in the following :



2. Colour the following scales according to the given quantity.



1300 *l* (a) 1.800 *l* (b) 1.400 *l* (c) 0.900 *l* (d) 1.100 *l* (e)

3. Fill in the blanks :

(a) 3.125 *l* = ... *l* ..... m*l*

(b) 8.720 k*l* = ... k*l* ..... *l*

(c) .... *l* = 4 *l* 948 m*l*

(d) .... k*l* = 15 kl 650 *l*

(e) 18.045 *l* = ... *l* ..... m*l*

4. Convert :

(a) 7.6 *l* into millilitres

(b) 250 m*l* into litres

(c) 4.25 k*l* into litres

(d) 0.845 *l* into millilitres

(e) 92 *l* into kilolitres

6.4 Addition - Subtraction of the Measurements :

We have learnt the conversion of units of length, mass and capacity from one unit to another. Here, we shall discuss about their addition and subtraction.

It should be noted that while addition and subtraction, the unit must be the same like meter with meter, kg with kg, litre with litre etc.

Example 1 : Add

(a) 3 kg 800 g and 7 kg 170 g

(b) 5 km 560 m and 3 km 850 m

(c) 4 k*l* 225 *l* and 5 k*l* 980 *l*

Solution : (a)

$$\begin{array}{r} 3\text{ kg }\ 800\text{ g} \\ +\ 7\text{ kg }\ 170\text{ g} \\ \hline 10\text{ kg }\ 970\text{ g} \end{array}$$

(b)

$$\begin{array}{r} 5\text{ km }\ 560\text{ m} \\ +\ 3\text{ km }\ 850\text{ m} \\ \hline 8\text{ km }\ 1410\text{ m} \end{array}$$

because 1410 m = 1 km 410 m

So, 8 km 1410 m = 9 km 410 m

(c)

$$\begin{array}{r} 4\text{ k}l\ \ 225\ l \\ +\ 5\text{ k}l\ \ 980\ l \\ \hline 9\text{ k}l\ \ 1205\ l \end{array}$$

because 1205 *l* = 1 k*l* 205 *l*

So, 9 k*l* 1205 *l* = 10 k*l* 205 *l*

Example 2 : Subtract :

(a) 3 kg 150 g from 7 kg 200 g

(b) 13 m 400 mm from 17 m 300 mm

(c) 3 *l* 650 m*l* from 4 *l*

Solution : (a)

$$\begin{array}{r} 7\text{ kg }\ 200\text{ g} \\ -\ 3\text{ kg }\ 150\text{ g} \\ \hline 4\text{ kg }\ 050\text{ g} \end{array}$$

(b) We can write 17 m 300 mm into 16 m 1300 mm [As 300 mm < 400 mm]

$$\begin{array}{r} 16\text{ m }\ 1300\text{ mm} \\ -\ 13\text{ m }\ 400\text{ mm} \\ \hline 3\text{ m }\ 900\text{ mm} \end{array}$$

(c) We can write 4 *l* as 3 *l* 1000 m*l*

$$\begin{array}{r} 3\ l\ 1000\ ml \\ -\ 3\ l\ \ 650\ ml \\ \hline 0\ l\ 350\ ml \end{array}$$

Example 3 : Raju bought 3 kg 250 g mangoes and 5 kg 480 g apples. How many kilograms of fruit had he bought ?

Solution :

$$\begin{array}{rl} \text{Raju bought mangoes} & = 3\text{ kg }250\text{ g} \\ \text{Raju bought apples} & = 5\text{ kg }480\text{ g} \\ \text{Total fruits bought} & = 3\text{ kg }250\text{ g} \\ & \quad +5\text{ kg }480\text{ g} \\ & \quad \hline \quad 8\text{ kg }730\text{ g} \end{array}$$

Therefore Raju bought 8 kg 730 gms. of fruits.

Example 4 : 45 *l* milk is purchased for a ceremony out of that, 33 *l* 500 m*l* milk is used. How many litres of milk is left ?

Solution : Milk purchased for ceremony = 44 *l* 1000 m*l* [∵ 45 *l* = 44 *l* 1000 *ml*]

$$\begin{array}{rl} \text{Milk used in ceremony} & = 33\ l\ 500\ ml \\ \text{Milk left} & = 44\ l\ 1000\ ml \\ & \quad -\ 33\ l\ 500\ ml \\ & \quad \hline \quad 11\ l\ 500\ ml \end{array}$$

Therefore 11 litre 500 m*l*. milk is left.

Example 5 : Mohan purchased 1 m 05 cm cloth for pants, 1 m 50 cm for shirt and 2 m 40 cm for Pyjama. Find the total length of cloth bought by Mohan ?

Solution :

$$\begin{array}{rl} \text{Cloth purchased for pants} & = 1\text{ m }05\text{ cm} \\ \text{Cloth purchased for shirt} & = 1\text{ m }50\text{ cm} \\ \text{Cloth purchased for pyjama} & = 2\text{ m }40\text{ cm} \\ \text{Total length of cloth} & = 1\text{ m }05\text{ cm} \\ & \quad +1\text{ m }50\text{ cm} \\ & = +2\text{ m }40\text{ cm} \\ & \quad \hline \quad 4\text{ m }95\text{ cm} \end{array}$$

Therefore, cloth purchased by Mohan is 4 m 95 cm.

Exercise-6.4

1. **Add the following :**
   (a) 7 km 750 m and 2 km 575 m
   (b) 4 kg 500 g and 9 kg 825 g
   (c) 5 *l* 925 m*l* and 7 *l* 650 m*l*
   (d) 10 m, 3 m 85 cm and 6 m 25 cm
   (e) 8 kg 700 g, 975 g and 2 kg 350 g
2. **Subtract :**
   (a) 7 km 625 m from 12 km 300 m
   (b) 3 kg 650 g from 8 kg
   (c) 5 *l* 850 ml from 10 *l* 350 m*l*
   (d) 9 m 60 cm from 15 m
   (e) 13 *l* from 25 *l* 765 m*l*
3. Anand has bought 2 kg 350 g onions. 1 kg 750 g potatoes. How many kilograms of vegetables has he bought ?
4. Ajay has travelled 150 km 400 m distance by bus, 120 km 650 m by taxi. How much distance has he covered ?
5. Three containers contained 10 *l* 350 m*l*, 9 *l* 850 ml and 11 *l* oil respectively. Find the total quantity of oil contained in three containers.
6. Anita bought 7 m 30 cm cloth. She used 2 m 50 cm cloth for her suit. Find the remaining length of the cloth.
7. A family consumes 10 kg 750 g wheat and 4 kg 500 g rice in a month. Find the difference of consumption of rice and wheat.

Value Based Question : Jasmeet is going to meet her maternal grand father and grandmother who lived far away. She covered the distance of 18 km 425 m by bus and then 4 km 215 m by auto rickshaw. How far is Jasmeet's maternal grand father and grand mothers house from her house ?

Multiplication /Division of Measurements

Students, you have learnt addition and subtraction of units of measurements. Now you will learn multiplication and division of units of measurements.

Example 1 : Ram has bought 3 m cloth for his shirt. The shopkeeper gives the cloth at a price of ₹ 152.50 per meter. How much does Ram pay for it.

Solution :

Price of 1 meter cloth = ₹ 152.5

Price of 3 meter cloth = ₹ 152.5 × 3

= ₹ 457.50

```
 152.5
  × 3
-------
 457.5
-------
```

Example 2 : The weight of 1 box of apples is 16.80 kg. Find the weight of 12 such boxes.

Solution :

Weight of 1 box of apples = 16.80 kg

Weight of 12 boxes of apples = 16.80 × 12

= 201.60 kg

Weight of 12 boxes = 201.60 kg

```
 1680
  × 12
-------
 3360
16800
-------
20160
-------
```

Example 3 : A vessel contains 22.75 *l* milk. How many litres of milk is contained in 8 such vessels.

Solution : Quantity of milk in 1 vessel = 22.75 *l*

Quantity of milk in 8 vessels = 22.75 × 8

= 18.200 *l*

```
 2275
  × 8
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18200
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```

Example 4 : A rope of length 18.3 m is divided into 3 equal parts. Find the length of each part.

Solution :

Total length of rope = 18.3 m

Length of each part = 18.3 ÷ 3

= 6.1 m

```
   6.1
3) 18.3 (
 - 18
-------
   0 3
  - 3
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   ×
```


Example 5 : There are 46.5 kg rice in a bag. A shopkeeper wants to make 5 packets from this. How much rice will be there in each packet ?

Solution :

Quantity of rice in bag = 46.5 kg

Total number of packets = 5

So, quantity of rice in 1 packet = 46.5 ÷ 5

= 9.3 kg

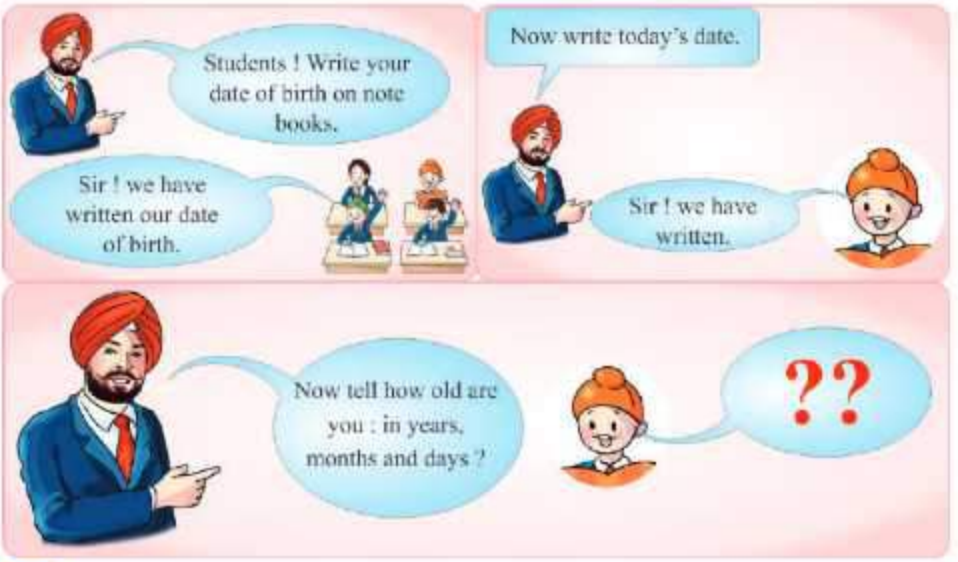
$$\begin{array}{r} 9.3 \\ 5\overline{)\,46.5\,(} \\ -45 \\ \hline 1.5 \\ -1.5 \\ \hline \times \end{array}$$

Exercise-6.5

1. The cost of 1 m cloth for pants is ₹ 265.50 and there is 24 m cloth in a roll. Find the cost of one bundle.
2. The weight of a box of mangoes is 32.4 kg. A shopkeeper wants to make 6 packets from this. How many kilograms of mangoes will be there in each packet ?
3. A vessel contains 28.5 *l* oil. It is poured into 5 small containers. How much oil will be there in one small container ?
4. 1 bundle of copies weighs 9.8 kgs. Find the weight of 14 such bundles.
5. The length of a stick is 12.7 cm. Find the length of 7 such sticks.

6.6 Time

Activity



We often use the word 'time' in our daily life. We already know the different units of time as year, week, day, hour, minute etc. In 4th class, we used minute as the smallest unit of time. In this class, we shall discuss another smallest unit of time.

If the time interval of 1 minute is divided into 60 equal parts then each part is called 'second'. So the relation between different time intervals is as follows :

1 year	=	12 months = 365 or 366 days (leap year)
1 month	=	28 or 29 or 30 or 31 days
1 week	=	7 days
1 day	=	24 hours
1 hour	=	60 minutes
1 minute	=	60 seconds

6.6.1. 24 Hour Clock :

In our daily life, we use 12 hour clock and for this, we use a.m. for morning and p.m. for evening, noon or midnight etc. But in some departments like Railway, Air Services etc. make use of 24 hrs clock. The Relation between 12 hour and 24 hour clock time is as follows :

12 hour clock time	**24 hour clock time**
12 midnight	00.00 or 24.00 hours
1 a.m. morning	01 : 00 hours
2 a.m. morning	02 : 00 hours
3 a.m. morning	03 : 00 hours
.....	.....
.....	.....
10 a.m. morning	10 : 00 hours
11 a.m. morning	11 : 00 hours
12 a.m. morning	12 : 00 hours
1 p.m. afternoon	13 : 00 hours
2 p.m. afternoon	14 : 00 hours

.....	.....
.....	.....
10 pm night	22 : 00 hours
11pm night	23 : 00 hours
12 midnight	00 : 00 hours or 24 : 00 hours

Example 1 : Convert the following into 24-hour clock time.

(a) 3 : 30 a.m. (b) 6 : 30 a.m.

(c) 11 : 20 p.m. (d) 10 : 10 a.m.

Solution : (a) 3 : 30 a.m. = 03 : 30 hours

(b) 6 : 30 a.m. = 18 : 30 hours

(c) 11 : 20 p.m. = 23 : 20 hours

(d) 10 : 10 a.m. = 10 : 10 hours

Example 2 : Convert the following into 12 hour clock

(a) 24 : 00 or 00 : 00 hours (b) 13 : 50 hours

(c) 20 : 00 hours (d) 08 : 40 hours

Solution : (a) 24 : 00 or 00 : 00 hours = 12 midnight

(b) 13 : 50 hours = 1 : 50 p.m.

(c) 20 : 00 hours = 8.00 p.m.

(d) 08 : 40 hours = 8 : 40 a.m.

6.6.2 Addition of Time

Addition of time is very easy. We add seconds in seconds, minutes in minutes and hours in hours. If the sum of seconds or minutes is more than 60 then we convert them into minutes and hours.

Example 3 : Add the following :

(a) 2 hours 30 min 15 sec and 4 hours 10 min 30 sec

(b) 3 hours 40 min 30 sec and 4 hours 30 min 40 sec

Solution : (a)

$$\begin{array}{r} 2 \text{ hours } 30 \text{ min } 15 \text{ sec} \\ +\ 4 \text{ hours } 10 \text{ min } 30 \text{ sec} \\ \hline 6 \text{ hours } 40 \text{ min } 45 \text{ sec} \end{array}$$

(b) 3 hours 40 min 30 sec

+ 4 hours 30 min 40 sec

7 hours 70 min 70 sec

Now 70 seconds = 1 min. 10 sec and 71 minutes. = 1 hour 11 min

So 7 hours 70 min 70 sec = 8 hours 11 min 10 sec.

Example 4 : Add the following :

(a) 6 years 5 months and 3 years 2 months

(b) 5 years 8 months and 6 years 5 months

Solution : (a) 6 years 5 months

+ 3 years 2 months

9 years 7 months

(b) 5 years 8 months

+ 6 years 5 months

11 years 13 months = 12 years 1 month

(As 13 months = 1 year 1 month)

Exercise-6.6

1. Addition :

(a) 2 hours 10 min and 1 hour 20 min.

(b) 4 hours 35 min and 3 hours 40 min.

2. Add the following :

(a) 1 hour 10 min 20 sec and 3 hours 20 min

(b) 2 hours 50 min 30 sec and 1 hour 10 min 30 sec

3. Add :

(a) 7 months and 2 years 3 months

(b) 4 years 5 months and 1 year 8 months

6.6. 3 Subtraction of Time :

We subtract seconds from seconds, minutes from minutes and hours from hours. If number of minutes or seconds is more while subtracting then we use the relation 1 hour = 60 minutes and 1 minute = 60 seconds.

Example 5 : Find the difference :

(a) 4 hours 28 min 30 sec and 2 hours 12 min 10 sec

(b) 5 hours 30 min 10 sec and 1 hour 40 min 30 sec

Solution : (a) 4 hours 28 min 30 seconds

$-$ 2 hours 12 min 10 seconds

2 hours 16 min 20 seconds

(b) We know that 1 hr = 60 min and 1 min = 60 seconds.

5 hours 30 min 10 secones = 4 hours 89 min 70 sec.

$-$1 hour 40 min 30 seconds = $-$ 1 hour 40 min 30 sec.

3 hour 49 min 40 sec.

[As 30 min = 29 min 60 sec and 5 hours = 4 hours 60 min]

Example 6 : Subtract :

(a) 2 years 5 months from 7 years 9 months

(b) 3 years 8 months from 6 years 3 months

Solution : (a) 7 years 9 months

$-$ 2 years 5 months

5 years 4 months

(b) As 1 year = 12 months

So, 6 years 3 months = 5 years 15 months

5 years 15 months

$-$ 3 years 8 months

2 years 7 months

Example 7: Ramesh leaves for his office at 8:20 a.m. from his home and reaches the office at 9 : 00 a.m. In how much time does he reach the office ?

Solution : We can get this time by subtraction

Now 9 : 00 a.m = 8 hours 60 minutes

So, the time taken to reach office

$$\begin{array}{r} 8 \text{ hours } 60 \text{ min} \\ -\ 8 \text{ hours } 20 \text{ min} \\ \hline 40 \text{ min} \end{array}$$

Example 8: Find the time interval between 10 : 30 pm. to 1 : 30 am next day ?

Solution : We know in 24 hour clock time, 10 : 30 pm = 22 : 30 and 12 midnight = 24 : 00

So time interval between 10 : 30 pm and midnight

$$\begin{array}{rl} 23 \text{ hours } 60 \text{ min} & [\text{As } 24 \text{ hours} = 23 \text{ hours } 60 \text{ min}] \\ -\ 22 \text{ hours } 30 \text{ min} & \\ \hline 1 \text{ hour } 30 \text{ min} & \end{array}$$

Now time interval between mid night and 1:30 am = 1 hour 30 min.

So, total time gap

$$\begin{array}{r} 1 \text{ hour } 30 \text{ min} \\ +\ 1 \text{ hour } 30 \text{ min} \\ \hline 2 \text{ hours } 60 \text{ min} \end{array}$$

So required time Interval = 2 hr 60 min = 3 hrs

Example 9 : A bus leaves from Chandigarh at 8:30 a.m. and reaches Delhi at 1:30 p.m. How much time does it take to reach Delhi ?

Solution : To find out the time taken, change 12 hour clock into 24 hour clock time.

$$\begin{array}{lrr} 8 : 30 \text{ am} & = & 08 : 30 \\ \text{and } 1 : 30 \text{ pm} & = & 13 : 30 \\ \text{So time taken} & = & 13 : 30 \\ & = & -\ 08 : 30 \\ & = & 05 : 00 \end{array}$$

So, the bus takes 5 hours to reach Delhi.

Example 10 : A school closes for summer vacation on 21st May and opens on July 5. Find out the number of days for which the school was closed.

Solution : Number of days from 21st May to 31st May = 11 days

(31 – 20 = 11)

Number of days in June = 30 days

Number of days in July = 04 days

Total days = 11 + 30 + 4

= 45 days

So school is closed for 45 days.

Example 11 : A train, Karnatka Express, runs from Delhi on Tuesday at 6 a.m. and reaches Bangalore on Wednesday at 9 : 00 pm. How much time is taken by the train ?

Solution : Time from Tuesday 6 am to Wednesday 6 a.m. = 24 hours

Wednesday 6 am to 9 pm = 15 hours

So total time = 24 + 15 = 39 hours

Or 1 day 15 hours

Exercise-6.7

1. **Find the difference :**
   (a) 8 hours 30 min and 2 hours 10 min
   (b) 10 hours 30 min 20 sec and 8 hours 20 min 15 sec
   (c) 11 years 5 months and 6 years 2 months
   (d) 7 years 2 months and 3 years 6 months
2. **Find the Time :**
   (a) 4 hours before 5 : 30 pm
   (b) 2 hours after 11 : 00 am
   (c) 6 hours before 4 : 30 am
   (d) 1 hour 45 min after 8 : 30 am

3. **Find the Time Gap :**

(a) From 3 : 00 a.m. to 10 : 00 a.m.

(b) From 6 : 00 a.m. to 1 : 30 p.m.

(c) From 5 : 00 p.m. to 10 : 45 p.m.

(d) From 9 : 00 p.m. to 2 : 30 a.m. (next morning)

4. A bank opens at 9:30 a.m. and closes at 5:00 p.m. How many working hours are there ?

5. A bus starts from Chandigarh at 7:30 am and reaches Shimla at 10:50 am. How much time is taken by the bus to reach Shimla ?

6. A boy goes to school at 7:30 am and returns back from school at 2:45 pm. How much time does he spend in the school ?

Multiple Choice Questions (MCQs)

Tick (✓) the right answer

1. Convert 8 m into centimeters.

(a) 80 cm (b) 800 cm (c) 8000 cm (d) 80 cm

2. Convert 16 k*l* into litres.

(a) 160 *l* (b) 1600 *l* (c) 16000 *l* (d)160000 *l*

3. Convert 10 dag into grams.

(a) 100 g (b) 1000 g (c) 10 g (d) 10000 g

4. How many kgs are there in 1000 g ?

(a) 100 kg (b) 10 kg (c) 20 kg (d) 1 kg

5. Decimal formation of 3 *l* 175 m*l*

(a) 31.75 *l* (b) 317.5 *l* (c) 3.175 *l* (d) 0.3175 *l*

6. 3.5 km = ... m

(a) 350 m (b) 3500 m (c) 35 m (d) 0.350 m

7. Which unit is used by a shopkeeper to weigh vegetables ?

(a) litre and k*l* (b) meter and km

(c) gram and kg (d) none

8. Which measurement is used to measure liquids ?

(a) litre (b) kg

(c) meter (d) none

9. Kanwal bought 6 kg potatoes, 3 kg 500 g onions and 500 g tomatoes from the market. How many kgs of vegetables had he bought ?

(a) 10 kg (b) 6 kg (c) 3 kg (d) 11 kg

10. Harpreet has bought 10 m cloth, he uses 6 m 50 cm cloth for her suit. How much cloth is left ?

(a) 2 m 50 cm (b) 4 m

(c) 4 m 50 cm (d) 3 m 50 cm

11. How many millimeter are in one meter ?

(a) $\frac{1}{100}$ (b) $\frac{1}{1000}$

(c) $\frac{1}{10}$ (d) 100

12. How many centimeters are in one hectometer ?

(a) 1000 (b) 10000

(c) 100 (d) $\frac{1}{1000}$

13. How many hectogram are in one kilogram ?

(a) 100 (b) $\frac{1}{100}$

(c) 10 (d) $\frac{1}{10}$

14. How many decalitres are in one kilolitre ?

(a) 1000 (b) 500

(c) 200 (d) 100

15. How many millilitres are in one deciletre ?

(a) 10 (b) 10000

(c) 100 (d) 1000

16. How many days are there in a leap year ?

(a) 364 (b) 366

(c) 365 (d) 363

17. How many days are there in February in a Leap year ?

(a) 28 (b) 30

(c) 29 (d) 31

18. Write 3.10 p.m. according to 24 hour clock ?

(a) 23:10 (b) 25:10

(c) 15:10 (d) 13:10

19. Write 22:25 according to 12 hour clock.

(a) 10:25 p.m. (b) 12:25 a.m.

(c) 12:25 p.m. (d) 9.25 p.m.

20. How many seconds make one hour ?

(a) 60 (b) 3600

(c) 360 (d) 300

Learning Outcomes

- To know about the relationship of the units of Length, Weight and Capacity and their usage in day to day life.
- To be capable of Fundamental operations of Length, Weight and Capacity
- To be capable of knowing about Time Duration.
- To prepare for competitive exams

Answers

Exercise 6.1

3. (a) 3 m 45 cm (b) 5 m 75 cm

(c) 10 km 850 m (d) 4.25 m

(e) 7.375 km

4. (a) 45 mm
(b) 0.270 km
(c) 5820 m
(d) 65 cm
(e) .018 m

Exercise 6.2

3. (a) 2 kg 850 g
(b) 15 g 790 mg
(c) 12.625 kg
(d) 7.075 kg
(e) 10.800 kg

4. (a) 3275 mg
(b) 8.050 kg
(c) 4200 g
(d) .865 g
(e) .520 kg

Exercise 6.3

3. (a) 3 *l* 125 m*l*
(b) 8 kl 720 *l*
(c) 4.948 *l*
(d) 15.650 k*l*
(e) 18 *l* 045 m*l*

4. (a) 7600 *l*
(b) .250 m*l*
(c) 4250 *l*
(d) 845 m*l*
(e) .092 k*l*

Exercise 6.4

1. (a) 10 km 325 m
(b) 14 kg 325 g
(c) 13 *l* 575 m*l*
(d) 20 m 10 cm
(e) 12 kg 25 g

2. (a) 4 km 675 m
(b) 4 kg 350 g
(c) 4 *l* 500 m*l*
(d) 5 m 40 cm
(e) 12 *l* 765 m*l*

3. 4 kg 100 g
4. 271 km 50 m
5. 31 *l* 200 m*l*
6. 4 m 80 cm
7. 6 kg 250 g

Exercise 6.5

1. 6372 m **2.** 5.4 kg

3. 5.7 *l* **4.** 137.2 kg

5. 88.9 m

Exercise 6.6

1. (a) 3 hours 30 min (b) 8 hours 15 min

2. (a) 4 hours 30 min 20 sec (b) 4 hours 1 min

3. (a) 2 years 10 month (b) 6 years 1 month

Exercise 6.7

1. (a) 6 hours 20 min (b) 2 hours 10 min 5 sec

(c) 5 years 3 months (d) 3 years 8 months

2. (a) 1 : 30 pm (b) 1 : 00 pm

(c) 10 : 30 pm (d) 10 : 15 am

3. (a) 7 hours (b) 7 hours 30 min

(c) 5 hours 45 min (d) 5 hours 30 min

4. (a) 7 hours 30 min

5. 3 hours 20 min **6.** 7 hours 15 min

Answer of MCQ

1. b	**2.** c	**3.** a	**4.** d
5. c	**6.** b	**7.** c	**8.** a
9. a	**10.** d	**11.** b	**12.** b
13. c	**14.** d	**15.** c	**16.** b
17. c	**18.** c	**19.** a	**20.** b