Chapter - 2

Measurements

Ex 2.1

Question 1.
Fill in the blanks.

(i) 250 ml + $\frac{1}{2}$ ml = _____ l.

(ii) 150 kg 200 g + 55 kg 750 g = ____ kg ____ g.
(iii) 20 l – 1 l 500 ml = ____ l ___ ml
(iv) 450 ml × 5 = ____ l ____ ml.
(v) 50 Kg ÷ 100 g = _____

Solution:

(i) $\frac{3}{4}$ l

(ii) 205 kg 950 g
(iii) 18 l 500 ml
(iv) 2l 250 ml
(v) 500

Question 2.
True or False.
(i) Pugazhenthi ate 100 g of nuts which is equal to 0.1 kg.
(ii) Meena bought 250 ml of buttermilk which is equal to 2.5 l.
(iii) Karkuzhali's bag 1 kg 250 g and Poongkodi's bag 2 kg 750 g. The total weight of their bags 4 kg.
(iv) Vanmathi bought 4 books each weighing 500 g. Total weight of 4 books is 2 kg.
(v) Gayathri bought 1 kg of birthday cake. She shared 450 g with her friends. The weight of cake remaining is 650 g.

Solution:
(i) True
(ii) False
(iii) True
(iv) True
(v) False

Question 3.
Convert into indicated units:
(i) 10 l and 50 ml into ml
(ii) 4 km and 300 m into m
(iii) 300 mg into g

Solution:
(i) 10 l and 50 ml
$= 10 \times 1000$ ml $+ 50$ ml
$= (10000 + 50)$ml
$= 10050$ ml

(ii) 4 km and 300 m
$= 4 \times 1000 + 300$ m
$= (4000 + 300)$ m
$= 4300$ m

(iii) 300 mg

$= \frac{300}{1000}$ g

$= 0.3$ g

Question 4.
Convert into higher units:
(i) 13000 mm
(km, m, cm)

Solution:
13000 mm

$= \frac{13000}{10}$ cm
$= 1300$ cm
$= \frac{13000}{1000}$ m $= 13000$ mm
$= 13$ m
$= \frac{13000}{1000000}$ km $= 13000$ mm
$= 0.013$ km

(ii) 8257 ml (kl, l)

Solution:
8257 ml

$= \frac{8257}{1000}$ l

= 8.257 l

= 8257 ml

$= \frac{8257}{1000000}$ kl

= 0.008257 kl

Question 5.
Convert into lower units:
(i) 15 km (m, cm, mm)
(ii) 12 kg (g, mg)

Solution:
(i) 15 km = 15 × 1000 m = 15000 m
15 km = 15 × 100000 cm
= 1500000 cm
15 km = 15 × 1000000 mm
= 15000000 mm

(ii) 12 kg (g, mg)

Solution:
12 kg = 12 × 1000 g
= 12000 g
12 kg = 12 × 1000000 mg
= 12000000 mg

Question 6.
Compare and put > or < or = in the following:
(i) 800 g + 150 g ___ 1 kg
(ii) 600 ml + 400 ml ___ 1 l
(iii) 6 m 25 cm ___ 600 cm + 25 cm
(iv) 88 cm ___ 8 m 8 cm
(v) 55 g ___ 550 mg

Solution:
(i) 800 g + 150g < 3kg
(ii) 600 ml + 400 ml = 1 l
(iii) 6 m 25 cm = 600 cm + 25 cm
(iv) 88 cm < 8 m 8 cm
(v) 55 g > 550 mg

Question 7.
Geetha brought 2 l and 250 ml of water in a bottle. Her friend drank 300 ml from it. How much of water is remaining in the bottle?

Solution:
Quantity of water Geetha brought = 2 l 250 ml
= 2 × 1000 + 250 ml
= 2000 + 250 ml
= 2,250 ml.
Quantity of water her friend drank = 300 ml
Remaining water = 2250 – 300 = 1950 ml. = 1 litre 950 ml.
Remaining water = 1 litre 950 ml.

Question 8.
Thenmozhi's height is 1.25 m now she grows 5 cm every year. What would be her height after 6 years?

Solution:
Thenmozhi's present height = 1.25 m
Rate of growth per year = 5 cm
Her growth in 6 years = 5 cm × 6 = 30 cm.
After 6 years her height = 1.25 m + 30 cm
= 1.25 × 100 + 30 cm
= 125 + 30 cm
= 155 cm.
∴ After 6 years Thenmozhi's height will be 155 cm.

Question 9.

Priya bought $22\frac{1}{2}$ kg of onion, Krishna bought $18\frac{3}{4}$ kg of onion and Sethu bought 9 kg 250 g of onion. What is the total weight of onion did they buy?

Solution:
Priya's weight = 22 kg 500 g
Krishna's weight = 18 kg 750 g
Sethu's weight = 9 kg 250 g
Total weight = 49 kg 1500 g = 49 kg + 1 kg 500 g = 50 kg + 500 g.
Their total weight = 50 kg 500 g.

Question 10.
Maran walks 1.5 km every day to reach the school while Mahizhan walks 1400 m. Who walks more distance and by how much?

Solution:
Distance which Maran walks = 1.5 km = 1.5 × 1000 m = 1500 m
The distance which Mahizhan walks = 1400 m.
Here 1500 > 1400
∴ Difference = 1500 – 1400 = 100 m.
∴ Maran walks more distance = 100 m.

Question 11.
In a JRC one day camp, 150 gm of rice and 15 ml oil are needed for a student. If there are 40 students to attend the camp how much rice and oil are needed?

Solution:
Rice needed for one student = 150 g

Rice needed for 40 students = 150 g × 40 = 6000 g. = $\frac{6000}{1000}$ kg = 6 kg.

Oil needed for one student = 15 ml

Oil needed for 40 students = 15 ml × 40 = 600 ml. = $\frac{600}{1000}$ l = 0.6 l

∴ For the camp 6 kg of rice and 0.6 l of oil needed.

Question 12.
In a school, 200 litres of lemon juice is prepared. If 250 ml lemon juice is given to each student, how many students get the juice?

Solution:
Total lemon juice prepared = 200 l = 200 × 1000 ml = 2,00,000 ml.
∴ Quantity of Lemon juice given to one student = 250 ml.

∴ Number of students can get = $\frac{2,00,000}{250}$ = 800

∴ 800 students can get the lemon juice.

Question 13.
How many glasses of the given capacity will fill a 2 litre jug?
(i) 100 ml ___
(ii) 50 ml ____
(iii) 500 ml ____

(iv) 1 l ___
(v) 250 ml ___

Solution:
2 litre = 2 × 1000 ml = 2000 ml.
(i) 100 ml

$\frac{2000}{100} = 20$
20 glasses of 100 ml.

(ii) 50 ml

$\frac{2000}{50} = 40$
40 glasses of 50 ml

(iii) 500 ml

$\frac{2000}{500} = 4$
4 glasses of 500 ml

(iv) 1 l

$\frac{2l}{1l} = 2$
2 glasses of 1 l.

(v) 250 ml

$\frac{2000}{250} = 8$
8 glasses of 250 ml can fill the jug.

Objective Type Questions

Question 14.
9 m 4 cm is equal to ……..
(i) 94 cm
(ii) 904 cm
(iii) 9.4 cm
(iv) 0.94 cm

Solution:
(ii) 904 cm

Question 15.
1006 g is equal to ___
(a) 1 kg 6 g
(b) 10 kg 6 g

(c) 100 kg 6 g
(d) 1 kg 600 g

Solution:
(a) 1 kg 6 g

Question 16.
Every day 150 l of water is sprayed in the garden. Water sprayed in a week is ……
(i) 700 l
(ii) 1000 l
(iii) 950 l
(iv) 1050 l

Solution:
(iv) 1050 l

Question 17.
Which is the greatest 0.007 g, 70 mg, 0.07 cg?
(a) 0.07 cg
(b) 0.007 g
(c) 70 mg
(d) all are equal

Solution:
(d) all are equal

Question 18.
7 km – 4200 m is equal to …….
(i) 3 km 800 m
(ii) 2 km 800 m
(iii) 3 km 200 m
(iv) 2 km 200 m

Solution:
(ii) 2 km 800 m

Ex 2.2

Question 1.
Say the time in two ways:

				
i.	ii.	iii.	iv.	v

Solution:
(i) 10 : 15 hours; quarter past 10; 45 minutes to 11
(ii) 6 : 45 hours; quarter to 7; 45 minutes past 6
(iii) 4 : 10 hours; 10 minutes past 4; 50 minutes to 5
(iv) 3 : 30 hours; half-past 3; 30 minutes to 4
(v) 9 : 40 hours; 20 minutes to 10; 40 minutes past 9.

Question 2.
Match the following:

(i) 9.55	a. 20 minutes past 2
(ii) 11.50	b. quarter past 4
(iii) 4.15	c. quarter to 8
(iv) 7.45	d. 5 minutes to 10
(v) 2.20	e. 10 minutes to 12

Solution:
(i) d
(ii) e
(iii) b
(iv) c
(v) a

Question 3.
Convert the following:
(i) 20 minutes into seconds
(ii) 5 hours 35 minutes 40 seconds into seconds
(iii) 3 ½ hours into minutes
(iv) 580 minutes into hours
(v) 25200 seconds into hours

Solution:
(i) 20 minutes into seconds:
1 min = 60 seconds

20 min = 20 × 60 seconds
= 1200 seconds

(ii) 5 hours 35 min 40 seconds into seconds

Solution:
1 hour = 60 min
1 min = 60 seconds
1 hour = 3600 seconds
5 hours = 5 × 3600 seconds
= 18000 seconds
35 min = 35 × 60 seconds
= 2100 seconds
5 hours 35 minutes 40 seconds
= (18000 + 2100 + 40) seconds
= 20140 seconds

(iii) 3 ½ hours into minutes

Solution:
1 hour = 60 minutes
3 ½ hours = 3 hours + 30 min
= (3 × 60 + 30) min
= (180 + 30)min
= 210 min

(iv) 580 minutes into hours

Solution:
1 hour = 60 min
580 min

$= \frac{580}{60}$ hours
$= \frac{290}{30}$ hours
$= \frac{29}{3}$
$= 9\ \frac{2}{3}$

= 9 hours 40 min

(v) 25200 seconds into hours:

Solution:

25200 seconds = $\frac{25200}{3600}$

= $\frac{126}{18}$ hours

= $\frac{63}{9}$ hours

= 7 hours

Question 4.
The duration of electricity consumed by the farmer for his pump set on Monday and Tuesday was 7 hours 20 minutes 35 seconds and 3 hours 44 minutes 50 seconds respectively. Find the total duration of consumption of electricity.

Solution:
The total duration of electricity consumed on both days
= 7 hours 20 min 35 sec + 3 hours 44 min 50 sec
= (7 + 3) hours (20 + 44) min (35 + 50) sec
= 10 hours 64 min 85 seconds
= 11 hours 5 min 25 seconds

Question 5.
Subtract 10 hours 20 min 35 seconds from 12 hours 18 min 40 seconds.

Solution:
12 hours 18 min 40 seconds
= (12 × 3600) + (18 × 60) + 40 seconds
= 43200 + 1080 + 40 seconds
= 44320 seconds
10 hours 20 min 35 seconds
= (10 × 3600) + (20 × 60) + 35 seconds
= 36000 + 1200 + 35 seconds
= 37235 seconds
Difference:
44320 – 37235
= 7085
7085 seconds = (1 × 3600) + 3480 + 5 seconds
= 1 hour 58 minutes 5 seconds

Question 6.
Change the following into 12 hour format
(i) 02:00 hours
(ii) 08:45 hours
(iii) 21:10 hours

(iv) 11:20 hours
(v) 00:00 hours

Solution:
(i) 2 am
(ii) 08:45 am
(iii) 9:10 pm
(iv) 11:20 am
(v) 12 midrid

Question 7.
Change the following into 24-hour format.
(i) 3.15 am
(ii) 12.35 pm
(iii) 12.00 noon
(iv) 12.00 mid night

Solution:
(i) 03.15 hours
(ii) 12.35 hours
(iii) 12.00 hours
(iv) 24.00 hours

Question 8.
Calculate the duration of time
(i) from 5.30 am to 12.40 pm
(ii) from 1.30 pm to 10.25 pm
(iii) from 20.00 hours to 4.00 hours
(iv) from 17.00 hours to 5.15 hours

Solution:
(i) from 5.30 a.m. to 12 .40 p.m.
Duration of time from 5.30 a.m. to noon = 12 : 00 – 5 : 30 = 6 : 30 i.e 6 hours 30 minutes
From noon to 12.40 p.m the duration = 00 hours 40 minutes
Total duration = 6 hours 30 minutes + 00 hours 40 minutes
= 6 hours 70 minutes
= 6 hours + (60 + 10) minutes
= 6 hours + 1 hr 10 minutes
= 7 hours 10 minutes
∴ Duration of time from 5.30 am to 12.40 pm = 7 hours 10 minutes

(ii) From 1.30 pm to 10.25 pm
= (1.30 pm to 10.00 pm) + 25 min
= 8 hrs 30 min + 25 min
= 8 hrs 55 min

(iii) From 20.00 hours to 4.00 hours
= (20.00 hrs to 24.00 hrs) + (24.00 hrs to 4.00 hrs)
= 4 hrs + 4 hrs
= 8 hours

(iv) From 17.00 hrs to 5.15 hours
= (17.00 hrs to 05.00 hrs) + 15 min
= 12 hours + 15 min
= 12 hours 1.5 min

Question 9.
The departure and arrival timing of the Vaigai Superfast Express (No. 12635) from Chennai Egmore to Madurai Junction are given. Read the details and answer the following.

Station	Arrival	Departure
Chennai Egmore	-	13:40
Tambaram	14:08	14:10
Chengalpattu	14:38	14:40
Villupuram	15:50	15:55
Virudhachalam	16:28	16:30
Ariyalur	17:04	17:05
Trichy	18:30	18:35
Dindigul	20:03	20:05
Sholavandan	20:34	20:35
Madurai	21:20	-

(i) At what time does the Vaigai Express start from Chennai and arrive at Madurai?
(ii) How many halts are there between Chennai and Madurai?
(iii) How long does the train halt at the Villupuram Junction?
(iv) At what time does the train come to Sholavandan?
(v) Find the journey time from Chennai Egmore to Madurai?

Solution:
(i) 13.40 hours – 21.20 hours
(ii) 8 halts
(iii) 5 minutes

(iv) 20.34 hours
(v) 7 hours 40 minutes

Question 10.
Manickam joined a chess class on 20.02.2017 and due to an exam, he left practice after 20 days. Again he continued to practice from 10.07.2017 to 31.03.2018. Calculate how many days did he practice?

Solution:
From the date of joining = 20 days From 10.07.2017 to 31.03.2018
July – 22
Aug – 31
Sep – 30
Oct – 31
Nov – 30
Dec – 31
Jan – 31
Feb – 28
Mar – 31
Total – 265
Total no of practice days = 265 + 20 = 285 days

Question 11.
A clock gains 3 minutes every hour. If the clock is set correctly at 5 am, find the time shown by the clock at 7 p.m?

Solution:
Time gained for 1 hour = 3 min
Time duration from 5 am to 7 pm = 14 hours
Time gained for 14 hours = 1 4 × 3 minutes
= 42 minutes
So, at 7 pm, the clock shows 7 hrs 42 minutes

Question 12.
Find the number of days between Republic day and Kalvi Valarchi Day in 2020.

Solution:
In 2020 Republic Day will be celebrated on 26th January and Kalvi Valarchi Day will be celebrated on 15th July.
Number of days between 26.01.2020 and 15.07.2020
January – 6 Days (from 26.01.2020)
February – 29 Days (2020 is a leap year)

March – 31 Days
April – 30 Days
May – 31 Days
June – 30 Days
July – 15 Days (upto 15.07.2020)
Total – 172 Days.
∴ Total number of days = 172

Question 13.
If the 11th of Jan 2018 is Thursday, what is the day on 20th July of the same year?

Solution:
Jan – 21
Feb – 28
Mar – 31
April – 30
May – 31
June – 30
July – 19
Total – 190 days
190 days = 27 weeks + 1 day
The required day is the first day after Thursday.
Therefore 20th July 2018 is Friday.

Question 14.
(i) Convert 480 days into years.
(ii) Convert 38 months into years

Solution:

(i) 480 days = $\frac{480}{365}$

= 1 year 115 days
= 1 year 3 months 25 days

(ii) 38 months = $\frac{38}{12}$
= 3 years 2 months

Question 15.
Calculate your age as on 01.06.2018

Solution:
My date of birth 20.11.1999
Convert in the format yyyy/mm/dd

2017	17(5+12)	31(30+1)
~~2018~~	~~06~~	~~01~~
1999	11	20
18 yrs	6m	11 days

My age is 18 years 6 months 11 days

Objective Type Questions

Question 16.
2 days = _____ hours.
(a) 38
(b) 48
(c) 28
(d) 40

Solution:
(b) 48

Question 17.
3 weeks = …… days
(i) 21
(ii) 7
(iii) 14
(iv) 28

Solution:
(i) 21

Question 18.
The number of ordinary years between two consecutive leap years is _____.
(a) 4 years
(b) 2 years
(c) 1 year
(d) 3 years

Solution:
(d) 3 years

Question 19.
What time will it be 5 hours after 22:35 hours?
(i) 2:30 hours
(ii) 3:35 hours
(iii) 4:35 hours
(iv) 5:35 hours

Solution:
(ii) 3:35 hours

Question 20.

$2\frac{1}{2}$ years is equal to _____ months.

(a) 25
(b) 30
(c) 24
(d) 5

Solution:
(b) 30

Ex 2.3

Question 1.
Two pipes whose lengths are 7 m 25 cm and 8 m 13 cm joined by welding and then a small piece 60 cm is cut from the whole. What is the remaining length of the pipe?

Solution:
Total length = 7 m 25 cm + 8 m 13 cm = 15 m 38 cm (or) 1538 cm
length detatched = 60 cm
Remaining length = 14 m 78 cm

Question 2.
The saplings are planted at a distance of 2 m 50 cm in the road of length 5 km by Saravanan. If he has 2560 saplings, how many saplings will be planted by him? how many saplings are left?

Solution:
Distance between two saplings = 2 m 50 cm = 250 cm
Total length of the road = 5000 m = 500000 cm

Question 3.
Put ✓ a mark in the circles which adds upto the given measure.

1.	1 *Kg*	◯ 500 *g*	◯ 50 *g*	◯ 100 *g*	◯ 200 *g*	◯ 250 *g*
2.	1 *m*	◯ 10 *cm*	◯ 30 *cm*	◯ 40 *cm*	◯ 25 *cm*	◯ 5 *cm*
3.	1 *l*	◯ 200 *ml*	◯ 100 *ml*	◯ 50 *ml*	◯ 500 *ml*	◯ 200 *ml*

Solution:

1.	1 kg	✓ 500g	✓ 50g	◯ 100g	✓ 200g	✓ 250g
2.	1m	◯ 10cm	✓ 30cm	✓ 40cm	✓ 25cm	✓ 5cm
3.	1*l*	✓ 200 *ml*	✓ 100 *ml*	◯ 50 *ml*	✓ 500 *ml*	✓ 200 *ml*

Question 4.
Make a calendar for the month of February 2020. (Hint: January 1st, 2020 is Wednesday)

Solution:
February 2020 is a leap year

FEBRUARY 2020						
SUN	**MON**	**TUE**	**WED**	**THURS**	**FRI**	**SAT**
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Question 5.
Observe and Collect the data for a minute

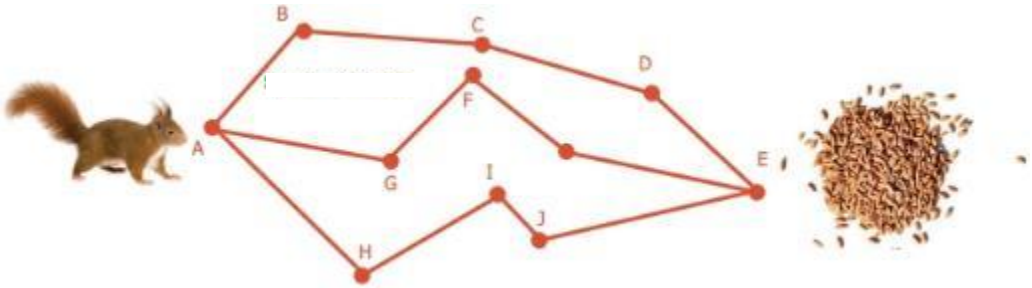
i.	Number of times a person breathes		ii.	Number of situps	
ii.	Number of times heart beats		iv.	Number of claps	
iii.	Number of times the eyes blink		vi.	Number of lines to write	
iv.	Distance by walking		viii.	Number of lines to read	
v.	Distance by running		x.	Number of Tamil verbs to say	

Solution:

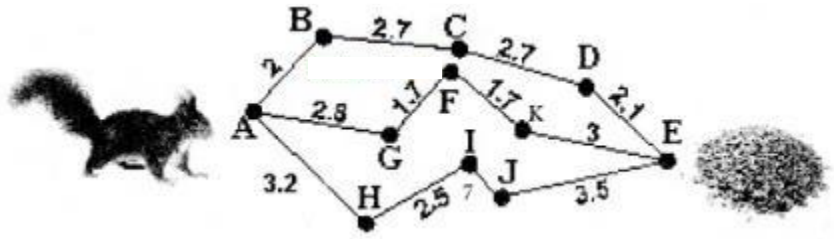
Do your self.

Challenge Problems

Question 6.
A squirrel wants to eat the grains quickly. Help the Squirrel to find the shortest way to reach the grains. (Use your scale to measure the length of the line segments)



Solution:



The Shortest way to reach the grains is the AGFKE path.

Question 7.
A room has a door whose measures are 1 m wide and 2 m 50 cm high.
Can we make a bed of 2 m and 20 cm in length and 90 cm wide into the room?

Solution:
Measures of the door length 2 m 50 cm width and lm (100 cm)

(i) Measures of the bed 2 m 20 cm width and 90 cm
Measures of the bed < measures of the door
∴ Yes, we can take the bed into the room.

Question 8.
A post office functions from 10 a.m. to 5.45 p.m. with a lunch break of 1 hour. If the post office works for 6 days a week, find the total duration of working hours in a week.

Solution:
Working hours in a day = 6 hrs 45 min
= (6 × 60 min) + 45 min
= (360 + 45) min
= 405 min
Total duration of working hours in a week
= 6 × 405 min
= 2430 min

$= \frac{2430}{60}$
$= \frac{810}{20}$
$= 40\ \frac{1}{2}$

= 40 hours 30 minutes

Question 9.
Seetha wakes up at 5.20 a.m. She spends 35 minutes to get ready and travels 15 minutes to reach the railway station. If the train departs exactly at 6.00 am, will Seetha catch the train?

Solution:
No, Seetha will not catch the train
Time at Seetha wakes up = 5.20 am
Time is taken for getting ready = 35 min
Travelling time to station = 15 min
Reporting time = 5.20 am + 50 min = 6.10 am
But, the train departs exactly at 6.00 am
So, Seetha will not catch the train.

Question 10.
A doctor advised Vairavan to take one tablet every 6 hours once on the 1st day and once every 8 hours on the 2nd and 3rd day. If he starts to take 9.30 am the first dose. Prepare a time chart to take the tablet in railway time.

Solution:

Starting Time	I day	II day	III day
09.30 hours	15.30 hours	17.30 hours	17.30 hours