11. Problems on Measurement

We use the units metre, gram and litre every day to measure length, mass and capacity respectively. While shopping, we use the units rupees and paise. We use units like days, hours and minutes to measure time. Let us see how to carry out basic operations like addition, subtraction, multiplication and division using these units of measurement.

Example (1) Add.

37 km 250 m + 15 km 950 m

	km	m
	11	
+	37	250
	15	950
	53	200

250 + 950 = 1200
1200 m
= 1 km + 200 m

53 km 200 m

Example (2) Subtract.

7 *l* 150 *ml* – 2 *l* 500 *ml*

	l	*ml*
	6	1150
–	~~7~~	~~150~~
	2	500
	4	650

We cannot subtract 500 *ml* from 150 *ml*.

Convert 1 *l* into 1000 *ml*.

4 *l* 650 *ml*

Problem Set 46

1. Add :

(1) ₹ 9, 50 paise + ₹ 14, 60 paise
(2) 6 cm 5 mm + 7 cm 9 mm
(3) 22 m 50 cm + 25 m 75 cm
(4) 15 km 740 m + 13 km 950 m
(5) 25 kg 650 g + 29 kg 770 g
(6) 19 *l* 840 *ml* + 25 *l* 250 *ml*

2. Subtract :

(1) ₹ 19, 50 paise – ₹ 12, 60 paise
(2) 24 cm 2 mm – 3 cm 8 mm
(3) 20 m 30 cm – 17 m 60 cm
(4) 40 km 255 m – 17 km 960 m
(5) 35 kg 150 g – 26 kg 470 g
(6) 46 *l* 200 *ml* – 38 *l* 750 *ml*

❒ Word problems

Study the following examples.

Example (1) If a shopkeeper has 150 kg 500 g of rice and sells 75 kg 750 g, how much rice will be left ?

	kg	gm
	149	1500
–	~~150~~	~~500~~
	75	750
	74	750

74 kg 750 g of rice is left.

Example (2) A can of milk has 20 *l* 450 *ml* of milk. Another can has 18 *l* 800 *ml*. How much milk is there in the two cans altogether?

The total quantity of milk is 39 *l* 250 *ml*.

	l	*ml*
	1	
	20	450
+	18	800
	39	250

Example (3) At a speed of 90 km per hour, what distance will a train cover in two and a half hours?

The speed of the train is 90 kmph. That is, it travels 90 km in one hour. It travels 90 more km in the second hour.

In the next half an hour, 90 ÷ 2 = 45 km

The total distance travelled is 90 + 90 + 45 = 225 km.

Example (4) If one dress requires 3 m 25 cm of cloth, how much do 4 dresses need?

Manju's method:

	3 m	25 cm	for the 1st dress
+	3 m	25 cm	for the 2nd dress
+	3 m	25 cm	for the 3rd dress
+	3 m	25 cm	for the 4th dress
	12 m	100 cm	

1 m is 100 cm, therefore 12 + 1 = 13 m

Kunal's method :

	m	cm
	3	25
×		4
	12	100

12 m 100 cm = 13 m

Example (5) If a wire that is 9 m 50 cm long is cut into pieces of 5 cm each, how many pieces will be made?

9 m 50 cm = (900 + 50) cm

To find out how many pieces of 5 cm can be made from a wire 950 cm long, let us use division.

190 pieces will be made.

```
      190
   ------
5 ) 950
    - 5
   ---
     45
    - 45
   ----
      00
    -  0
   ----
      0
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Example (6) A play started at 30 minutes past 6 in the evening and finished two and three quarter hours later. What time did the play get over?

	Hr	Min
	6	30
+	2	45
	8	75

75 min = 60 min + 15 min

= 1 hr + 15 min

8 hr + 1 hr 15 min = 9 hr 15 min

The play got over at 15 minutes past 9 at night.

Note : The units for length, mass and capacity are written in decimal form. This makes it easy to carry out addition and subtraction of length, mass and capacity.

Units of measuring time are not in decimal form. It is a little more difficult to carry out additions and subtractions of those quantities.

Problem Set 47

1. For his birthday, Ajay gave 20 *l* 450 *ml* of milk to the children in an Ashramshala and 28 *l* 800 *ml* to the children in an orphanage. How much milk did Ajay donate?

2. Under the Rural Cleanliness Mission, college students cleaned 1 km 750 m of a village road that is 2 km 575 m long. How much remained to be cleaned?

3. Babhulgaon used 21,250 litres of treated waste water in the fields. Samvatsar used 31,350 litres of similar water. How much treated waste water was used in all?

4. If half a litre of milk costs 22 rupees, how much will 7 litres cost?

5. If the speed of a motorcycle is 40 km per hour, how far will it travel in an hour and a quarter ?

6. If a man walks at a speed of 4 kmph, how long will it take him to walk 3 km?

7. If a rickshaw travels at a speed of 30 kmph, how far will it travel in three quarters of an hour?

8. During Cleanliness Week, children cleaned the public park in their town. They collected three quarter kilograms of plastic bags and five and a half kilograms of other garbage. How much garbage did they collect in all?

9. If one shirt needs 2 m 50 cm of cloth, how much cloth do we need for 5 shirts?

10. If a car travels 60 km in an hour, how far will it travel in

(1) 2 hours?

(2) 15 minutes?

(3) half an hour?

(4) three and a half hours?

11. If one gold bangle is made from 12 grams 250 milligrams of gold, how much gold will be needed to make 8 such bangles? (1000 mg = 1 g)

12. How many pouches of 20 g cloves each can be made from 1 kg 240 g of cloves?

13. Seema's mother bought 2 m 70 cm of cloth for a kurta and 2 m 40 cm for a shirt. How much cloth did she buy in all?

14. A water tank holds 125 *l* of water. If 97 *l* 500 *ml* of the water is used, how much water remains in the tank?

15. Harminder bought 57 kg 500 g of wheat from one shop and 36 kg 800 g of wheat from another shop. How much wheat did he buy altogether?

16. Renu took part in a 100 m race. She tripped and fell after running 80 m 50 cm. How much distance did she have left to run?

17. A sack had 40 kg 300 grams of vegetables. There were 17 kg 700 g potatoes, 13 kg 400 g cabbage and the rest were onions. What was the weight of the onions?

18. One day, Gurminder Singh walked 3 km 750 m and Parminder Singh walked 2 km 825 m. Who walked farther and by how much?

19. Suresh bought 3 kg 250 g of tomatoes, 2 kg 500 g of peas and 1 kg 750 g of cauliflower. How much was the total weight of the vegetables he bought ?

20. Jalgaon, Bhusawal, Akola, Amravati and Nagpur lie serially on a certain route. The distances between Akola and these other places are given below. Use them to make word problems and solve the problems.

Amravati - 95 km, Bhusawal - 154 km, Nagpur - 249 km, Jalgaon - 181 km

21. Complete the following table and prepare the total bill.

Foodstuff	Weight (kg)	Rate (₹ per kg)	Cost
Sugar	2·5	32	
Rice	4·0	35	
Chana Dal	1·5	60	
Toor Dal	3·0	70	
Wheat	7·0	21	
Oil	1·5	110	
		Total	

Activity

- You have 1 kg of potatoes. Find out which other ingredients you will need to make *potato vadas* and approximately how much of each ingredient you will need. Also find out approximately how much each ingredient will cost and how many *vadas* you will be able to make.
- Fix a 1 m long stick in an open field. Measure the shadow of the stick at 9:00 in the morning, at 12:00 noon, at 3:00 in the afternoon and at 5:00 in the evening. Observe at which time of the day the shadow is shortest and at what time, it is longest.
- Measure the length of a pen refill.