

# DECIMAL FRACTIONS

## 6.1 BASIC CONCEPT

A fraction whose denominator is 10 or a higher power of 10, i.e., 100, 1000, etc., is called a **decimal fraction**. Thus, each of  $\frac{7}{10}$ ,  $\frac{13}{10^2}$ ,  $\frac{357}{1000}$ ,  $\frac{29}{10^4}$  is a decimal fraction.

For such a fraction, the denominator is removed and its absence is shown by a small dot (called the **decimal point**) inserted in its proper place.

*For example :*

$$\frac{2}{10} = 0 \cdot 2, \quad \frac{24}{100} = 0 \cdot 24, \quad \frac{3159}{1000} = 3 \cdot 159, \quad \frac{31}{10} = 3 \cdot 1, \text{ etc.}$$

1. Since  $\frac{2}{10}$  and  $\frac{31}{10}$  have 10 as denominator; therefore, when 10 is removed, a dot representing a decimal point is placed just one digit from the right

i.e.  $\frac{2}{10} = 0 \cdot 2$  and  $\frac{31}{10} = 3 \cdot 1$ .

In the same way, when denominator is 100 and it is removed, the decimal point is placed just after two digits from the right, at the same time; so  $\frac{24}{100} = 0 \cdot 24 = 0 \cdot 24$ ,  $\frac{479}{100} = 4 \cdot 79$ , etc.

In the same way;  $\frac{5278}{1000} = 5 \cdot 278$ ,  $\frac{5278}{10000} = 0 \cdot 5278$ ,  $\frac{5278}{100000} = 0 \cdot 05278$  and so on.

2. Also,  $\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10} = 0 \cdot 6$ ;  $\frac{17}{20} = \frac{17 \times 5}{20 \times 5} = \frac{85}{100} = 0 \cdot 85$ , etc.

⇒ A fraction whose denominator can be expressed as 10 or some higher power of 10 is also a decimal fraction.

3. 3·1 means  $3 + 0 \cdot 1$ . Here 3 is the **integral part** and 0·1 is the **decimal part**.

## 6.2 NUMBER OF DECIMAL PLACES

The number of digits in the decimal part of a number is the number of decimal places in it.

*For example :*

In 3·462, the decimal part is .462, which contains *three digits*.

∴ The number 3·462 has **3 decimal places**.

Similarly, 4·83 has **2 decimal places**; 0·0478 has **4 decimal places** and so on.

When a number has only the decimal part, such as .7, .83, .403, etc., it is always advised to write a zero before the decimal point.

i.e. write .7 as 0·7; .83 as 0·83; .403 as 0·403 and so on.

## 6.3 LIKE AND UNLIKE DECIMAL NUMBERS

The given decimal numbers are said to be **like decimal numbers**, if they **have the same number of decimal places**. Otherwise, they are called **unlike decimal numbers**.

*For example :*

- (i) 5.7, 0.8, 329.2 and 50.6 are **like decimal numbers**.
- (ii) 26.03, 8.87, 0.52 and 400.04 are **like decimal numbers**.
- (iii) 2.6, 40.32, 0.009, 3.0728 and 328.2 are **unlike decimal numbers**.

**Note :** Unlike decimal numbers can be converted into like decimal numbers.

*For example :*

Consider the unlike decimal numbers :

5.8, 239.06 and 0.5497

In these numbers, 5.8 has one decimal place, 239.06 has two decimal places and 0.5497 has four decimal places.

Since 0.5497 has the maximum number of decimal places (four decimal places), make the decimal places in each given decimal number equal to four.

$$\text{Thus, } 5.8 = 5.8000,$$

$$239.06 = 239.0600$$

$$\text{and } 0.5497 = 0.5497$$

∴ The given unlike decimal numbers 5.8, 239.06 and 0.5497 are converted into the like decimal numbers 5.8000, 239.0600 and 0.5497.

The value of a given decimal fraction does not change, if one or more zeroes are placed on the right side of it.

Similarly, the unlike decimal numbers 320.98, 0.07325 and 53.4 will be 320.98000, 0.07325 and 53.40000 as like decimal numbers.

## 6.4

## CONVERSION OF A GIVEN FRACTION INTO A DECIMAL FRACTION

### 1. When the denominator is 10, 100, 1000, etc.

**Steps :**

1. Count the number of zeroes in the denominator of the given fraction.
2. In the numerator, mark the decimal point after as many digits (counting from extreme right to left) as the number of zeroes in the denominator. At the same time, remove the denominator.

*For example :*

In the fraction  $\frac{327}{100}$ , the denominator is 100, which has two zeroes in it.

Therefore, in the numerator 327, mark the decimal point after two digits from right to left, giving 3.27.

Thus  $\frac{327}{100} = 3.27$ . Similarly,  $\frac{7}{10} = .7 = 0.7$ ,  $\frac{14}{1000} = 0.014$  and so on.

In  $\frac{14}{1000}$ , the denominator has three zeroes, and so the decimal point is to be marked after 3 digits from the right of the numerator 14. Since 14 has only two digits, write one zero to the left of 14 and then place the decimal point.

In a similar manner;

$$(i) \frac{17}{1000} = 0.017 = 0.017, \frac{5}{1000} = 0.005 = 0.005 \text{ and so on.}$$

$$(ii) \frac{254}{10} = 25.4, \frac{254}{100} = 2.54, \frac{254}{1000} = 0.254, \\ \frac{254}{10000} = 0.0254 \text{ and so on.}$$

$$(iii) \frac{57}{10^2} = \frac{57}{100} = 0.57 = 0.57, \frac{34}{10^4} = \frac{34}{10000} = 0.0034 \text{ and so on.}$$

**Remember:**  $10^2 = 10 \times 10 = 100$ ,  $10^3 = 10 \times 10 \times 10 = 1000$ ,  $10^4 = 10 \times 10 \times 10 \times 10 = 10000$  and so on.

## 2. When the denominator can be expressed as 10, 100, 1000, etc.

Multiply both the numerator and the denominator of the given fraction by a suitable number so that the denominator becomes 10 or a power of 10. Then proceed as above.

Thus :

$$(i) \frac{1}{4} = \frac{1 \times 25}{4 \times 25} \\ = \frac{25}{100} = 0.25$$

$4 \times 25 = 100$ ,  
a power of ten

$$(ii) \frac{73}{125} = \frac{73 \times 8}{125 \times 8} \\ = \frac{584}{1000} = 0.584$$

$125 \times 8 = 1000$ ,  
a power of ten

$$(iii) \frac{6}{8} = \frac{3}{4} = \frac{3 \times 25}{4 \times 25} = \frac{75}{100} = 0.75, \\ \frac{8}{250} = \frac{8 \times 4}{250 \times 4} = \frac{32}{1000} = 0.032 \text{ and so on.}$$

Also, seven-tenths  $= \frac{7}{10} = 0.7$ , 53-hundredths  $= \frac{53}{100} = 0.53$  and so on.

There are several fractions whose denominators are neither 10 nor some higher power of 10. Also, their denominators cannot be converted into 10 or some higher power of 10. Such fractions can also be expressed as decimal fractions. Conversion of such fractions into decimal fractions will be discussed in the next class, i.e. in class 7.

## 6.5 CONVERSION OF A GIVEN DECIMAL FRACTION INTO A NON-DECIMAL FRACTION

Remove the decimal point and at the same time, write in the denominator as many zeroes to the right of 1 (one) as there are digits in the decimal part. Then simplify.

For example :

$$(i) \quad 0.42 = \frac{42}{100} = \frac{21}{50} \quad [\text{Two digits in the decimal part}]$$

$$(ii) \quad 0.021 = \frac{021}{1000} = \frac{21}{1000} \quad [\text{Three digits in the decimal part}]$$

$$(iii) \quad 1.75 = \frac{175}{100} = \frac{7}{4} = 1\frac{3}{4} \quad \text{and so on.}$$

### EXERCISE 6(A)

1. Write the number of decimal places in each of the following :

- |             |             |             |
|-------------|-------------|-------------|
| (i) 7.03    | (ii) 0.509  | (iii) 146.2 |
| (iv) 0.0065 | (v) 8.03207 |             |

2. Convert the given unlike decimal fractions into like decimal fractions :

- |                                    |
|------------------------------------|
| (i) 1.36, 239.8 and 47.008         |
| (ii) 507.0752, 8.52073 and 0.808   |
| (iii) 459.22, 7.03093 and 0.200037 |

3. Change each of following fractions to a *decimal fraction* :

- |                         |                         |                         |                       |
|-------------------------|-------------------------|-------------------------|-----------------------|
| (i) $\frac{7}{10}$      | (ii) $\frac{47}{10}$    | (iii) $\frac{343}{100}$ | (iv) $\frac{3}{10^3}$ |
| (v) $\frac{7295}{10^5}$ | (vi) $\frac{289}{10^6}$ | (vii) 95-hundredths     |                       |

4. Convert into a *decimal fraction* :

- |                   |                     |                       |                     |
|-------------------|---------------------|-----------------------|---------------------|
| (i) $\frac{3}{4}$ | (ii) $\frac{3}{40}$ | (iii) $\frac{1}{125}$ | (iv) $\frac{7}{25}$ |
|-------------------|---------------------|-----------------------|---------------------|

5. Change the given decimal fractions to fractions in their *lowest terms* :

- |           |              |              |            |
|-----------|--------------|--------------|------------|
| (i) 0.05  | (ii) 3.95    | (iii) 4.005  | (iv) 0.876 |
| (v) 50.06 | (vi) 0.01075 | (vii) 4.8806 |            |

### 6.6 ADDITION OF DECIMAL NUMBERS

**Steps :**

1. Convert, if required, the given decimal numbers into like decimal numbers.
2. Write all the like decimal numbers, obtained in step 1, one below the other in such a way that their decimal points are one below the other, i.e. in the same vertical line.
3. Add the numbers and in the result, mark the decimal point below the other decimal points.

**Example 1 :**

**Add :** (i) 2.7, 35.82 and 140.052    (ii) 8.09, 0.9273 and 233.4

**Solution :****(i) Step 1**

For the given numbers, the like decimal numbers are 2.700, 35.820 and 140.052

**Steps 2 and 3**

$$\begin{array}{r} 2.700 \\ 35.820 \\ 140.052 \\ \hline 178.572 \end{array}$$

**(ii) Direction method**

$$\begin{array}{r} 8.0900 \\ 0.9273 \\ 233.4000 \\ \hline 242.4173 \end{array}$$

(Ans.)

(Ans.)

**6.7 SUBTRACTION**

If required, convert the given decimal numbers into like decimal numbers, and then complete the required subtraction. Care must be taken that the decimal point in the given numbers and in the result must be in the same vertical line.

**Example 2 :**

**Subtract :** (i) 35.724 from 180.938    (ii) 72.385 from 85.4

**Solution :**

(i) 180.938

$\underline{- 35.724}$

**145.214**

(Ans.)

(ii) 85.400

$\underline{- 72.385}$

**13.015**

(Ans.)

Make the decimal places the same in both the given numbers

**Example 3 :**

**Simplify :** (i) 14.8 – 7.23 + 9.631    (ii) 3.241 – 0.53 + 6.6105 – 8.2413 + 5.2

**Solution :**

Add all the positive numbers together and all the negative numbers separately together as well. Finally, add or subtract as required :

(i) **14.8 – 7.23 + 9.631**

$= 24.431 - 7.23$

$= 17.201$  (Ans.)

$$\begin{array}{r} 14.800 \\ + 9.631 \\ \hline 24.431 \end{array}$$

and

$$\begin{array}{r} 24.431 \\ - 7.230 \\ \hline 17.201 \end{array}$$

(ii) **3.241 – 0.53 + 6.6105 – 8.2413 + 5.2**

$= 15.0515 - 8.7713 = 6.2802$

(Ans.)

Here,

3.241

+ 6.6105

– 0.53

15.0515

+ 5.2

– 8.2413

and, finally

– 8.7713

**15.0515**

**– 8.7713**

**6.2802**

**EXERCISE 6(B)**

1. **Add** the following :

(i) 0.243, 2.47 and 3.009

(ii) 0.0736, 0.6095 and 0.9107

(iii) 1.01, 257 and 0.200

(iv) 18, 200.35, 11.72 and 2.3

(v) 0.586, 0.0586 and 0.00586

2. Find the value of :
- $6.8 - 2.64$
  - $2 - 1.0304$
  - $0.1 - 0.08$
  - $0.83 - 0.342$
3. Subtract :
- 0.43 from 0.97
  - 2.008 from 22.1058
  - 0.18 from 0.6
  - 1.002 from 17
  - 83 from 92.05
4. Simplify :
- $3.5 - 2.43 + 0.075$
  - $7.84 + 0.3 - 4.016$
  - $2.987 - 1.25 - 0.54$
  - $52.9 - 231.666 + 204$
  - $8.57 - 6.4432 - 1.70 + 0.683$
5. From the sum of 75.75 and 4.9 subtract 28.465.
6. Subtract the sum of 8.14 and 12.9 from 32.7.
7. Subtract the sum of 34.27 and 159.8 from the sum of 20.937 and 200.6.
8. From the sum of 2.43 and 4.349 subtract the sum of 0.8 and 3.15.
9. By how much does the sum of 18.0495 and 34.9644 exceed the sum of 7.6752 and 24.876 ?
10. What number added to 89.376 gives 1000 ?
- 

## 6.8 MULTIPLICATION

### Steps :

- Multiply the two given decimal numbers, ignoring their decimal points.
- In the product obtained in step 1, mark the decimal point such that the decimal places in it is equal to the sum of decimal places of the two given numbers.

### Example 4 :

- Evaluate :  $532.43 \times 7$
- Multiply : 4.09 and 5.6
- Evaluate :  $0.856 \times 12.39$
- Evaluate :  $2.4 \times 0.5 \times 0.04$

### Solution :

- Since  $53243 \times 7 = 372701$  [Step 1]  
 $\therefore 532.43 \times 7 = 3727.01$  [Step 2] (Ans.)
- Since  $409 \times 56 = 22904$  [Step 1]  
 $\therefore 4.09 \times 5.6 = 22.904$  [Step 2] (Ans.)
- Since  $856 \times 1239 = 1060584$   
 $\therefore 0.856 \times 12.39 = 10.60584$  (Ans.)
- Since  $24 \times 5 \times 4 = 480$   
And, the sum of decimal places in the given decimal numbers 2.4, 0.5 and 0.04 =  $1 + 1 + 2 = 4$ . So, in the answer, the decimal point must be placed after 4 digits from the right.  
 $\therefore 2.4 \times 0.5 \times 0.04 = 0.0480$  or 0.048 (Ans.)

**Note :** 0.0480 and 0.048 are the same.

## **Multiplication of a decimal number by 10 or higher powers of 10.**

To multiply a decimal number by 10, 100, 1000, ... shift the decimal point to the right by as many digits as there are zeroes in 10, 100, 1000, etc.

*For example :*

$$(i) \quad 43.8725 \times 10 = 438.725 \quad (ii) \quad 43.8725 \times 100 = 4387.25$$

$$(iii) \quad 43.8725 \times 1000 = 43872.5$$

Also,

$$(iv) \quad 5.7 \times 10 = 57, \quad 5.7 \times 100 = 570, \quad 5.7 \times 1000 = 5700.$$

$$(v) \quad 0.008 \times 10 = 0.08, \quad 0.008 \times 100 = 0.8, \quad 0.008 \times 10000 = 80.$$

## **6.9 DIVISION**

(a) **Division of a decimal number by a natural number** (i.e. by a counting number) :

Divide in the ordinary way, and in the quotient obtained, place the decimal just after the division of the integral part of the given decimal number.

*For example :*

$$(i) \quad \frac{83.6}{2} = 41.8$$

$$\begin{array}{r} 41.8 \\ 2 \sqrt{83.6} \\ \underline{-8} \\ \hline 3 \\ \underline{-2} \\ \hline 16 \\ \underline{-16} \\ \hline 0 \end{array}$$

$$(ii) \quad \frac{64.56}{12} = 5.38$$

$$\begin{array}{r} 5.38 \\ 12 \sqrt{64.56} \\ \underline{-60} \\ \hline 45 \\ \underline{-48} \\ \hline 96 \\ \underline{-96} \\ \hline 0 \end{array}$$

(b) **Division of a decimal number by a decimal number :**

- Steps :**
1. Form a fraction with the decimal number to be divided as the numerator and the other decimal number (divisor) as the denominator.
  2. Multiply both the terms of the fraction formed in step 1 by 10 or 100 or 1000, etc., so that the decimal point in the denominator is removed, and then divide.

*For example :*

$$(i) \quad \frac{36.8}{1.6} = \frac{36.8 \times 10}{1.6 \times 10}$$

$$= \frac{368}{16} = 23$$

$$1.6 \times 10 = 16$$

$$(ii) \quad \frac{5.065}{0.05} = \frac{5.065 \times 100}{0.05 \times 100} = \frac{506.5}{5} = 101.3 \quad \text{and so on.}$$

(c) **Division of a decimal number by 10, 100, 1000, etc.**

Shift the decimal point in the given number (dividend) to the left by as many digits as there are zeroes in the divisor : 10, 100, 1000, etc.

*For example :*

$$\frac{48.7}{10} = 4.87, \quad \frac{937.3}{100} = 9.373, \quad \frac{520.81}{1000} = 0.52081 \quad \text{and so on.}$$

### EXERCISE 6(C)

**1. Multiply :**

- |                      |                       |                    |
|----------------------|-----------------------|--------------------|
| (i) 5.6 and 8        | (ii) 38.46 and 9      | (iii) 0.943 and 62 |
| (iv) 0.0453 and 35   | (v) 7.5 and 2.5       | (vi) 4.23 and 0.8  |
| (vii) 83.54 and 0.07 | (viii) 0.636 and 1.83 |                    |

**2. Evaluate :**

- |                                       |                                 |                                   |
|---------------------------------------|---------------------------------|-----------------------------------|
| (i) $0.0008 \times 26$                | (ii) $0.038 \times 95$          | (iii) $1.2 \times 2.4 \times 3.6$ |
| (iv) $0.9 \times 1.8 \times 0.27$     | (v) $1.5 \times 1.5 \times 1.5$ | (vi) $0.025 \times 0.025$         |
| (vii) $0.2 \times 0.002 \times 0.001$ |                                 |                                   |

**3. Multiply each of the following numbers by 10, 100 and 1000 :**

- |           |            |              |
|-----------|------------|--------------|
| (i) 3.9   | (ii) 2.89  | (iii) 0.0829 |
| (iv) 40.3 | (v) 0.3725 |              |

**4. Evaluate :**

- |                       |                      |                       |
|-----------------------|----------------------|-----------------------|
| (i) $8.64 \div 8$     | (ii) $0.0072 \div 6$ | (iii) $20.64 \div 16$ |
| (iv) $1.602 \div 15$  | (v) $13.08 \div 4$   | (vi) $3.204 \div 9$   |
| (vii) $3.024 \div 12$ | (viii) $5.15 \div 5$ | (ix) $3 \div 5$       |

**5. Divide each of the following numbers by 10, 100 and 1000 :**

- |           |            |              |
|-----------|------------|--------------|
| (i) 49.79 | (ii) 0.923 | (iii) 0.0704 |
|-----------|------------|--------------|

**6. Evaluate :**

- |                        |                           |                       |
|------------------------|---------------------------|-----------------------|
| (i) $9.4 \div 0.47$    | (ii) $6.3 \div 0.09$      | (iii) $2.88 \div 1.2$ |
| (iv) $8.64 \div 1.6$   | (v) $37.188 \div 3.6$     | (vi) $16.5 \div 0.15$ |
| (vii) $3.2 \div 0.005$ | (viii) $3.24 \div 0.0016$ |                       |

**7. Fill in the blanks** with 10, 100, 1000 or 10000, etc. :

- |                                    |                                    |                                    |
|------------------------------------|------------------------------------|------------------------------------|
| (i) $7.85 \times \dots = 78.5$     | (ii) $0.442 \times \dots = 442$    | (iii) $0.0924 \times \dots = 9.24$ |
| (iv) $0.00187 \times \dots = 18.7$ | (v) $2.6 \times \dots = 2600$      | (vi) $0.08 \times \dots = 80$      |
| (vii) $96.7 \div \dots = 0.967$    | (viii) $5.2 \div \dots = 0.52$     | (ix) $33.15 \div \dots = 0.03315$  |
| (x) $0.7 \div \dots = 0.007$       | (xi) $0.00672 \times \dots = 67.2$ |                                    |

**8. Evaluate :**

- |  |   |  |
|--|---|--|
| (i) $9.32 - 28.54 \div 10$             | (ii) $0.234 \times 10 + 62.8$           | (iii) $3.06 \times 100 - 889.4 \div 100$ |
| (iv) $2.86 \times 7.5 + 45.4 \div 0.2$ | (v) $97.82 \times 0.03 - 0.54 \div 0.3$ |  |

## 6.10 USING DECIMALS IN

### (a) Denoting the value of currency :

The currency of our country is *Rupee*, we write it as Re or ₹. When it is divided into hundred equal parts, each part is called a *paisa* (P).

We can express Rupees (₹) and paise together in decimal system, as shown below :

- (i) ₹ 14 and 42 paise = ₹ 14.42
- (ii) ₹ 3 and 8 paise = ₹ 3.08
- (iii) 5 paise = ₹ 0.05

Rupee is written before the decimal point and paise after it.

### (b) Measuring lengths :

The most commonly used unit of length is *metre* (m). When a length of one metre is divided into 100 equal parts, each part is called a *centimetre* (cm).

The units for measuring smaller lengths are *decimetre* (dm), *millimetre* (mm), etc. and these for bigger lengths are *decametre* (dam), *hectametre* (hm), *kilometre* (km), etc.

The relations between the different units used for measuring lengths are given below :

$$10 \text{ millimetre (mm)} = 1 \text{ centimetre (cm)}$$

$$10 \text{ centimetre (cm)} = 1 \text{ decimetre (dm)}$$

$$100 \text{ centimetre} = 10 \text{ decimetre (dm)} = 1 \text{ metre (m)}$$

$$10 \text{ metre (m)} = 1 \text{ decametre (dam)}$$

$$10 \text{ dam} = 1 \text{ hectametre (hm)}$$

$$1000 \text{ metre} = 10 \text{ hm} = 1 \text{ kilometre (km)}$$

In our daily life, we most commonly use *metre* (m) and *centimetre* (cm) for measuring lengths and the relation between these two units of length is :

$$1 \text{ m} = 100 \text{ cm} \quad \text{and} \quad 1 \text{ cm} = \frac{1}{100} \text{ m}$$

In the decimal system, the relation between these two units is as shown below :

- |                            |                               |
|----------------------------|-------------------------------|
| (i) 3 m and 58 cm = 3.58 m | (ii) 7 m and 8 cm = 7.08 m    |
| (iii) 250 cm = 2.50 m      | (iv) 63 cm = 0.63 m and so on |

### (c) Measuring weights (mass) :

The most commonly used units for measuring weight are *kilogramme* (kg) and *gramme* (gm), and the relation between these two units of mass is :

$$1 \text{ kg} = 1000 \text{ gm} \quad \text{and} \quad 1 \text{ gm} = \frac{1}{1000} \text{ kg}$$

- |                              |                                  |
|------------------------------|----------------------------------|
| (i) 1 kg 546 gm = 1.546 kg   | (ii) 5 kg 68 gm = 5.068 kg       |
| (iii) 64 kg 5 gm = 64.005 kg | (iv) 875 gm = 0.875 kg and so on |

**EXERCISE 6(D)**

1. Express in paise :  
 (i) ₹ 8.40      (ii) ₹ 0.97      (iii) ₹ 0.09      (iv) ₹ 62.35
2. Express in rupees :  
 (i) 55 p      (ii) 8 p      (iii) 695 p      (iv) 3279 p
3. Express in centimetre (cm) :  
 (i) 6 m      (ii) 8.54 m      (iii) 3.08 m      (iv) 0.87 m  
 (v) 0.03 m      (vi) 25.04 m
4. Express in metre (m) :  
 (i) 250 cm      (ii) 2328 cm      (iii) 86 cm      (iv) 4 cm  
 (v) 107 cm
5. Express in gramme (gm) :  
 (i) 6 kg      (ii) 5.543 kg      (iii) 0.078 kg      (iv) 3.62 kg  
 (v) 4.5 kg
6. Express in kilogramme (kg) :  
 (i) 7000 gm      (ii) 6839 gm      (iii) 445 gm      (iv) 93 gm  
 (v) 8 gm      (vi) 13545 gm
7. Add, giving answer in rupees :  
 (i) ₹ 5.37 and ₹ 12      (ii) ₹ 24.03 and 532 paise  
 (iii) 73 paise and ₹ 2.08      (iv) 8 paise and ₹ 15.36
8. Subtract :  
 (i) ₹ 35.74 from ₹ 63.22      (ii) 286 paise from ₹ 7.02      (iii) ₹ 0.55 from 121 paise
9. Add, giving answer in metre :  
 (i) 2.4 m and 1.78 m      (ii) 848 cm and 2.9 m      (iii) 0.93 m and 64 cm
10. Subtract, giving answer in metre :  
 (i) 5.03 m from 19.6 m      (ii) 428 cm from 1033 m      (iii) 0.84 m from 122 cm
11. Add, giving answer in kg :  
 (i) 2.06 kg and 57.864 kg      (ii) 778 gm and 1.939 kg      (iii) 0.065 kg and 4023 gm
12. Subtract, giving answer in kg :  
 (i) 9.462 kg from 15.6 kg      (ii) 4317 gm from 23 kg      (iii) 0.798 kg from 4169 gm

**6.11 WORD PROBLEMS BASED ON DECIMALS****Example 5 :**

The cost of one metre cloth is ₹ 15.75. Find the cost of 2.4 m cloth.

**Solution :**

Since cost of 1 m cloth = ₹ 15.75

$$\therefore \text{Cost of } 2.4 \text{ m cloth} = ₹ 15.75 \times 2.4 = ₹ 37.80$$

(Ans.)

**Example 6 :**

The length of a rod is 28.14 m. If it is divided into 3 equal pieces, find the length of each piece.

**Solution :**

Clearly, the length of 3 pieces = 28.14 m

[∴ The length of rod = the sum of the lengths of 3 pieces]

$$\text{and the length of each piece} = \frac{28.14}{3} \text{ m} = 9.38 \text{ m} \quad (\text{Ans.})$$

**Example 7 :**

The total weight of 8 identical bricks is 20.4 kg.

Find : (i) the weight of each brick. (ii) the total weight of 5 bricks.

**Solution :**

$$(i) \text{ Given weight of 8 bricks} = 20.4 \text{ kg},$$

$$\therefore \text{Weight of each brick} = \frac{20.4}{8} \text{ kg} = 2.55 \text{ kg} \quad (\text{Ans.})$$

$$(ii) \text{ Since weight of 1 brick} = 2.55 \text{ kg},$$

$$\therefore \text{Total weight of 5 bricks} = 2.55 \text{ kg} \times 5 = 12.75 \text{ kg} \quad (\text{Ans.})$$

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**EXERCISE 6(E)**

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1. The cost of a fountain pen is ₹ 13.25. Find the cost of 8 such pens.
2. The cost of 25 identical articles is ₹ 218.25. Find the cost of one article.
3. The length of an iron rod is 10.32 m. The rod is divided into 4 pieces of equal length. Find the length of each piece.
4. What will be the total length of cloth required to make 5 shirts if 2.15 m of cloth is needed for each shirt ?
5. Find the distance walked by a boy in  $1\frac{1}{2}$  hours if he walks 2.150 km every hour.
6. 83 note-books are sold at ₹ 15.25 each. Find the total money (in rupees) obtained by selling these note-books.
7. If the length of one bed-cover is 2.1 m, find the total length of 17 bed-covers.
8. A piece of rope is 10 m 67 cm long. Another rope is 16 m 32 cm long. By how much is the second rope longer than the first one ?
9. 12 cakes of soap together weigh 5 kg and 604 gm. Find the weight of :
  - (i) one cake in both kg and gramme
  - (ii) 5 cakes in kg.
10. Three strings of lengths 50 m 75 cm, 68 m 58 cm and 121 m 3 cm, respectively, are joined together to get a single string of greatest length, find the length of the single string obtained. If this single string is then divided into 12 equal pieces, find the length of each piece.

### - Revision Exercise (Chapter 6)

- Write the following decimal numbers in ascending order of value :
    - 5.054, 5.250, 5.245 and 5.0543
    - 62.443, 62.434, 62.344 and 62.444
  - What number added to 0.805 gives 1 ?
  - What must be subtracted from 3 to get 2.462 ?
  - By how much should 83.407 be decreased to get 27.78 ?
  - Two articles weigh 32.674 kg and 40.038 kg, respectively. Find :
    - the total weight of both the articles.
    - the difference in the weights of both the articles.
  - By how much does the sum of 34.07 and 15.239 exceed the sum of 16.40 and 27.08 ?
  - The cost of 1 kg of fruit is ₹ 27.50. What is the cost of 3.6 kg of fruit ?
  - Evaluate : 
 

(i) $0.8 \times 0.8 \times 0.8$	(ii) $0.8 \div 0.8 \times 0.8$	(iii) $0.8 \times 0.8 \div 0.8$
(iv) 0.8 ÷ 0.8 of 0.8	(v) 0.8 of 0.8 ÷ 0.8	
  - Evaluate : 
 

(i) $3.5 \times (4.2 + 2.6)$	(ii) $3.5 \times 4.2 + 3.5 \times 2.6$
Are (i) and (ii) equal ?	
  - Evaluate : 
 

(i) $(3.87 - 2.09) \times 2.4$	(ii) $3.87 \times 2.4 - 2.09 \times 2.4$
Are (i) and (ii) equal ?	
  - A 4.85 m long pole is divided into 5 equal parts. Find the length of each part.
  - A car can run 16.8 km, consuming one litre of petrol. How many kilometres will it run on 3.7 litres of petrol ?
  - A certain amount of money is distributed among 28 persons. If each person gets ₹ 62.45 and ₹ 5.78 is left, find the original amount of money.
  - Complete the following table :

Item	Cost per kg	Quantity	Amount
(i) A	₹ 17.40	2.5 kg	.....
(ii) B	₹ 42.25	1.6 kg	.....
(iii) C	₹ 28.50	3.2 kg	.....
			<b>Total = .....</b>

  - The difference between two numbers is 47.364. If the smaller number is 31.855, find the bigger one.

<b>Item</b>	<b>Cost per kg</b>	<b>Quantity</b>	<b>Amount</b>
(i) A	₹ 17.40	2.5 kg	.....
(ii) B	₹ 42.25	1.6 kg	.....
(iii) C	₹ 28.50	3.2 kg	.....
<b>Total =</b>			.....

15. The difference between two numbers is 47.364. If the smaller number is 31.855, find the bigger one.