Decimal Fractions

IMPORTANT POINTS

Decimal Fraction : A fraction, whose denominator is 10 or a higher power of 10 e.g. 100, 1,000, 10,000 etc. is known as decimal fraction.

Number of Decimal Places: The number of digits in the decimal part of a number is the number of decimal places in it.

When the given number has only decimal part in it. It is always written 0 before it as 0.7, 0.55 are written as 0.7, 0.55.

Conversion of a Fraction into a Decimal Fraction :

1. When the denominator is 10,100,1000, 10,000 etc. : Counting from right to left of the numerator of the given fraction, mark the decimal point after as many digits as the number of zeroes in it denominator

   e.g. $\frac{2}{10} = 0.2$, $\frac{24}{1000} = 0{\cdot}024$; $\frac{221}{100} = 2{\cdot}21$

2. When the denominator is not, 10, 100, 1000, 10,000 etc.
   Multiply both, the numerator and denominator of the given fraction, by a suitable number to get the denominator 10 or a power of 10 and then proceed as above, e.g.

   $\frac{1}{2} = \frac{1 \times 50}{2 \times 50} = \frac{50}{100} = 0{\cdot}50 = 0{\cdot}5,$

   $\frac{2}{25} = \frac{2 \times 4}{25 \times 4} = \frac{8}{100} = 0{\cdot}08$

3. Conversion of a given Decimal Fraction into a Non-Decimal Fraction : Remove the decimal point and at the same time write 1 in the denominator, as many zeroes to the right of 1 as there are digits in the decimal part e.g.,

   $0{\cdot}42 = \frac{42}{100}, 0{\cdot}031 = \frac{31}{1000};$

   $3{\cdot}79 = \frac{379}{100} = 3\frac{79}{100}$

   $10^2 = 10 \times 10, 10^3 = 10 \times 10 \times 10 = 1{,}000,$

   $10^5 = 10 \times 10 \times 10 \times 10 \times 10 = 1{,}00{,}000$

   Zero or zeores written at the right of a decimal number does not change its value, e.g. 3.4 is the same as 3.40, 3.400, 3.4000 etc.

EXERCISE 15(A)

Question 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

Solution:

(i) 7.03, the decimal part is .03 which contains two digits.
Number 7.03 has 2 decimal places.
(ii) 0.509, the decimal part is 0.509 which contains three digits.
Number 0.509 has 3 decimal places
(iii) 146.2, the decimal part is .2 which contains one digits.
Number 146.2 has 1 decimal places.
(iv) 0.0065, the decimal part is .0065 which contains four digits.
Number 0.0065 has 4 decimal places
(v) 8.03207, the decimal part is .03207 which contains five digits.
Number 8.03207 has 5 decimal places.

Question 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

Solution:

(i) 1.36 = 1.360
239:8 = 239.800
47.008 = 47.008
(ii) 507.0752 = 507.07520
8.52073 = 8.52073
0.808 = 0.80800
(iii) 459.22 = 459.220000
7.03093 = 7.030930
0.200037 = 0.200037

Question 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

Solution:

$(i)\ \frac{7}{10} = 0.7 \qquad (ii)\ \frac{47}{10} = 4{\cdot}7$

$(iii)\ \frac{343}{100} = 3.43$

$(iv)\ \frac{3}{10^3} = \frac{3}{10\times10\times10} = \frac{3}{1000} = 0{\cdot}003$

$(v)\ \frac{7295}{10^5} = \frac{7295}{10\times10\times10\times10\times10}$

$= \frac{7295}{100000} = 0{\cdot}07295$

$(vi)\ \frac{289}{10^6} = \frac{289}{10\times10\times10\times10\times10\times10}$

$= \frac{289}{10,00,000} = 0{\cdot}000289$

$(vii)\ 95\text{-hundredths} = \frac{95}{100} = 0{\cdot}95$

Question 4.

Convert into a decimal fraction :

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

Solution:

$(i)\ \frac{3}{4} = \frac{3\times25}{4\times25} = \frac{75}{100} = 0.75$

$(ii)\ \frac{3}{40} = \frac{3\times25}{40\times25} = \frac{75}{1000} = 0.075$

$(iii)\ \frac{1}{125} = \frac{1\times8}{125\times8} = \frac{8}{1000} = 0.008$

$(iv)\ \frac{7}{25} = \frac{7\times4}{28\times4} = \frac{28}{100} = 0.28$

Question 5.

Change the given decimals 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

Solution:

$$(i)\ 0{\cdot}05 = \frac{5}{100} = \frac{1}{20}$$

$$(ii)\ 3{\cdot}95 = \frac{395}{100} = \frac{79}{20} = 3\frac{19}{20}$$

$$(iii)\ 4{\cdot}005 = \frac{4005}{1000} = \frac{801}{200} = 4\frac{1}{200}$$

$$(iv)\ 0{\cdot}876 = \frac{876}{1000} = \frac{219}{250}$$

$$(v)\ 50{\cdot}06 = \frac{5006}{100} = \frac{2503}{50} = 50\frac{3}{50}$$

$$(vi)\ 0{\cdot}01075 = \frac{1075}{100000} = \frac{43}{4000}$$

$$(vii)\ 4{\cdot}8806 = \frac{48806}{10000} = \frac{24403}{5000} = 4\frac{4403}{5000}$$

EXERCISE 15(B)

Question 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

Solution:

$$\begin{array}{rr} (i) & 0{\cdot}243 \\ & +\ 2{\cdot}470 \\ & +\ 3{\cdot}009 \\ \hline & 5{\cdot}722 \end{array} \qquad \begin{array}{rr} (ii) & 0{\cdot}0736 \\ & +\ 0{\cdot}6095 \\ & +\ 0{\cdot}9107 \\ \hline & 1{\cdot}5938 \end{array}$$

$$\begin{array}{rr} (iii) & 1.010 \\ & +\ 257.000 \\ & +\ 0.200 \\ \hline & 258.210 \end{array}$$

$$\begin{array}{rr} (iv) & 18{\cdot}00 \\ & +\ 200{\cdot}35 \\ & 11{\cdot}72 \\ & 2{\cdot}30 \\ \hline & 232{\cdot}37 \end{array}$$

$$\begin{array}{rr} (v) & 0{\cdot}58600 \\ & +\ 0{\cdot}05860 \\ & +\ 0{\cdot}00586 \\ \hline & 0{\cdot}65046 \end{array}$$

Question 2.

Find the value of :

(i) 6.8 – 2.64

(ii) 2 – 1.0304

(iii) 0.1 – 0.08

(iv) 0.83 – 0.342

Solution:

(*i*) 6.8 – 2.64

$$\begin{array}{r} 6.80 \\ -2.64 \\ \hline 4.16 \end{array}$$

= 6.80 – 2.64 = 4.16

(*ii*) 2 – 1·0304

$$\begin{array}{r} 2{\cdot}0000 \\ -1{\cdot}0304 \\ \hline 0{\cdot}9696 \end{array}$$

(*iii*) 0·1 – 0·08

$$\begin{array}{r} 0{\cdot}10 \\ -0{\cdot}08 \\ \hline 0{\cdot}02 \end{array}$$

(*iv*) 0·83 – 0·342

$$\begin{array}{r} 0{\cdot}830 \\ -0{\cdot}342 \\ \hline 0{\cdot}488 \end{array}$$

Question 3.

Subtract :

(i) 0.43 from 0.97

(ii) 2.008 from 22.1058

(iii) 0.18 from 0.6

(iv) 1.002 from 17

(v) 83 from 92.05

Solution:

(i) 0.43 from 0.97

$$\begin{array}{r} 0{\cdot}97 \\ -0{\cdot}43 \\ \hline 0{\cdot}54 \end{array}$$

(*ii*) 2·008 from 22·1058

$$\begin{array}{r} 22{\cdot}1058 \\ -2{\cdot}0080 \\ \hline 20{\cdot}0978 \end{array}$$

(*iii*) 0·18 from 0·6

$$\begin{array}{r} 0{\cdot}60 \\ -0{\cdot}18 \\ \hline 0{\cdot}42 \end{array}$$

(*iv*) 1.002 from 17

$$\begin{array}{r} 17.000 \\ -1.002 \\ \hline 15.998 \end{array}$$

$= 17.000 - 1.002 = 15.998$

(*v*) 83 from 92·05

$$\begin{array}{r} 92{\cdot}05 \\ -83{\cdot}00 \\ \hline 9{\cdot}05 \end{array}$$

Question 4.

Simplify :

(i) 3.5 – 2.43 + 0.075

(ii) 7.84 + 0.3 – 4.016

(iii) 2.987 – 1.25 – 0.54

(iv) 52.9 – 231.666 + 204

(v) 8.57 – 6.4432 – 1.70 + 0.683

Solution:

(i) 3.5 – 2.43 + 0.075

= 3.500 + 0.075 – 2.43

= 3.575 – 2.430 = 1.145

(ii) 7.84 + 0.3 – 4.016

= 7.840 + 0.300 – 4.016

= 8.140 – 4.016

= 4.124

(iii) 2.987 – 1.25 – 0.54

= 2.987 – 1.79

= 2.987 – 1.790

= 1.197

(iv) 52.9 – 231.666 + 204

= 52.9 – 231.666 + 204.0

= 256.9 – 231.666

= 256.900 – 231.666
= 25.234

Question 5.
From the sum of 75.75 and 4.9 subtract 28.465.
Solution:

75.75	80·650
+ 4.90	−28·465
80.65	**52·185**

Question 6.
Subtract the sum of 8.14 and 12.9 from 32.7.
Solution:

8·14	32·70
+12·9	−21·04
21·04	**11·66**

Question 7.
Subtract the sum of 34.27 and 159.8 from the sum of 20.937 and 200.6.
Solution:

34·27	20·937	221.537
+159·8	+200·6	−194.070
194·07	221·537	27.467

Question 8.
From the sum of 2.43 and 4.349 subtract the sum of 0.8 and 3.15.
Solution:

2·43	0·8	6·779
+4·349	+3·15	−3·95
6·779	3·95	**2·829**

Question 9.
By how much does the sum of 18.0495 and 34.9644 exceed the sum of 7.6752 and 24.876 ?
Solution:

18·0495	7·6752	53·0139
+34·9644	+24·876	−32·5512
53·0139	32·5512	**20·4627**

Question 10.
What least number must be added to 89.376 to get 1000?
Solution:

$$\begin{array}{r} 1000{\cdot}000 \\ -89{\cdot}376 \\ \hline 910{\cdot}624 \end{array}$$

$\therefore$ The number add to recieve 1000
= **910·624**

EXERCISE 15(C)

Question 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
(ix) 6.4564 and 1000
(x) 0.076 and 100
Solution:
(i) 5.6 x 8 = 44.8
(ii) 38.46 x 9 = 346.14
(iii) 0.943 and 62

$$\begin{array}{r} 943 \\ \times 62 \\ \hline 1886 \\ 5658\times \\ \hline 58466 \end{array}$$

Since, $.943 \times 62 = 58{\cdot}466$

$\therefore \quad 0{\cdot}943 \times 62 = \mathbf{58{\cdot}466}$

(*iv*)
$$\begin{array}{r} 453 \\ \times 35 \\ \hline 2265 \\ 1359\times \\ \hline 15855 \end{array}$$

Since, $453 \times 35 = 15855$,

$\therefore\ 0{\cdot}0453 \times 35 = \mathbf{1{\cdot}5855}$.

(*v*) 7·5 and 2·5

$$\begin{array}{r} 75 \\ \times 25 \\ \hline 375 \\ 150\times \\ \hline 1875 \end{array}$$

Since, $75 \times 25 = 1875$

$\therefore \quad 7{\cdot}5 \times 2{\cdot}5 = \mathbf{18{\cdot}75}$

(*vi*) 4·23 and 0·8

Since, $423 \times 8 = 3384$

$\therefore \quad 4{\cdot}23 \times 0{\cdot}8 = \mathbf{3{\cdot}384}$

(*vii*) 83·54 and 0·07

Since, $8354 \times 7 = 58478$

$\therefore 83{\cdot}54 \times 0{\cdot}07 = \mathbf{5{\cdot}8478}$

(*viii*) 0·636 and 1·83

$$\begin{array}{r} 636 \\ \times 183 \\ \hline 1908 \\ 5088\times \\ 636\times\times \\ \hline 116388 \end{array}$$

Since, $636 \times 183 = 116388$

$\therefore$ 0·636 and 1·83 $= \mathbf{1{\cdot}16388}$

(*ix*) $6{\cdot}4564 \times 1000$

Since, $64564 \times 1000 = 64564000$

$\therefore \quad 6{\cdot}4564 \times 1000 = \mathbf{6456{\cdot}4000}$

$= \mathbf{6456{\cdot}4}$

(*x*) 0·076 and 100

Since, $76 \times 100 = 7600$

$\therefore \quad 0{\cdot}076 \times 100 = \mathbf{7{\cdot}600} = 7{\cdot}6$

Question 2.

Evaluate :

(i) 0.0008 x 26

(ii) 0.038 x 95

(iii) 1.2 x 2.4 x 3.6

(iv) 0.9 x 1.8 x 0.27

(v) 1.5 x 1.5 x 1.5

(vi) 0.025 x 0.025

(vii) 0.2 x 0.002 x 0.001

Solution:

(i) 0.0008 – 26

Since, 8 x 26 = 208

0.0008 x 26 = 0.0208

(*ii*) **0·038 × 95**

38
×95
190
342×
3610

Since, 38 × 95 = 3610

∴ ·038 × 95 = **3·610 = 3·61**

(*iii*) 1·2 × 2·4 × 3·6

12
×24
48
24×
288
×36
1728
864×
10368

Since, 12 × 24 × 36 = 10368

∴ 1·2 × 2·4 × 3·6 = **10·368**

(*iv*) 0·9 × 1·8 × 0·27

9
×18
72
9×
162
×27
1134
324×
4374

Since, 9 × 18 × 27 = 4374

∴ 0·9 × 1·8 × 0·27 = **0·4374**

(*v*) 1·5 × 1·5 × 1·5

15
×15
75
15×
225
×15
1125
225×
3375

Since, $15 \times 15 \times 15 = 3375$

$1{\cdot}5 \times 1{\cdot}5 \times 1{\cdot}5 = \mathbf{3{\cdot}375}$

(*vi*) $0{\cdot}025 \times 0{\cdot}025$

Since, $25 \times 25 = 625$

$\therefore\ 0{\cdot}025 \times 0{\cdot}025 = \mathbf{0{\cdot}000625}$

(*vii*) $0{\cdot}2 \times 0{\cdot}002 \times 0{\cdot}001$

Since, $2 \times 2 \times 1 = 4$

$\therefore\ 0{\cdot}2 \times 0{\cdot}002 \times 0{\cdot}001 = \mathbf{0{\cdot}0000004}$

Question 3.

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

(i) 3.9

(ii) 2.89

(in) 0.0829

(iv) 40.3

(v) 0.3725

Solution:

(i) 3.9 x 10 = 39

3.9 x 100 = 390.0 = 390

3.9 x 1000 = 3900.0 =3900

(ii) 2.89 x 10 = 28.9

2.89 x 100 = 289

2.89 x 1000 = 2890.00 = 2890

(iii) 0.0829 x 10 = 0.829

0.0829 x 100 = 8.29

0.0829 x 1000 = 82.9

(iv) 40.3 x 10 = 403

40.3 x 100 = 4030

40.3 x 1000 = 40300

(v) 0.3725 x 10 = 3.725

0.3725 x 100 = 37.25

0.3725 x 1000 = 372.5

Question 4.

Evaluate :

(i) 8.64 ÷ 8

(ii) 0.0072 ÷ 6

(iii) 20.64 ÷ 16

(iv) 1.602 ÷ 15

(v) 13.08 ÷ 4

(vi) 3.204 ÷ 9

(vii) 3.024 ÷ 12

(viii) 5.15 ÷ 5

(ix) 3 ÷ 5

Solution:

$$(i)\ 8.64 \div 8 = \frac{8.64}{8} = 1.08$$

$$(ii)\ 0.0072 \div 6 = \frac{0.0072}{6} = 0.0012$$

$$(iii)\ \frac{20{\cdot}64}{16} = \mathbf{1{\cdot}29}$$

$$(iv)\ 1.602 \div 15 = \frac{1.602}{15} = \frac{1602}{1000 \times 15}$$

$$= \frac{106.8}{1000} = 0.1068$$

$$(v)\ \frac{13{\cdot}08}{4} = \mathbf{3{\cdot}27}$$

$$(vi)\ \frac{3{\cdot}204}{9} = \mathbf{0{\cdot}356}$$

$$(vii)\ 3.024 \div 12 = \frac{3.024}{12} = 0.252$$

$$(viii)\ \frac{5{\cdot}15}{5} = \mathbf{1{\cdot}03}$$

$$(ix)\ 3 \div 5 = \frac{3}{5} = 0.6$$

Question 5.

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

(i) 49.79

(ii) 0.923

(iii) 0.0704

Solution:

$$(i)\ \frac{49\cdot79}{10} = 4\cdot979$$

$$\frac{49\cdot79}{100} = 0\cdot4979$$

$$\frac{49\cdot79}{1000} = 0\cdot04979$$

$$(ii)\ \frac{0\cdot923}{10} = 0\cdot0923$$

$$\frac{0\cdot923}{100} = 0\cdot00923$$

$$\frac{0\cdot923}{1000} = 0\cdot000923$$

$$(iii)\ \frac{0\cdot0704}{10} = 0\cdot00704$$

$$\frac{0\cdot0704}{100} = 0\cdot000704$$

$$\frac{0\cdot0704}{1000} = 0\cdot0000704$$

Question 6.

Evaluate :

(i) 9.4 ÷ 0.47

(ii) 6.3 ÷ 0.09

(iii) 2.88 ÷ 1.2

(iv) 8.64 ÷ 1.6

(v) 37.188 ÷ 3.6

(vi) 16.5 ÷ 0.15

(vii) 3.2 ÷ 0.005

(viii) 3.24 ÷ 0.0016

Solution:

(*i*) $\frac{9.4}{0.47} = \frac{94 \times 100}{47 \times 10} = 2 \times 10 = \mathbf{20}$

(*ii*) $\frac{6{\cdot}3}{0{\cdot}09} = \frac{63 \times 100}{9 \times 10} = \frac{630}{9} = \mathbf{70}$

(*iii*) $\frac{2{\cdot}88}{1{\cdot}2} = \frac{288 \times 10}{12 \times 100} = \frac{288}{120} = \mathbf{2{\cdot}4}$

or $\frac{2{\cdot}88}{1{\cdot}2} = \frac{28{\cdot}8}{12} = \mathbf{2{\cdot}4}$

(*iv*) $8.64 \div 1.6 = \frac{8.64}{1.6} = \frac{8.64 \times 10}{1.6 \times 10}$

$= \frac{86.4}{16} = \mathbf{5.4}$

(*v*) $\frac{37{\cdot}188}{3{\cdot}6} = \frac{371{\cdot}88}{36} = \mathbf{10{\cdot}33}$

or $\frac{37{\cdot}188}{3{\cdot}6} = \frac{37188 \times 10}{36 \times 1000}$

$= \frac{371880}{36000} = \frac{2066}{200} = \frac{1033}{100}$

$= \mathbf{10{\cdot}33}$

(*vi*) $\frac{16{\cdot}5}{0{\cdot}15} = \frac{165 \times 100}{15 \times 10} = \frac{16500}{150} = \mathbf{110}$

or $\frac{16{\cdot}5}{0{\cdot}15} = \frac{1650}{15} = \mathbf{110}$

(*vii*) $3.2 \div 0.005 = \frac{3.2}{0.005} = \frac{3.2 \times 1000}{0.005 \times 1000}$

$= \frac{3200}{5} = \mathbf{640}$

(*viii*) $\frac{3{\cdot}24}{0{\cdot}0016} = \frac{324 \times 10000}{100 \times 16}$

$= \frac{3240000}{1600} = \mathbf{2025}$

or $\frac{3{\cdot}24}{0{\cdot}0016} = \frac{324 \times 10000}{00016 \times 100}$

$= \frac{32400}{16} = \mathbf{2025}$

Question 7.

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

(i) 7.85 x …….. = 78.5

(ii) 0.442 x ……. = 442

(in) 0.0924 x …… = 9.24

(iv) 0.00187 x ……. = 18-7
(v) 2.6 x ……. = 2600
(vi) 0.08 x ……. = 80
(vii) 96.7 ÷ …….. = 0.967
(viii) 5.2 ÷ ……. = 0.52
(ix) 33.15 ÷ …….. = 0.03315
(x) 0.7 ÷ ……. = 0.007
(xi) 0.00672 x …… = 67.2

Solution:

(i) 7.85 x **10** = 78.5
(ii) 0.442 x **1000** = 442
(iii) 0.0924 x **100** = 9.24
(iv) 0.00187 x **10000** = 18.7
(v) 2.6 x **1000** = 2600
(vi) 0.08 x **1000** = 80
(vii) 96.7 ÷ **100** = 0.967
(viii) 5.2 ÷ **10** = 0.52
(ix) 33.15 ÷ **1000** = 0.03315
(x) 0.7 ÷ **100** = 0.007
(xi) 0.00672 x **10000** = 67.2

Question 8.

Evaluate :
(i) 9.32 – 28.54 ÷ 10
(ii) 0.234 x 10 + 62.8
(iii) 3.06 x 100 – 889.4 ÷ 100
(iv) 2.86 x 7.5 + 45.4 ÷ 0.2

(i) 9.32 – 28.54 ÷ 10
= 9.32 – 2.854

$= 9.320 - 2.854 = 6.466$

(*ii*) $0{\cdot}234 \times 10 + 62{\cdot}8$ (Using BODMAS)

$2{\cdot}34 + 62{\cdot}80 = \mathbf{65{\cdot}14}$

(*iii*) $3{\cdot}06 \times 100 - 889{\cdot}4 \div 100$

(Using BODMAS)

$3{\cdot}06 \times 100 - 8{\cdot}894$

$306 - 8{\cdot}894$

$306{\cdot}000 - 8{\cdot}894 = \mathbf{297{\cdot}106}$

(*iv*) $2{\cdot}86 \times 7{\cdot}5 + 45{\cdot}4 \div 0{\cdot}2$

(Using BODMAS)

$2{\cdot}86 \times 7{\cdot}5 + 454 \div 2$

$2{\cdot}86 \times 7{\cdot}5 + 227{\cdot}00$

$\frac{286}{100} \times \frac{75}{10} + 227{\cdot}00$

$\frac{286}{4} \times \frac{3}{10} + 227{\cdot}00$

$\frac{143}{2} \times \frac{3}{10} + 227{\cdot}00$

$\frac{429}{20} + 227{\cdot}00$

$21{\cdot}45 + 227{\cdot}00 = \mathbf{248{\cdot}45}$

(*v*) $97.82 \times 0.03 - 0.54 \div 0.3$

$= 97.82 \times 0.03 - \frac{0.54}{0.3}$

$= 97.82 \times 0.03 - \frac{0.54 \times 10}{0.3 \times 10}$

$= 2.9346 - \frac{5.4}{3}$

$= 2.9346 - 1.8$

$= 2.9346 - 1.8000 = 1.1346$

EXERCISE 15(D)

Question 1.

Express in paise :

(i) Rs. 8.40

(ii) Rs. 0.97

(iii) Rs. 0.09

(iv) Rs. 62.35

Solution:

(i) Rs. 8.40 = 8.40 x 100 paise [1Rs. = 100 Paise]

$$= \frac{840}{100} \times 100 \text{ Paise}$$

$$= \mathbf{840\ Paise}$$

(*ii*) Rs. 0.97 = 0.97 × 100 paise

= 97 paise ($\because$ 1 Re. = 100 paise)

(*iii*) Rs. 0.09 = 0.09 × 100 Paise

= 9.00 Paise

(*iv*) Rs. 62·35 = 62·35 × 100 Paise

$$= \frac{6235}{100} \times 100 \text{ Paise}$$

$$= \mathbf{6235\ Paise.}$$

Question 2.

Express in rupees :

(i) 55 P

(ii) 8 P

(iii) 695 P

(iv) 3279 P

Solution:

$$(i)\ 55\text{P} = \frac{55}{100} = \mathbf{Rs.\ 0{\cdot}55}$$

$$(ii)\ 8\text{P} = \frac{8}{100} = \mathbf{Rs.\ 0{\cdot}08}$$

$$(iii)\ 695\text{P} = \frac{695}{100} = \mathbf{Rs.\ 6{\cdot}95}$$

$$(iv)\ 3279\text{P} = \frac{3279}{100} = \mathbf{Rs.\ 32{\cdot}79}$$

Question 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

Solution:

(i) 6 x 100 = 600 cm

(ii) 8.54 x 100 = 854 cm
(iii) 3.08 x 100 = 308 cm
(iv) 0.87 x 100 = 87 cm
(v) 0.03 x 100 = 3 cm
(vi) 25.04 x 100 = 2504 cm

Question 4.
Express in metre (m) :
(i) 250 cm
(ii) 2328 cm
(iii) 86 cm
(iv) 4 cm
(v) 107 cm
Solution:

$(i) \quad \frac{250}{100} = \mathbf{2{\cdot}50\ m}$

$(ii) \quad \frac{2328}{100} = \mathbf{23{\cdot}28\ m}$

$(iii) \quad \frac{86}{100} = \mathbf{0{\cdot}86\ m}$

$(iv) \quad \frac{4}{100} = \mathbf{0{\cdot}04\ m}$

$(v) \quad 107\ \text{cm} = \frac{107}{100}\ \text{m} = 1.07\ \text{m}$

$(\because 1\ \text{m} = 100\ \text{cm})$

Question 5.
Express in gramme (gm) :
(i) 6 kg
(ii) 5.543 kg
(iii) 0.078 kg
(iv) 3.62 kg
(v) 4.5 kg
Solution:
(i) 6 x 1000 = 6000 gm
(ii) 5.543 x 1000 = 5543 gm
(iii) 0. 078 kg = 0.078 x 1000 g = 78 g (1 kg = 1000 g)
(iv) 3.62 x 1000 = 3620 gm
(v) 4.5 x 1000 = 4500 gm

Question 6.
Express in kilogramme (kg) :

(i) 7000 gm
(ii) 6839 gm
(iii) 445 gm
(iv) 8 gm
(iv) 93 gm
(vi) 13545 gm

Solution:

$$(i) \quad \frac{7000}{1000} = 7 \text{ kg}$$

$$(ii) \quad \frac{6839}{1000} = 6{\cdot}839 \text{ kg}$$

$$(iii) \quad \frac{445}{1000} = 0{\cdot}445 \text{ kg}$$

$$(iv) \quad \frac{93}{1000} = 0{\cdot}093 \text{ kg}$$

$$(v) \quad \frac{8}{1000} = 0{\cdot}008 \text{ kg}$$

$$(vi) \quad \frac{13545}{1000} = 13{\cdot}545 \text{ kg}$$

Question 7.

Add (giving answer in rupees) :
(i) Rs. 5.37 and Rs. 12
(ii) Rs. 24.03 and 532 paise
(iii) 73 paise and Rs. 208
(iv) 8 paise and Rs. 1536

Solution:

(*i*)
$$\begin{array}{r} 5{\cdot}37 \\ +12{\cdot}00 \\ \hline \text{Rs. } 17{\cdot}37 \end{array}$$

(*ii*) Rs. 24·03 and 532 paise

$= \text{Rs. } 24{\cdot}03 + \frac{532}{100}$

(∵ 1 Rupee = 100 paise)

$= \text{Rs. } (24{\cdot}03 + 5{\cdot}32) = \mathbf{Rs.\ 29{\cdot}35}$

(*iii*) 73 paise and 2·08

$= 73 + 2{\cdot}08 \times 100$

(∵ 100 paise = 1 Rupee)

$= 73 + 208 = 281$ paise

or $\frac{281}{100} = \mathbf{Rs.\ 2{\cdot}81}$

(*iv*) 8 paise and Rs. 15·36

$= 8 + 15{\cdot}36 \times 100$

(∵ 100 paise = 1 Rupee)

$= 8 + 1536 = 1544$ paise

or $\frac{1544}{100} = \mathbf{Rs.\ 15{\cdot}44}$

Question 8.

Subtract :

(i) Rs. 35.74 from Rs. 63.22

(ii) 286 paise from Rs. 7.02

(iii) Rs. 0.55 from 121 paise

Solution:

(*i*) Rs. 35·74 from Rs. 63·22

$$\begin{array}{r} 63{\cdot}22 \\ -35{\cdot}74 \\ \hline 27{\cdot}48 \end{array}$$

(*ii*) 286 paise from Rs. 7·02

$= \text{Rs. } 7{\cdot}02 - 286 \text{ paise}$

$= \text{Rs. } 7{\cdot}02 - \frac{286}{100}$

(∵ 1 Rupee = 100 paise)

$= \text{Rs. } 7{\cdot}02 - 2{\cdot}86 = \mathbf{Rs.\ 4{\cdot}16}$

(*iii*) Rs. 0·55 from 121 paise

$= \text{Rs.} \frac{121}{100} - 0{\cdot}55$

$= \text{Rs. } 1{\cdot}21 - 0{\cdot}55 = \mathbf{Rs.\ 0{\cdot}66}$

or $\cdot 66 \times 100 = 66$ paise

Question 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

Solution:

(*i*) 2·4 m and 1·78 m

$$\begin{array}{r} 2{\cdot}40\text{m} \\ +1{\cdot}78\text{m} \\ \hline \mathbf{4{\cdot}18\text{m}} \end{array}$$

(*ii*) 848 cm + 2·9 m

$= \frac{848}{100}\text{m} + 2{\cdot}9 \text{ m} (1\text{m} = 100 \text{ cm})$

$= 8{\cdot}48 + 2{\cdot}9 \text{ m} = 8{\cdot}48 + 2{\cdot}90 \text{ m}$

$= \mathbf{11{\cdot}38 \text{ m}}$

(*iii*) 0·93 m + 64 cm

$= 0{\cdot}93 \text{ m} + \frac{64}{100}\text{cm}$

$= 0{\cdot}93 + 0{\cdot}64 \text{ m} = \mathbf{1{\cdot}57 \text{ m}}.$

Question 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

Solution:

(*i*) $19{\cdot}60\ \text{m}$
$-5{\cdot}03\ \text{m}$
$\mathbf{14{\cdot}57\ \text{m}}$

(*ii*) $1033\ \text{m} - 428\ \text{cm}$

$= 1033\ \text{m} - \frac{428}{100}\text{m}$

$(\because\ 1\ \text{m} = 100\ \text{cm})$

$= 1033\ \text{m} - 4{\cdot}28\ \text{m}$

$= (1033{\cdot}00 - 4{\cdot}28)\ \text{m} = \mathbf{1028{\cdot}72\ m}$

(*iii*) $122\ \text{cm} - 0{\cdot}84\ \text{m}$

$= \frac{122}{100}\text{m} - 0{\cdot}84\ \text{m}$

$= 1{\cdot}22\ \text{m} - 0{\cdot}84\ \text{m} = \mathbf{0{\cdot}38\ m\ or\ 38\ cm}$

Question 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

Solution:

(*i*) $2{\cdot}06\ \text{kg} + 57{\cdot}864\ \text{kg}$

$= 2{\cdot}060\ \text{kg} + 57{\cdot}864\ \text{kg} = \mathbf{59{\cdot}924\ kg}$

(*ii*) $778\ \text{gm} + 1{\cdot}939\ \text{kg}$

$= \frac{778}{100}\text{kg} + 1{\cdot}939\ \text{kg}$

$= 0{\cdot}778\ \text{kg} + 1{\cdot}939\ \text{kg}$

$= 0{\cdot}778\ \text{kg} + 1{\cdot}939\ \text{kg} = \mathbf{2{\cdot}717\ kg}$

(*iii*) $0{\cdot}065\ \text{kg} + 4023\ \text{gm}$

$= 0{\cdot}065 \times 1000\ \text{gm} + 4023\ \text{gm}$

$= 65\ \text{gm} + 4023\ \text{gm} \quad = \mathbf{4088\ gm}$

or $\frac{4088}{1000} = \mathbf{4{\cdot}088\ kg.}$

Question 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

Solution:

(*i*) 15·600 kg – 9·462 kg

= 6·138 kg

(*ii*) 23 kg – 4317 gm

$= 23 \text{ kg} - \frac{4317}{1000} \text{ kg}$

= 23·000 kg – 4·317 kg

= 18·683 kg

(*iii*) 4169 gm – 0·798 kg

$\frac{4169}{1000}$ kg – 0·798 kg

4·169 kg – 0·798 kg = **3·371 kg**

EXERCISE 15(E)

Question 1.

The cost of a fountain pen is Rs. 13.25. Find the cost of 8 such pens.

Solution:

Cost of 1 fountain Pen = Rs. 13.25

Cost of 8 fountain Pen = 13.25 x 8 = 106.00 = Rs. 106

Question 2.

The cost of 25 identical articles is Rs. 218.25. Find the cost of one article.

Solution:

Cost of 25 article = 218·25

$\therefore$ Cost of 1 article $= \frac{218 \cdot 25}{25}$

$= \frac{21825}{25 \times 100} = \frac{873}{100}$ **= Rs. 8·73**

Question 3.

The length of an iron rod is 10.32 m. The rod is divided into 4 pieces of equal lengths. Find the length of each piece.

Solution:

The length of iron rod = 10.32 m

Dividing in 4 equal parts = $\frac{10.32}{4}$ = 2.58 m

Question 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 ?

Solution:

Cloth required for each shirt = 2.15 m
Cloth required for 5 shirts = 2.15 x 5 m = 10.75 m

Question 5.

Find the distance walked by a boy in $1\frac{1}{2}$ hours, if he walks at 2.150 km every hour.

Solution:

Distance covered in one hour
$= 2{\cdot}150$ km

$\therefore$ Distance covered in $1\frac{1}{2}$ hour

or $\frac{3}{2}$ hour $= 2{\cdot}150 \times \frac{3}{2}$

$= 1{\cdot}075 \times 3 = \mathbf{3{\cdot}225\ km}$

Question 6.

83 note-books are sold at Rs. 15.25 each. Find the total money (in rupees) obtained by selling these note-books.

Solution:

Sale price of 1 note-book = Rs. 15.25
Sale of 83 books = Rs. 15.25 x 83 = Rs. 1265.75 paise

$$\begin{array}{r} 15.25 \\ \times 83 \\ \hline 4575 \\ 122000 \\ \hline 1265.75 \end{array}$$

Question 7.

If length of one bed-cover is 2.1 m, find the total length of 17 bed-covers.

Solution:

Length of one bed-cover = 2.1 m
Length of 17 bed-cover = 17 x 2.1 = 35.7 m

Question 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 ?

Solution:

Length of one rope = 10 m 67 cm
Length of another rope = 16 m 32 cm
Difference in length = 16 m $\frac{32}{100}$ cm – 10 m $\frac{67}{100}$ cm
= 16.32 m – 10.67 m
= 5.65 m or 5 m 65 cm.

Question 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.
Solution:

Weight of 12 cakes of soap = 5 kg and

$604 \text{ gm} = 5 \text{ kg and } \frac{604}{1000} \text{ kg}$

$= 5{\cdot}604 \text{ kg.}$

(*i*) Weight of 12 cakes = 5·604 kg

$\therefore$ Weight of 1 cake $= \frac{5{\cdot}604}{12}$

$= \mathbf{0{\cdot}467 \text{ kg}}$

Weight in gm = 0·467 × 1000 = **467 gm**

(*ii*) Weight of one cake = 0·467 kg

Weight of five cakes = 0·467 × 5 = 2·335 kg.

Question 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, And the length of the single string obtained.
If this single string is then divided into 12 equal pieces ; find the length of each piece.
Solution:
1st string 50 m 75 cm = 50.75 m
2nd string 68 m 68 m 58 cm = 68.58 m
3rd string 121 m3 cm= 121.03 m
On joining three total length = 240.36 m
Now, one string = 240.36 m
Dividing 12 parts = $\frac{240.36}{12}$ = 20.3 m.

REVISION EXERCISE

Question 1.
Write th& following decimal numbers in ascending order of value
(i) 5.054, 5.250, 5.245 and 5.0543
(ii) 62.443, 62.434, 62.344 and 62.444
Solution:
(i) 5.054, 5.250, 5.245 and 5.0543
Writing them in like decimals :
5.0540, 5.2500, 5.2450, 5.0543
Now arranging in ascending order :
5.0540, 5.0543, 5.2450, 5.2500

=> 5.054 < 5.0543 < 5.245 < 5.250
(ii) 62.443, 62.434, 62.344 and 62.444
There are in like decimals :
Now writing in ascending order.
62.344, 62.434, 62.443, 62.444
or 62.344 < 62.434 < 62.443 < 62.444

Question 2.
What number added to 0.805 gives 1 ?
Solution:
The required number will be formed by subtracting 0.805 from 1
Required number = 1 – 0.805 = 1.000 – 0.805 = 0.195

Question 3.
What must be subtracted from 3 to get 2.462 ?
Solution:
The required number can be formed by subtracting 2.462 from 3
Required number = 3 – 2.462 = 3.000 – 2.462 = 0.538

Question 4.
By how much should 83.407 be decreased to get 27.78 ?
Solution:
The required number can be formed by subtracting 27.78 from 83.407
Required number = 83.407 – 27.78 = 83.407 – 27.780 = 55.627

Question 5.
Two articles weigh 32.674 kg and 40.038 kg respectively. Find :
(i) the total weight of both the articles.
(ii) the difference in the weights of both the articles.
Solution:
Weight of first article = 32.674 kg
Weight of second article = 40.038 kg
(i) Total weight of both the articles = (32.674 + 40.038) kg = 72.712 kg
(ii) Difference between the weights of the articles = (40.038 – 32.674) kg = 7.364 kg

Question 6.
By how much does the sum of 34.07 and 15.239 exceed the sum of 16.40 and 27.08?
Solution:
Sum of 34.07 and 15.239 = 34.070 + 15.239 = 49.309
and sum of 16.40 and 27.08 = 16.40 + 27.08 = 43.48
Difference between their sums = 49.309 – 43.48 = 49.309 – 43.480 = 5.829

Question 7.
The cost of 1 kg of fruit is Rs. 27.50. What is the cost of 3.6 kg of fruit ?

Solution:
Cost of 1 kg fruit = Rs. 27.50
Cost of 3.6 kg fruit = Rs. 27.50 x 3.6 = Rs. 99.00

Question 8.
Evaluate :
(i) 0.8 x 0.8 x 0.8
(ii) 0.8 ÷ 0.8 x 0.8
(iii) 0.8 x 0.8 ÷ 0.8
(iv) 0.8 ÷ 0.8 of 0.8
(v) 0.8 of 0.8 ÷ 0.8
Solution:
(i) 0.8 x 0.8 x 0.8 = 0.512
(ii) 0.8 ÷ 0.8 x 0.8

$$= 0.8 \times \frac{1}{0.8} \times 0.8 = 0.8$$

(iii) $0.8 \times 0.8 \div 0.8$

$$= 0.8 \times 0.8 \times \frac{1}{0.8} = 0.8$$

(iv) $0.8 \div 0.8$ of 0.8

$$= 0.8 \div 0.64$$

$$= 0.8 \times \frac{1}{0.64} = \frac{1}{0.8}$$

$$= \frac{10}{8} = \frac{5}{4} = 1.25$$

(v) 0.8 of $0.8 \div 0.8$

$$= 0.64 \div 0.8 = 0.64 \times \frac{1}{0.8} = 0.8$$

Question 9.
Evaluate :
(i) 3.5 x (4.2 + 2.6)
(ii) 3.5 x 4.2 + 3.5 x 2.6
Are (i) and (ii) equal ?
Solution:
(i) 3.5 x (4.2 + 2.6) = 3.5 x (6.8) = 23.8
(ii) 3.5 x 4.2 + 3.5 x 2.6 = 14.7 + 9.1 = 23.8
Yes results of (i) and (ii) are equal.

Question 10.
Evaluate :
(i) (3.87 – 2.09) x 2.4
(ii) 3.87 x 2.4 – 2.09 x 2.4
Are (i) and (ii) equal ?
Solution:
(i) (3.87 – 2.09) x 2.4 = 1.78 x 2.4 = 4.272
(ii) 3.87 x 2.4 – 2.09 x 2.4 = 9.288 – 5.016 = 4.272
Yes, results of (i) and (ii) are equal.

Question 11.
A 4.85 m long pole is divided into 5 equal parts. Find the length of each part.
Solution:
Length of pole = 4.85 m
It is divided into 5 equal parts Length of each part = 4.85 ÷ 5 m = 0.97 m
Hence length of each part = 0.97 m

Question 12.
A car can run 16.8 km consuming one litre of petrol. How many kilometres will it run on 3.7 litres of petrol ?
Solution:
A car can go in one litre = 16.8 km
It will go in 3.7 litres of petrol = 16.8 x 3.7 km = 62.16 km

Question 13.
A certain amount of money is distributed among 28 persons. If each person gets Rs. 62.45 and Rs. 5.78 is left, find the original amount of money.
Solution:
Number of persons = 28
Each person gets = RS. 62.45
Total amount distributed to 28 persons = Rs. 62.45 x 28 = Rs. 1748.60
Amount left undistributed = Rs. 5.78
Total amount = Rs. 1748.60 + 5.78 = Rs. 1754.38

Question 14.
Complete the following table :

Item	cost per kg	Quantity	Amount
(*i*) A	Rs. 17.40	2.5 kg	.....
(*ii*) B	Rs. 42.25	1.6 kg	.....
(*iii*) C	Rs. 28.50	3.2 kg	.....
		Total =	.....

Solution:

The given table has been completed as follows:

Item	cost per kg	Quantity	Amount
A	Rs. 17.40	2.5 kg	Rs. 43.50
B	Rs. 42.25	1.6 kg	Rs. 67.60
C	Rs. 28.50	3.2 kg	Rs. 91.20
		Total	Rs. 202.30

Question 15.

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

Solution:

Difference of two number = 47.364
Smaller number = 31.855
Bigger number = 47.364 + 31.855 = 79.219