Class – IV

Subject – Mathematics

Chapter – 3

Decimals

Important Points

1 A decimal is a fraction written in a special form

for eg : $\frac{1}{2}$ is written as 0.5 , where zero is in the ones place and 5 is in the tenths place .

2. A decimal number shows a value less than 1 .

3 A decimal point is a (.) used to separate the whole number from fractional part .

4 The special fractions with denominators as 1o , 100 , 1000 are known as

decimal fractions eg : $\frac{9}{10}$, $\frac{2}{100}$, $\frac{43}{1000}$

5 The place value chart of the decimal number is as follows :

Thousands	Hundreds	Tens	Ones	Point	Tenths	Hundredths	Thousandths
1000	100	10	1	.	0.1	0.01	0.001

Exercise-1

1. $\frac{1}{10}$, $\frac{9}{100}$, $\frac{19}{10}$, $\frac{157}{1000}$

2. (a) $\frac{9}{10} = 9 \times \frac{1}{10} = 9 \times 0.1 = 0.9$

   (c) $7\frac{1}{10} = \frac{71}{10} = 71 \times \frac{1}{10} = 71 \times 0.1 = 7.1$

   (i) $\frac{127}{1000} = 0.127$

   (j) $\frac{519}{1000} = 0.519$

   (k) $1\frac{177}{1000} = \frac{1177}{1000} = 1.177$

   (l) $32\frac{19}{1000} = \frac{32019}{1000} = 32.019$

Practice b, d, e, f, g, h

3. (a) $0.3 = \dfrac{3}{10}$ (b) $0.7 = \dfrac{7}{10}$ (c) $0.45 = \dfrac{45}{100}$

(g) $15.008 = \dfrac{15008}{1000} = 15\dfrac{8}{1000}$

(h) $92.170 = \dfrac{92170}{1000} = 92\dfrac{170}{1000}$

Practice d, e, f

4. (a) 1.3 (b) 0.008 (c) 25.342 (d) 158.058

Practice e, f, g

5. (a) Ninety eight hundredths (b) Three and sixty two hundredths

(c) Four hundred fifty seven thousandths

(d) Nineteen and two hundred fifty six thousandths

(e) Eight and seventy five thousandths

(f) Five hundred thirty five thousandths

(g) Two hundred twenty two thousandths

Practice h, i, j, k, l

Exercise-2

1. (a) Place value of $6 = 6 \times 1 = 6$,

Place value of $0 = 0$,

Place value of $3 = 3 \times \dfrac{1}{100} = \dfrac{3}{100}$.

(b) Place value of $1 = 1 \times 10 = 10$,

Place value of $9 = 9 \times 1 = 9$,

Place value of $2 = 2 \times \dfrac{1}{10} = \dfrac{2}{10}$,

Place value of $5 = 5 \times \dfrac{1}{100} = \dfrac{5}{100}$.

(c) Place value of $4 = 4 \times 100 = 400$,

Place value of $3 = 3 \times 10 = 30$,

Place value of $5 = 5 \times 1 = 5$,

Place value of $0 = 0$,

Place value of $7 = 7 \times \dfrac{1}{100} = \dfrac{7}{100}$,

Place value of $5 = 5 \times \dfrac{1}{1000} = \dfrac{5}{1000}$.

(d) Place value of $1 = 1 \times 1000 = 1000$,

Place value of $7 = 7 \times 100 = 700$,

Place value of $3 = 3 \times 10 = 30$,

Place value of $8 = 8 \times 1 = 8$,

Place value of $1 = 1 \times \dfrac{1}{10} = \dfrac{1}{10}$,

Place value of $3 = 3 \times \dfrac{1}{100} = \dfrac{3}{100}$,

Place value of $5 = 5 \times \dfrac{1}{1000} = \dfrac{5}{1000}$.

(e) Place value of $3 = 3 \times 1000 = 3000$,

Place value of $5 = 5 \times 100 = 500$,

Place value of $4 = 4 \times 10 = 40$,

Place value of $7 = 7 \times 1 = 7$,

Place value of $1 = 1 \times \dfrac{1}{10} = \dfrac{1}{10}$,

Place value of $8 = 8 \times \dfrac{1}{100} = \dfrac{8}{100}$.

Practice f, g, h

2. **(a)** $9.259 = 9 + 0.2 + 0.05 + 0.009$ (decimal form)

$\quad = 9 + \dfrac{2}{10} + \dfrac{5}{100} + \dfrac{9}{1000}$ (fraction form)

(b) $32.54 = 30 + 2 + 0.5 + 0.04$ (decimal form)

$\quad = 30 + 2 + \dfrac{5}{10} + \dfrac{4}{100}$ (fraction form)

Practice c, d

3. **(a)** $40 + 5 + \dfrac{3}{10} + \dfrac{9}{1000} = 40 + 5 + 0.3 + 0.009 = 45.309$

   (b) $900 + 20 + 9 + \dfrac{9}{100} + \dfrac{2}{1000} = 900 + 20 + 9 + 0.09 + 0.002 = 929.092$

   (e) $300 + 20 + 1 + 0.1 + 0.02 = 321.12$

   (f) $50 + 5 + 0.5 + 0.05 + 0.005 = 55.555$

Practice c, d

Exercise-3

1. **(a)** Maximum number of decimal places in given numbers is 3.

   Thus, each of these decimals have to be converted to decimal with three decimal places.

   $5.8 = 5.800, 79.25 = 79.250, 0.008 = 0.008$

   Thus, 5.800, 79.250 and 0.008 are like decimals.

   (b) Maximum number of decimal places in given numbers is 3.

   Thus, each of these decimals have to be converted to decimal with three decimal places.

   $0.6 = 0.600, \quad 3.519 = 3.519, \quad 5.38 = 5.380, \quad 9.7 = 9.700$

   Thus, 0.600, 3.519, 5.380 and 9.700 are like decimals.

Practice c, d

2. **(a)** The whole number part is greater in 53.7 than to 35.7.

   $\therefore 53.7 > 35.7$

   (b) Converting into like decimals, $19.705 \rightarrow 19.705, 19.75 \rightarrow 19.750$

   As the whole number parts are same, we compare the decimal parts.

   Since, 0 hundredths < 5 hundredths

   $\therefore 19.705 < 19.75$

Practice c, d

3. **(a)** Arranging the given decimals in place value chart, we have

Decimal number	Ones	Point	Tenths	Hundredths	Thousandths
6.3	6	.	3	0	0
2.4	2	.	4	0	0
5.37	5	.	3	7	0
8.14	8	.	1	4	0
6.03	6	.	0	3	0

Comparing according to the place value, we have decimal numbers in ascending order as $2.4 < 5.37 < 6.03 < 6.3 < 8.14$

Practice b

4. **(a)** Arranging the given decimals in place value chart, we have

Decimal number	Tens	Ones	Point	Tenths	Hundredths	Thousandths
87.6	8	7	.	6	0	0
67.8	6	7	.	8	0	0
78.6	7	8	.	6	0	0
6.78		6	.	7	8	0
7.68		7	.	6	8	0

Comparing according to the place value, we have decimal numbers in descending order as $87.6 > 78.6 > 67.8 > 7.68 > 6.78$

Practice b

5. **(a)** $0.5 = 0.50 = 0.500$ **(b)** $3.03 = 3.030 = 3.0300$

(c) $19.91 = 19.910 = 19.9100$

Exercise-4

1. **(a)** 0.8 has 1 decimal place.

$$\therefore 0.8 = \frac{8}{10} = \frac{4}{5}$$

(b) 0.65 has 2 decimal places. $\quad 0.65 = \frac{65}{100} = \frac{13}{20}$

(g) 0.072 has 3 decimal places, $0.072 = \frac{72}{1000} = \frac{36}{500} = \frac{18}{250} = \frac{9}{125}$

(h) $8.5 = \frac{85}{10} = \frac{17}{2} = 8\frac{1}{2}$

(i) $4.25 = \frac{425}{100} = \frac{85}{20} = \frac{17}{4} = 4\frac{1}{4}$

(j) $0.006 = \frac{6}{1000} = \frac{3}{500}$

Practice c, d, e, f

2. **(a)** $\frac{15}{10} = 1\frac{5}{10} = 1 + \frac{5}{10} = 1 + 0.5 = 1.5$

(b) $\frac{144}{100} = 1\frac{44}{100} = 1 + \frac{44}{100} = 1 + 0.44 = 1.44$

(d) $\frac{999}{10} = 99\frac{9}{10} = 99 + \frac{9}{10} = 99 + 0.9 = 99.9$

(e) $8\frac{3}{4} = \frac{35}{4}$
$= 8.75$

```
     8.75
4) 35.00
   -32
    30
   -28
    20
   -20
     0
```

(f) $\frac{9}{20} = \frac{9 \times 5}{20 \times 5} = \frac{45}{100} = 0.45$

(g) $\frac{11}{3} = 3.666$

```
     3.666
3) 11.000
   -9
    20
   -18
    20
   -18
    20
   -18
     2
```

(h) $\frac{49}{12} = 4.083$

```
      4.083
12) 49.000
    -48
    100
    -96
     40
    -36
      4
```

Practice c, I, j

Exercise-5

1. (a) $6.3 + 3.2 = 9.5$

$$
\begin{array}{r}
6.3 \\
+\ 3.2 \\
\hline
9.5 \\
\hline
\end{array}
$$

(b) $2.47 + 8.28 = 10.75$

$$
\begin{array}{r}
①\ ① \\
2.47 \\
+\ \ 8.28 \\
\hline
10.75 \\
\hline
\end{array}
$$

(e) $111.111 + 11.11 + 1.1 + 0.001 = 123.322$

$$
\begin{array}{r}
111.111 \\
11.110 \\
1.100 \\
+\ \ \ 0.001 \\
\hline
123.322 \\
\hline
\end{array}
$$

(f) $153.6 + 96.87 + 8.974 + 0.13 = 259.574$

$$
\begin{array}{r}
①①②\ \ ① \\
153.600 \\
96.870 \\
8.974 \\
+\ \ \ \ 0.130 \\
\hline
259.574 \\
\hline
\end{array}
$$

Practice c, d

2. (a) $1.7 - 0.55 = 1.15$

$$
\begin{array}{r}
⑥⑩ \\
1.7\,\cancel{0} \\
-\ 0.55 \\
\hline
1.15 \\
\hline
\end{array}
$$

(b) $53.72 - 38.4 = 15.32$

$$
\begin{array}{r}
④⑬ \\
\cancel{5}\cancel{3}.72 \\
-\ 38.40 \\
\hline
15.32 \\
\hline
\end{array}
$$

(c) $2.015 - 0.78 = 1.235$

$$
\begin{array}{r}
⑨ \\
①\ ⑩⑪ \\
2.\cancel{0}\cancel{1}5 \\
-\ 0.780 \\
\hline
1.235 \\
\hline
\end{array}
$$

(d) $4.01 - 0.381 = 3.629$

$$
\begin{array}{r}
⑨ \\
③\ ⑩⑩⑩ \\
\cancel{4}.\cancel{0}\cancel{1}\cancel{0} \\
-\ 0.381 \\
\hline
3.629 \\
\hline
\end{array}
$$

(e) $33.6 - 3.637 = 29.963$

```
       ⑫     ⑮⑨
   ② ②  ⑤⑩⑩
   3̸ 3̸ . 6̸ 0̸ 0̸
 -     3 . 6 3 7
 ─────────────────
   2 9 . 9 6 3
```

(f) $100 - 86.713 = 13.287$

```
       ⑨⑨    ⑨⑨
   ⓪⑩⑩  ⑩⑩⑩
   1̸ 0̸ 0̸ . 0̸ 0̸ 0̸
 -   8 6 . 7 1 3
 ─────────────────
     1 3 . 2 8 7
```

Practice g, h, i

3. (a) $16.468 + 3.03 - 12.97 = 19.498 - 12.97$
$$= 6.528$$

```
                          ⑧   ⑭
   1 6 . 4 6 8       1 9̸ . 4̸ 9 8
 +   3 . 0 3 0     - 1 2 . 9 7 0
 ───────────────   ───────────────
   1 9 . 4 9 8         6 . 5 2 8
```

(b) $76 + 31.75 - 72.208 = 107.75 - 72.208$
$$= 35.542$$

```
   ①                    ⓪⑩        ④⑩
     7 6 . 0 0      1̸ 0̸ 7 . 7 5̸ 0̸
 + 3 1 . 7 5      -   7 2 . 2 0 8
 ───────────────   ───────────────
 1 0 7 . 7 5         3 5 . 5 4 2
```

(c) $777 - 77.7 - 7.777 = 699.3 - 7.777$
$$= 691.523$$

```
        ⑯⑯                       ⑫⑨
     ⑥⑥⑥ ⑩              ⑧  ②⑩⑩
   7̸ 7̸ 7̸ . 0̸            6 9 9̸ . 3̸ 0̸ 0̸
 -   7 7 . 7          -     7 . 7 7 7
 ───────────────      ───────────────
   6 9 9 . 3            6 9 1 . 5 2 3
```

(d) $829 - 325.5 + 21.728 = 850.728 - 325.5$
$$= 525.228$$

```
   ①                       ④⑩
   8 2 9 . 0 0 0      8 5̸ 0̸ . 7 2 8
 +   2 1 . 7 2 8    - 3 2 5 . 5 0 0
 ───────────────    ───────────────
   8 5 0 . 7 2 8      5 2 5 . 2 2 8
```

Practice e, f

4.

$$
\begin{array}{r}
\overset{\scriptsize\textcircled{9}}{\overset{\scriptsize\textcircled{3}\textcircled{10}}{\cancel{4}\ \cancel{0}}} . \overset{\scriptsize\textcircled{9}}{\overset{\scriptsize\textcircled{10}\textcircled{10}}{\cancel{0}\ \cancel{0}}} \\
-\ 2\ 5\ .\ 5\ 6 \\
\hline
1\ 4\ .\ 4\ 4
\end{array}
$$

14.44 should be subtracted from 40 to get 25.56.

Practice 5, 6

7.

$$
\begin{array}{r}
9\ 6\ .\ \overset{\scriptsize\textcircled{6}}{\cancel{7}}\ \overset{\scriptsize\textcircled{12}}{\cancel{2}}\ 5 \\
-\ 4\ 5\ .\ 0\ 5\ 0 \\
\hline
5\ 1\ .\ 6\ 7\ 5
\end{array}
$$

96.725 should be decreased by 51.675 to get 45.05.

8. Total distance covered in the three days $= (2.4 + 3.55 + 2.72)$ km
                                                                 $= 8.67$ km

$$
\begin{array}{r}
\overset{\scriptsize\textcircled{1}}{}\ \ \ \ \ \ \\
2\ .\ 4\ 0 \\
3\ .\ 5\ 5 \\
+\ 2\ .\ 7\ 2 \\
\hline
8\ .\ 6\ 7
\end{array}
$$

So, Mr Mishra walked 8.67 km in the three days.

Practice 9

10. Height of Neem tree $= 4.12$ m

Height of Gulmohar tree $= 5.4$ m

Difference in heights $= 5.4$ m $- 4.12$ m

$= 1.28$ m

$$
\begin{array}{r}
\overset{\scriptsize\textcircled{3}\textcircled{10}}{\cancel{5}\ .\ \cancel{4}\ \cancel{0}} \\
-\ 4\ .\ 1\ 2 \\
\hline
1\ .\ 2\ 8
\end{array}
$$

So, the difference in the heights of the two trees is 1.28 m.

Exercise-6

1. (a) 1 paisa $= \dfrac{1}{100}$ rupee $= ₹\ 0.01$

   ∴ 44 paise $= ₹\ 0.44$

   (b) 22 rupees 72 paise $= ₹\ 22 + ₹\ 0.72 = ₹\ 22.72$

Practice c

2. **(a)** $1 \text{ mm} = \dfrac{1}{10} \text{ cm} = 0.1 \text{ cm}$

$\therefore 98 \text{ mm} = 98 \times 0.1 \text{ cm} = 9.8 \text{ cm}$

(b) $72 \text{ mm} = 72 \times 0.1 \text{ cm} = 7.2 \text{ cm}$

Practice c

3. **(a)** Practice

(b) $68 \text{ cm} = 68 \times 0.01 \text{ m} = 0.68 \text{ m}$

(c) $24 \text{ m } 75 \text{ cm} = 24 \text{ m} + (75 \times 0.01)\text{m}$

$= 24 \text{ m} + 0.75 \text{ m}$

$= 24.75 \text{ m}$

4. **(a)** $1000 \text{ m} = 1 \text{ km}$

$1 \text{ m} = \dfrac{1}{1000} \text{ km} = 0.001 \text{ km}$

$\therefore 5 \text{ km } 205 \text{ m} = 5 \text{ km} + (205 \times 0.001) \text{ km}$

$= 5 \text{ km} + 0.205 \text{ km}$

$= 5.205 \text{ km}$

(b) $9 \text{ km } 119 \text{ m} = 9 \text{ km} + (119 \times 0.001) \text{ km}$

$= 9 \text{ km} + 0.119 \text{ km}$

$= 9.119 \text{ km}$

Practice c

5. (a) $1000 \text{ g} = 1 \text{ kg}$

$1 \text{ g} = \dfrac{1}{1000} \text{ kg} = 0.001 \text{ kg}$

$\therefore 570 \text{ g} = 570 \times 0.001 \text{ kg} = 0.570 \text{ kg}$

(b) $6 \text{ kg } 230 \text{ g} = 6 \text{ kg} + 230 \text{ g}$

$= 6 \text{ kg} + (230 \times 0.001) \text{ kg}$

$= 6 \text{ kg} + 0.230 \text{ kg}$

$= 6.230 \text{ kg}$

Practice C

6. (a) Practice

(b) $6 \ell \, 275 \text{ m}\ell = 6 \ell + 275 \text{ m}\ell$

$= 6 \ell + (275 \times 0.001) \ell$

$= 6 \ell + 0.275 \ell$

$= 6.275 \ell$

(c) $46 \text{ m}\ell = 46 \times 0.001 \ell = 0.046 \ell$