Decimal Fractions (Decimals)

POINTS TO REMEMBER

1. **Decimal fraction (or a decimal number)**
   A decimal fraction is a fraction whose denominator is 10 or a higher power of 10. In order to express a given decimal fraction in shorter form, the denominator is not written but its absence is shown by a dot which is called a decimal point inserted in a proper place.
   Note :
   (i) When there is no number is the left of the decimal point, generally, a zero is written.
   (ii) Generally, a decimal fraction has two parts, the first part which is on the right ox the decimal point is called decimal part and the part on the left side of the decimal point, is called integeral part.
   (iii) The decimal part is always less than 1.
2. **Reading Decimal Numbers**
   The integral part is read according to its value and the decimal part is read by naming each digit, in order, separately
3. **Converting a decimal number into a vulgar fraction :**
   Remove the decimal point from the decimal number and write in its denominator with as many zeros as the number of digits are in the decimal parts to the right of 1.
   In the decimal number, the name of each place is given as under is the place value chart:

Thousands	Hundreds	Tens	Units	•	Tenths	Hundredths	Thousandth
				Decimal point			and so on

4. **Converting a given fraction in to a decimal fraction :**
   (a) When the denominator in given fraction is 10. 100, 1000 etc., then count from extreme right to left, mark decimal point after as many digits of the numerator as there are zeroes in the denominator.
   (b) When the denominator of the given number is other then 10 or higher power of 10, then divide in an ordinary way and mark the decimal point in the quotient just after the division of unit digit is completed. After this, any number of zeroes can be borrowed to.complete the division.

Note : The number of figures that follow the decimal part is called the number of decimal places.

5. **Addition and Subtraction of decimal numbers.**
   (a) Addition : Write the given decimal numbers in such a way, that the decimal points of all the numbers fall in the same vertical line. Digits with the same place value are placed one below the other units are written below units, tens below tens and so on.
   Addition is started from the right side, as done in the usual addition (empty places may be filled up by zeroes). In the result (total), the decimal point is placed under decimal points of the numbers added.
   (b) Subtraction : In subtraction also, the numbers are written in such a way that their decimals are in ihe same vertical line. Digits with the same place value are placed one below the other (empty places may be filled by zeroes).
   Subtraction is started from the right side, as in the case of normal subtraction. In the result, decimal point is placed just under the other decimal points.
6. **Multiplication of decimal numbers :**
   (1) Multiplication by 10,100, 1000 etc. shift the decimal point, in the multiplicand, to the right by as many digits as there are zeroes in the multiplier.
   (2) Multiplication by a whole number : Multiply in an ordinary way, without considering the decimal point. In the product, the decimal point should be fixed by counting as many digits from the right as there are decimal places in the multiplicand.
   Thus, (i) 0.3 x 6 = 1.8 (ii) 0.26 x 18 = 4.68 and so on.
   (3) Multiplication of a decimal number by another decimal number :
   Multiply the two numbers in a normal way, ignoring their decimals. In the product, decimal point is fixed counting from right, the digits equal to the sum of decimal places in the multiplicand and the multiplier.
   Thus, 32.5 x ().()7 = 2.275
   Since, the multiplicand (32.5) has one decimal place and multiplier (0.07) has two decimal places, their product will have 1+2 = 3 decimal places.
7. **Division of decimal numbers :**
   (1) Division by 10, 100, 1000 etc : Shift the decimal points to the left as many digits as there are
   zeroes in the divisor. .
   (2) Division by a whole number : Divide in the normal manner, ignoring the decimal, and mark tire decimal point; in the quotient, while just crossing over the decimal point in the dividend.
8. **Recurring Decimals :**
   On performing a division, sometimes we find that the same remainder is left, no matter how long we continue the division process. For this reason, the same digit appeares again and again in the quotient. This fact is shown by puting a dot as a bar over the repeating digits.
9. **Rounding off of decimal numbers :**
   (i) If the answer required is correct to two decimal places, we retain digits upto three decimal places.
   (ii) If the digit in the third decimal place is five or more than five, then the digit in

the second decimal place is increased by one and, if the digit in the third decimal place is less than five, then the digit in the second decimal place is not altered.
(iii)The third digit which was retained is now omitted.
Thus, for getting 8.4813 correct to two decimal places.
Write the given number upto three decimal places i.e. 8.481.
Since, the digit in the third decimal place is 1 which is less than 5.
∴The digit in the second decimal place is not altered.
And, so 8.4813 = 8.48, correct to two decimal places.
In the same way, to get 3.946824 correct to nearest thousandths i.e., correct to three decimal places, first write it as 3.9468.
Then according to the rule, the digit in the third place changes from 6 to 7.
3.9468 = 3.947, correct to three decimal places.

EXERCISE 4 (A)

Question 1.

Convert the following into fractions in their lowest terms :

(i) 3.75
(ii) 0.5
(iii) 2.04
(iv) 0.65
(v) 2.405
(vi) 0.085
(vii) 8.025

Answer:

$$(i)\ 3{\cdot}75 = \frac{375}{100} = \frac{375 \div 25}{100 \div 25}$$

(HCF of 375 and 100 = 25)

$$= \frac{15}{4} \text{ Ans.}$$

$$(ii)\ 0{\cdot}5 = \frac{5}{10} = \frac{1}{2} \text{ Ans.}$$

$$(iii)\ 2{\cdot}04 = \frac{204}{100} = \frac{204 \div 4}{100 \div 4}$$

(HCF of 204 and 100 = 4)

$$= \frac{51}{25} \text{ Ans.}$$

$$(iv)\ 0{\cdot}65 = \frac{65}{100} = \frac{65 \div 5}{100 \div 5} = \frac{13}{20} \text{ Ans.}$$

$$(v)\ 2{\cdot}405 = \frac{2405}{1000} = \frac{2405 \div 5}{1000 \div 5} = \frac{481}{200} \text{ Ans.}$$

$$(vi)\ 0{\cdot}085 = \frac{85}{1000} = \frac{85 \div 5}{1000 \div 5} = \frac{17}{200} \text{ Ans.}$$

$$(vii)\ 8{\cdot}025 = \frac{8025}{1000} = \frac{8025 \div 25}{1000 \div 25}$$

Question 2.

Convert into decimal fractions

(*i*) $2\frac{4}{5}$ (*ii*) $\frac{79}{100}$

(*iii*) $\frac{37}{10,000}$ (*iv*) $\frac{7543}{10^4}$

(*v*) $\frac{3}{4}$ (*vi*) $9\frac{3}{5}$

(*vii*) $8\frac{5}{8}$ (*viii*) $5\frac{7}{8}$

Answer:

(*i*) (*i*) $2\frac{4}{5} = \frac{14}{5}$

$= \frac{14}{5} \times \frac{2}{2} = \frac{28}{10} = 2.8$

(*ii*) $\frac{79}{100} = 0{\cdot}79$ **Ans.**

(*iii*) $\frac{37}{10,000} = 0{\cdot}0037$ **Ans.**

(*iv*) $\frac{7543}{10^4} = \frac{7543}{10000}$

$= 0{\cdot}7543$ **Ans.**

(*v*) $\frac{3}{4} = 0{\cdot}75$ **Ans.**

$$
\begin{array}{r}
0{\cdot}75 \\
4\overline{)\,3{\cdot}00} \\
28 \\
\hline
20 \\
20 \\
\hline
\times
\end{array}
$$

(vi) $9\frac{3}{5} = \frac{48}{5} = 9{\cdot}6$

$$
\begin{array}{r}
9{\cdot}6 \\
5\,)\,48{\cdot}0 \\
45 \\
\hline
30 \\
30 \\
\hline
\times
\end{array}
$$

(vii) $8\frac{5}{8} = 8{\cdot}625$

$$
\begin{array}{r}
0{\cdot}625 \\
8\,)\,5{\cdot}000 \\
48 \\
\hline
20 \\
16 \\
\hline
40 \\
40 \\
\hline
\times
\end{array}
$$

(viii) $5\frac{7}{8} = 5{\cdot}875$

$$
\begin{array}{r}
8{\cdot}75 \\
8\,)\,7{\cdot}000 \\
64 \\
\hline
60 \\
56 \\
\hline
40 \\
40 \\
\hline
\times
\end{array}
$$

Question 3.

Write the number of decimal places in :

(i) 0.4762

(ii) 7.00349

(iii) 8235.403

(iv) 35.4

(v) 2.608

(vi) 0.000879

Answer:

(i) In 0.4762, there are four places.

(ii) In 7.00349, there are five places.

(iii) In 8235.403, there are three places.

(iv) In 35.4, there is one place.

(v) In 2.608, there are three places.

(vi) In 0.000879, there are six places.

Question 4.

Write the following decimals as word statements :

(i) 0.4,0.9,0.1

(ii) 1.9, 4.4, 7.5

(iii) 0.02, 0.56, 13.06

(iv) 0.005,0.207, 111.519

(v) 0.8, 0.08, 0.008, 0.0008

(vi)256.1, 10.22, 0.634

Answer:

(i) 0.4 = zero point four, 0.9 = zero point nine, 0.1 = zero point one.

(ii) 1 .9 = one point nine, 4.4 = four point four, 7.5 = seven point five.

(iii) 0.02 = zero point zero two, 0.56 = zero point five six, 13.06 = thirteen point zero six.

(iv) 0.005 = zero point zero zero five, 0.207 = zero point two zero seven, 111.519 = one hundred eleven point five one nine.

(v) 0.8 = zero point eight, 0.08 = zero point zero eight, 0.008 = zero point zero zero eight, 0.0008 = zero point zero zero zero eight

(vi) 256.1 = Two hundred fifty six point one, 10.22 = Ten point two two, 0.634 = zero point six three four.

Question 5.

Convert the given fractions into like fractions:

(i) 0.5,3.62,43.987 and 232.0037

(ii) 215.78, 33.0006, 530.3 and 0.03569

Answer:

(i) 0.5, 3.62, 43.987 and 232.0037

In these decimals, the greatest places of decimal is 4

∴0.5 = 0.5000

3.62 = 3.6200

43.987 = 43.9870

232.0037 = 232.0037

(**ii)** 215.78, 33.0006, 530.3 and 0.03569

In these decimals, the greatest places of decimal is 5

∴215.78 = 215.78000

33.0006 = 33.00060

530.3 = 530.30000

0.03569 = 0.03569

EXERCISE 4 (B)

Question 1.

Add:

(i) 0.5 and 0.37 (ii) 3.8 and 8.7
(iii) 0.02, 0.008 and 0.309
(iv) 0. 4136, 0. 3195 and 0.52
(v) 9.25, 3.4 and 6.666
(vi) 3.007, 0.587 and 18.341
(vii) 0.2, 0.02 and 2.0002
(viii) 6. 08, 60.8, 0.608 and 0.0608
(ix) 29.03, 0.0003, 0.3 and 7.2
(x) 3.4, 2.025, 9.36 and 3.6221

Answer:

(*i*) 0·5 + 0·37 = 0·87 **Ans.**

$$\begin{array}{r} 0{\cdot}5 \\ +\ 0{\cdot}37 \\ \hline 0{\cdot}87 \end{array}$$

(*ii*) 3·8 + 8·7 = 12·5 **Ans.**

$$\begin{array}{r} 3{\cdot}8 \\ +\ 8{\cdot}7 \\ \hline 12{\cdot}5 \end{array}$$

(*iii*) 0·02 + 0·008 + 0·309 = 0·337 **Ans.**

$$\begin{array}{r} 0{\cdot}02 \\ +\ 0{\cdot}008 \\ +\ 0{\cdot}309 \\ \hline 0{\cdot}337 \end{array}$$

(*iv*) 0·4136 + 0·3195 + 0·52 = 1·2531 **Ans.**

$$\begin{array}{r} 0{\cdot}4136 \\ +\ 0{\cdot}3195 \\ +\ 0{\cdot}52 \\ \hline 1{\cdot}2531 \end{array}$$

(*v*) 9·25 + 3·4 + 6·666 = 19·316 **Ans.**

$$\begin{array}{r} 9{\cdot}25 \\ +\ 3{\cdot}4 \\ +\ 6{\cdot}666 \\ \hline 19{\cdot}316 \end{array}$$

(*vi*) 3·007 + 0·587 + 18·341 = 21·935 **Ans.**

$$\begin{array}{r} 3{\cdot}007 \\ +\ 0{\cdot}587 \\ +\ 18{\cdot}341 \\ \hline 21{\cdot}935 \end{array}$$

(*vii*) 0·2 + 0·02 + 2·0002 = 2·2202 **Ans.**

$$\begin{array}{r} 0{\cdot}2 \\ +\ 0{\cdot}02 \\ +\ 2{\cdot}0002 \\ \hline 2{\cdot}2202 \end{array}$$

(*viii*) 6·08 + 60·8 + 0·608 + 0·0608 = 67·5488

Ans.

$$\begin{array}{r} 6\cdot08 \\ +\ 60\cdot8 \\ +\ \ 0\cdot608 \\ +\ \ 0\cdot0608 \\ \hline 67\cdot5488 \end{array}$$

(*ix*) 29·03 + 0·0003 + 0·3 + 7·2 = 36·5303 **Ans.**

$$\begin{array}{r} 29\cdot03 \\ +\ \ 0\cdot0003 \\ +\ \ 0\cdot3 \\ +\ \ 7\cdot2 \\ \hline 36\cdot5303 \end{array}$$

(*x*) 3·4 + 2·025 + 9·36 + 3·6221 = 18·4071 **Ans.**

$$\begin{array}{r} 3\cdot4 \\ +\ \ 2\cdot025 \\ +\ \ 9\cdot36 \\ +\ \ 3\cdot6221 \\ \hline 18\cdot4071 \end{array}$$

Question 2.

Subtract the first! number from the second :

(i) 5.4, 9.8
(ii) 0.16, 4.3
(iii) 0.82, 8.6
(v) 2.237, 9.425
(vi) 41 .03, 59.46
(vii) 3.92. 26.86
(viii) 4.73, 8.5
(ix) 12.63, 36.2
(x) 0.845, 3.71

Answer:

(*i*) $9{\cdot}8 - 5{\cdot}4 = 4{\cdot}4$ **Ans.**

$$\begin{array}{r} 9{\cdot}8 \\ -\,5{\cdot}4 \\ \hline 4{\cdot}4 \end{array}$$

(*ii*) $4{\cdot}30 - 0{\cdot}16 = 4{\cdot}14$ **Ans.**

$$\begin{array}{r} 4{\cdot}30 \\ -\,0{\cdot}16 \\ \hline 4{\cdot}14 \end{array}$$

(*iii*) $8{\cdot}60 - 0{\cdot}82 = 7{\cdot}78$ **Ans.**

$$\begin{array}{r} 8{\cdot}60 \\ -\,0{\cdot}82 \\ \hline 7{\cdot}78 \end{array}$$

(*iv*) $8{\cdot}43 - 0{\cdot}07 = 8{\cdot}36$ **Ans.**

$$\begin{array}{r} 8{\cdot}43 \\ -\,0{\cdot}07 \\ \hline 8{\cdot}36 \end{array}$$

(*v*) $9{\cdot}425 - 2{\cdot}237 = 7{\cdot}188$ **Ans.**

$$\begin{array}{r} 9{\cdot}425 \\ -\,2{\cdot}237 \\ \hline 7{\cdot}188 \end{array}$$

(*vi*) 59·46 – 41·03 = 18·43 **Ans.**

$$\begin{array}{r} 59\cdot46 \\ -\ 41\cdot03 \\ \hline 18\cdot43 \end{array}$$

(*vii*) 26·86 – 3·92 = 22·94 **Ans.**

$$\begin{array}{r} 26\cdot86 \\ -\ 3\cdot92 \\ \hline 22\cdot94 \end{array}$$

(*viii*) 8·50 – 4·73 = 3·77 **Ans.**

$$\begin{array}{r} 8\cdot50 \\ -\ 4\cdot73 \\ \hline 3\cdot77 \end{array}$$

(*ix*) 36·20 – 12·63 = 23·57 **Ans.**

$$\begin{array}{r} 36\cdot20 \\ -\ 12\cdot63 \\ \hline 23\cdot57 \end{array}$$

(*x*) 3·710 – 0·845 = 2·865 **Ans.**

$$\begin{array}{r} 3\cdot710 \\ -\ 0\cdot845 \\ \hline 2\cdot865 \end{array}$$

Question 3.

Simplify :

(i) 28.796 -13.42 – 2.555
(ii) 93.354 – 62.82 – 13.045
(iii) 36 – 18.59 – 3.2
(iv) 86 + 16.95 – 3.0042
(v) 32.8 – 13 – 10.725 +3.517
(vi) 4000 – 30.51 – 753.101 – 69.43
(vii) 0.1835 + 163.2005 – 25.9 – 100
(viii) 38.00 – 30 + 200.200 – 0.230
(ix) 555.555 + 55.555 – 5.55 – 0.555

Answer:

(*i*) $28{\cdot}796 - 13{\cdot}42 - 2{\cdot}555$

$= 28{\cdot}796 - (13{\cdot}42 + 2{\cdot}555)$

$= 28{\cdot}796 - 15{\cdot}975 = 12{\cdot}821$ **Ans.**

$$\begin{array}{r} 28{\cdot}796 \\ -\ 15{\cdot}975 \\ \hline 12{\cdot}821 \\ \hline \end{array} \qquad \begin{array}{r} 13{\cdot}420 \\ +\ 2{\cdot}555 \\ \hline 15{\cdot}975 \\ \hline \end{array}$$

(*ii*) $93{\cdot}354 - 62{\cdot}82 - 13{\cdot}045$

$= 93{\cdot}354 - (62{\cdot}82 + 13{\cdot}045)$

$= 93{\cdot}354 - 75{\cdot}865 = 17{\cdot}489$ **Ans.**

$$\begin{array}{r} 93{\cdot}354 \\ -\ 75{\cdot}865 \\ \hline 17{\cdot}489 \\ \hline \end{array} \qquad \begin{array}{r} 62{\cdot}820 \\ +\ 13{\cdot}045 \\ \hline 75{\cdot}865 \\ \hline \end{array}$$

(*iii*) $36 - 18{\cdot}59 - 3{\cdot}2 = 36 - (18{\cdot}59 + 3{\cdot}2)$

$= 36 - (21{\cdot}79) = 14{\cdot}21$ **Ans.**

$$\begin{array}{r} 36{\cdot}00 \\ -\ 21{\cdot}79 \\ \hline 14{\cdot}21 \\ \hline \end{array} \qquad \begin{array}{r} 18{\cdot}59 \\ +\ 3{\cdot}20 \\ \hline 21{\cdot}79 \\ \hline \end{array}$$

(*iv*) $86 + 16{\cdot}95 - 3{\cdot}0042 = 102{\cdot}95 - 3{\cdot}0042$

$= 99{\cdot}9458$ **Ans.**

$$\begin{array}{r} 102{\cdot}9500 \\ -\ \ 3{\cdot}0042 \\ \hline 99{\cdot}9458 \\ \hline \end{array} \qquad \begin{array}{r} 86{\cdot}00 \\ +\ 16{\cdot}95 \\ \hline 102{\cdot}95 \\ \hline \end{array}$$

(*v*) $32{\cdot}8 - 13 - 10{\cdot}725 + 3{\cdot}517$

$= (32{\cdot}8 + 3{\cdot}517) - (13 + 10{\cdot}725)$

$= 36{\cdot}317 - 23{\cdot}725 = 12{\cdot}592$ **Ans.**

$$\begin{array}{r} 13{\cdot}000 \\ +\ 10{\cdot}725 \\ \hline 23{\cdot}725 \\ \hline \end{array} \qquad \begin{array}{r} 32{\cdot}8 \\ +\ \ 3{\cdot}517 \\ \hline 36{\cdot}317 \\ \hline \end{array} \qquad \begin{array}{r} 36{\cdot}317 \\ -\ 23{\cdot}725 \\ \hline 12{\cdot}592 \\ \hline \end{array}$$

(*vi*) $4000 - 30{\cdot}51 - 753{\cdot}101 - 69{\cdot}43$

$= 4000 - (30{\cdot}51 + 753{\cdot}101 + 69{\cdot}43)$

$= 4000 - 853{\cdot}041 = 3146{\cdot}959$ **Ans.**

$$\begin{array}{r} 30{\cdot}510 \\ +{\cdot}753{\cdot}101 \\ +\ 69{\cdot}430 \\ \hline 853{\cdot}041 \\ \hline \end{array} \qquad \begin{array}{r} 4000{\cdot}000 \\ -\ 853{\cdot}041 \\ \hline 3146{\cdot}959 \\ \hline \end{array}$$

(*vii*) 0·1835 + 163·2005 – 25·9 – 100

= (0·1835 + 163·2005) – (25·9 + 100)

= 163·3840 – 125·9 = 37·484 **Ans.**

$$\begin{array}{r} 25\cdot9 \\ +\ 100.0 \\ \hline 125\cdot9 \end{array}$$

$$\begin{array}{r} 0\cdot1835 \\ +\ 163\cdot2005 \\ \hline 163\cdot3840 \end{array} \qquad \begin{array}{r} 163\cdot3840 \\ -\ 125\cdot9000 \\ \hline 37\cdot4840 \end{array}$$

(*viii*) 38·00 – 30 + 200·200 – 0·230

= (38·00 + 200·200) – (30 + 0·230)

= 238·200 – 30·230

= 207·970 = 207·97 **Ans.**

$$\begin{array}{r} 238\cdot200 \\ -\ 30\cdot230 \\ \hline 207\cdot970 \end{array}$$

(*ix*) 555·555 + 55·555 – 5·55 – 0·555

= (555·555 + 55·555) – (5·55 + 0·555)

= 611·110 – 6·105 = 605·005 **Ans.**

$$\begin{array}{r} 555\cdot555 \\ +\ 55\cdot555 \\ \hline 611\cdot110 \end{array} \qquad \begin{array}{r} 611\cdot110 \\ -\ 6\cdot105 \\ \hline 605\cdot005 \end{array}$$

Question 4.

Find the difference between 6.85 and 0.685.

Answer:

Difference between 6·85 and 0·685

= 6·85 – 0·685 = 6·165 **Ans.**

$$\begin{array}{r} 6\cdot850 \\ -\ 0\cdot685 \\ \hline 6\cdot165 \end{array}$$

Question 5.

Take out the sum of 19.38 and 56.025 then subtract it from 200. 111.

Answer:

Sum of 19·38 + 56·025 = 75·405

$$\begin{array}{r} 19{\cdot}38 \\ +\,56{\cdot}025 \\ \hline 75{\cdot}405 \end{array}$$

Difference of 200·111 and 75·405

= 200·111 – 75·405 = 124·706 **Ans.**

$$\begin{array}{r} 200{\cdot}111 \\ -\;\;75{\cdot}405 \\ \hline 124{\cdot}706 \end{array}$$

Question 6.

Add 13.95 and 1.003 ; and from the result, subtract the sum of 2.794 and 6.2.

Answer:

Sum of 13·95 and 1·003

= 13·95 + 1·003 = 14·953

$$\begin{array}{r} 13{\cdot}95 \\ +\;\;1{\cdot}003 \\ \hline 14{\cdot}953 \end{array}$$

Sum of 2·794 and 6·2

= 2·794 + 6·2 = 8·994

$$\begin{array}{r} 2{\cdot}794 \\ +\,6{\cdot}200 \\ \hline 8{\cdot}994 \end{array}$$

Difference of 14·953 and 8·994

= 14·953 – 8·994 = 5·959 **Ans.**

$$\begin{array}{r} 14{\cdot}953 \\ -\;\;8{\cdot}994 \\ \hline 5{\cdot}959 \end{array}$$

Question 7.
What should be added to 39.587 to give 80.375 ?

Answer:
Sum = 80·375

Given number = 39·587

∴ The number which is to be added

= 80·375 – 39·587 = 40·788 **Ans.**

$$\begin{array}{r} 80\cdot375 \\ -\ 39\cdot587 \\ \hline 40\cdot788 \end{array}$$

Question 8.
What should be subtracted from 100 to give 19.29?
Answer:
Sum = 100

The number = 19·29

∴ The number which is to be subtracted

= 100 – 19·29 = 80·71 **Ans.**

$$\begin{array}{r} 100\cdot00 \\ -\ 19\cdot29 \\ \hline 80\cdot71 \end{array}$$

Question 9.
What is the excess of 584.29 over 213.95 ?
Answer:
Total = 584·29

Given number = 213·95

Required difference = 584·29 – 213·95

= 370·34 **Ans.**

$$\begin{array}{r} 584\cdot29 \\ -\ 213\cdot95 \\ \hline 370\cdot34 \end{array}$$

Question 10.
Evaluate:
(i) (5.4 – 0.8) + (2.97 -1.462)
(ii) (6.25 + 0.36) -(17.2 – 8.97)
(iii) 9.004 + (3 -2.462)
(iv) 879.4 – (87.94 – 8 .794)

Answer:

(i) $(5\cdot4 - 0\cdot8) + (2\cdot97 - 1\cdot462)$

$= 4\cdot6 + 1\cdot508 = 6\cdot108$

$$\begin{array}{r} -\;1\cdot4 \\ \hline 1\cdot5 \\ \hline \end{array}$$

(ii) $(6\cdot25 + 0\cdot36) - (17\cdot2 - 8\cdot97)$

$= 6\cdot61 - 8\cdot23 = -1\cdot62$

$$\begin{array}{r} 6\cdot25 \\ +\,0\cdot36 \\ \hline 6\cdot61 \\ \hline \end{array} \qquad \begin{array}{r} 17\cdot20 \\ -\;\;8\cdot97 \\ \hline 8\cdot23 \\ \hline \end{array} \qquad \begin{array}{r} 8\cdot23 \\ -\;\;6\cdot61 \\ \hline -1\cdot62 \\ \hline \end{array}$$

(iii) $9\cdot004 + (3 - 2\cdot462)$

$= 9\cdot004 + 0\cdot538 = 9\cdot542$

$$\begin{array}{r} 3\cdot000 \\ -\,2\cdot462 \\ \hline 0\cdot538 \\ \hline \end{array}$$

(iv) $879\cdot4 - (87\cdot94 - 8\cdot794)$

$= 879\cdot4 - 79\cdot146 = 800\cdot254$

$$\begin{array}{r} 87\cdot940 \\ -\;\;8\cdot794 \\ \hline 79\cdot146 \\ \hline \end{array} \qquad \begin{array}{r} 879\cdot400 \\ -\;\;79\cdot146 \\ \hline 800\cdot254 \\ \hline \end{array}$$

Question 11.
What is the excess of 75 over 48.29?
Answer:

Excess of 75 over 48.29

$$\begin{array}{r} 75.00 \\ -48.29 \\ \hline 26.71 \\ \hline \end{array}$$

∴ Excess of 75 over 48.29 is 26.71

Question 12.

If A = 237.98 and B = 83.47.
Find :
(i) A – B
(ii) B – A.

Answer:

$(i)\ A - B$

$A = 237.98$

$B = 83.47$

$$\begin{array}{r} 237.98 \\ -83.47 \\ \hline 154.51 \end{array}$$

$\Rightarrow A - B = 154.51$

$(ii)\ B - A$

$= 83.47 - 237.98 = -154.51$

Question 13.

The cost of one kg of sugar increases from ?28.47 to T32.65. Find the increase in cost.

Answer:

Initial cost of sugar = ₹28.47

Increase cost of sugar = ₹32.65

$$\begin{array}{r} 32.65 \\ -28.47 \\ \hline 5.18 \end{array}$$

$\therefore$ Increase of sugar in cost = ₹5.18

EXERCISE 4 (C)

Question 1.

Multiply:
(i) 0.87 by 10
(ii) 2.948 by 100
(iii) 6.4 by 1000
(iv) 5.8 by 4
(v) 16.32 by 28
(vi) 5. 037 by 8
(vi) 4.6 by 2.1
(viii) 0.568 by 6.4

Answer:

(*i*) $0 \cdot 87 \times 10 = 8 \cdot 7$

(*ii*) $2 \cdot 948 \times 100 = 294 \cdot 8$

(*iii*) $6 \cdot 4 \times 1000 = 6400$

(*iv*) $5 \cdot 8 \times 4 = 23 \cdot 2$

(*v*) $16 \cdot 32 \times 28 = 456 \cdot 96$

$$\begin{array}{r} 16 \cdot 32 \\ \times \quad 28 \\ \hline 130 \cdot 56 \\ 326 \cdot 40 \\ \hline 456 \cdot 96 \end{array}$$

(*vi*) $5 \cdot 037 \times 8 = 40 \cdot 296$

(*vii*) $4 \cdot 6 \times 2 \cdot 1 = 9 \cdot 66$

$$\begin{array}{r} 4 \cdot 6 \\ \times 2 \cdot 1 \\ \hline 46 \\ 92\times \\ \hline 9 \cdot 66 \end{array}$$

(*viii*) $0 \cdot 568 \times 6 \cdot 4 = 3 \cdot 6352$

$$\begin{array}{r} 0 \cdot 568 \\ \times \quad 6 \cdot \ 4 \\ \hline 2272 \\ 34080 \\ \hline 3 \cdot 6352 \end{array}$$

Question 2.

Multiply each number by 10, 100, 1000 :

(i) 0.5

(ii) 0.112

(iii) 4.8

(iv) 0.0359

(v) 16.27

(vi) 234.8

Answer:

(i) 0.5 x 10 = 5,0.5 x 100 = 50,
0.5 x 1000 = 500

(ii) 0.112 x 10= 1.12,0.112 x 100
= 11.2, 0.112 x 1000= 112

(iii) 4.8 x 10 = 48, 4.8 x 100 = 480,
4.8 x 1000 = 4800

(iv) 0.0359 x 10 = 0.359,0.0359 x 100 = 3.59, 0.0359 x 1000 = 35-9

(v) 16.27 x 10 = 162.7, 16.27 x 100 = 1627, 16.27 x 1000= 16270

(vi) 234.8 x 10 = 2348, 234.8 x 100 = 23480, 234.8 x 1000 = 234800

Question 3.

Evaluate:

(i) 5.897 x 2.3
(ii) 0.894 x 87
(iii) 0.01 x 0.001
(iv) 0.84 x 2.2 x 4
(v) 4.75 x 0.08 x 3
(vi) 2.4 x 3.5 x 4.8
(vii) 0.8 x 1.2 x 0.25
(viii) 0.3 x 0.03 x 0.003
(ix) 12.003 x (0.2)5

Answer:

(*i*) 5·897 × 2·3 = 13·5631 **Ans.**

$$\begin{array}{r} 5\cdot897 \\ \times\ 2\cdot3 \\ \hline 17691 \\ 11794\times \\ \hline 13\cdot5631 \end{array}$$

(*ii*) 0·894 × 87 = 77·778 **Ans.**

$$\begin{array}{r} \cdot894 \\ \times 87 \\ \hline 6258 \\ 7152\times \\ \hline 77\cdot778 \end{array}$$

(*iii*) 0·01 × 0·001 = 0·00001 **Ans.**

(*iv*) 0·84 × 2·2 × 4

= 0·84 × 8·8

= 7·392 **Ans.**

$$\begin{array}{r} 84 \\ \times 88 \\ \hline 672 \\ 672\times \\ \hline 7392 \end{array}$$

(*v*) 4·75 × 0·08 × 3 = 4·75 × 0·08 × 3

= 4·75 × 0·24

= 1·1400 = 1·14 **Ans.**

$$\begin{array}{r} 4.75 \\ 0.24 \\ \hline 1900 \\ 950\times \\ \hline 1.1400 \end{array}$$

(*vi*) $2{\cdot}4 \times 3{\cdot}5 \times 4{\cdot}8 = 8{\cdot}40 \times 4{\cdot}8$

$= 8{\cdot}4 \times 4{\cdot}8$

$= 40{\cdot}32$ **Ans.**

$$\begin{array}{r} 24 \\ \times 35 \\ \hline 120 \\ 72\times \\ \hline 840 \end{array} \qquad \begin{array}{r} 8{\cdot}4 \\ \times 4\,8 \\ \hline 672 \\ 336\times \\ \hline 4032 \end{array}$$

(*vii*) $0{\cdot}8 \times 1{\cdot}2 \times 0{\cdot}25 = 0{\cdot}96 \times 0{\cdot}25$

$= 0{\cdot}2400$

$= 0{\cdot}24$ **Ans.**

$$\begin{array}{r} 96 \\ \times 25 \\ \hline 480 \\ 192\times \\ \hline 2400 \end{array}$$

(*viii*) $0{\cdot}3 \times 0{\cdot}03 \times 0{\cdot}003$

$= 0{\cdot}009 \times 0{\cdot}003$

$= 0{\cdot}000027$ **Ans.**

(*ix*) $12{\cdot}003 \times (0{\cdot}2)^5$

$= 12{\cdot}003 \times 0{\cdot}2 \times 0{\cdot}2 \times 0{\cdot}2 \times 0{\cdot}2 \times 0{\cdot}2$

$= 12{\cdot}003 \times 0{\cdot}00032 = 0{\cdot}00384096$ **Ans.**

$$\begin{array}{r} 12003 \\ \times \quad 32 \\ \hline 24006 \\ 36009\times \\ \hline 384096 \end{array}$$

Question 4.
Divide :
(i) 54.9 by 10
(ii) 7.8 by 100
(iii) 324.76 by 1000
(iv) 12.8 by 4
(v) 27.918 by 9
(vi) 4.672 by 8
(vii) 4.32 by 1.2
(viii) 7.644 by 1.4
(ix) 4.8432 by 0.08

Answer:

(*i*) 54·9 ÷ 10 = 5·49 **Ans.**

(*ii*) 7·8 ÷ 100 = 0·078 **Ans.**

(*iii*) 324·76 ÷ 1000 = 0·32476 **Ans.**

(*iv*) 12·8 ÷ 4 = 3·2 **Ans.**

(*v*) 27·918 ÷ 9 = 3·102 **Ans.**

(*vi*) 4·672 ÷ 8 = 0·584 **Ans.**

$$\begin{array}{r|l} & 0{\cdot}584 \\ 8 & 4{\cdot}672 \\ & -40 \\ \hline & 67 \\ & -64 \\ \hline & 32 \\ & -32 \\ \hline & \times \end{array}$$

(*vii*) 4·32 ÷ 1·2 = 4·32 ÷ 1·20
= 432 ÷ 120 = 3·6 **Ans.**

$$\begin{array}{r|l} & 3{\cdot}6 \\ 120 & 432{\cdot}0 \\ & -360 \\ \hline & 720 \\ & -720 \\ \hline & \times \end{array}$$

(*viii*) 7·644 ÷ 1·4 = 7·644 ÷ 1·400
= 7644 ÷ 1400 = 5·46 **Ans.**

$$\begin{array}{r|l} & 5{\cdot}46 \\ 1400 & 7644{\cdot}00 \\ & -7000 \\ \hline & 6440 \\ & -5600 \\ \hline & 8400 \\ & -8400 \\ \hline & \times \end{array}$$

(*ix*) $4{\cdot}8432 \div 0{\cdot}08 = 4{\cdot}8432 \div 0{\cdot}0800$

$= 48432 \div 800 = 60{\cdot}54$ **Ans.**

$$
\begin{array}{r|l}
 & 60{\cdot}54 \\
800 & 48432{\cdot}00 \\
 & -4800 \\
\hline
 & 4320 \\
 & -4000 \\
\hline
 & 3200 \\
 & -3200 \\
\hline
 & \times
\end{array}
$$

Question 5.
Divide each of the given numbers by 10, 100, 1000 and 10000
(i) 2.1
(ii) 8.64
(iii) 5-01
(iv) 0.0906
(v) 0.125
(vi) 111.11
(vii) 0.848 x 3
(viii)4.906 x $(0.2)^2$
(ix) $(1.2)^2$ x$(0.9)^2$

Answer:

(i) 2.1 ÷ 10 = 0.21, 2.1 ÷ 100 = 0.021,
2.1 ÷ 1000 = 0.0021
and 2.1 ÷10000 = 0.00021

(ii) 8.64 ÷ 10 = 0-864, 8.64 ÷ 100 = 0-0864,
8.64 ÷ 1000 = 0-00864
and 8.64 ÷ 10000 = 0.000864

(iii)5.01 ÷ 10 = 0.501,
5.01 ÷ 100 = 0.0501,
5.01 ÷1000 = 0.00501,
5.01 ÷ 10000 = 0.000501

(iv) 0.0906 ÷ 10 = 0.00906,
0.0906 ÷ 100 = 0.000906,
0.0906 ÷ 1000 = 0.0090906,
0.0906 ÷ 10000 = 0.00000906

(v) 0.125
Now 0.125 + 10 = 0.0125,
0.125 ÷ 100 = 0-00125,
0.125 ÷1000 = 0.000125,
0.125 ÷ 10000 = 0.0000125

(vi) 111.11÷ 10= 11.111,
111.11÷ 100 = 1.1111,
111.11 ÷ 1000 = 0.11111,
111.11 ÷ 10000 = 0.011111

(vii) 0.848 x 3 = 2.544 ,
Now 2.544 ÷ 10 = 0.2544,
2.544 ÷ 100 = 0-02544,
2-544 ÷ 1000 = 0-002544,
2-544 ÷ 10000 = 0-0002544

(viii) $4.906 \times (0.2)^2 = 4.906 \times 0.2 \times 0.2$
$= 4.906 \times 0.04 = 0.19624$
Now 0.19624 + 10 = 0.019624,
0.19624 + 100 = 0.0019624,
0.19624 + 1000 = 0.00019624,
0.19624 + 10000 = 0.000019624

(ix) $(1.2)^2 \times (0.9)^2 = 1.2 \times 1.2 \times 0.9 \times 0.9 = 1.44 \times 0.81 = 1.1664$
Now 1 .1664 + 10 = 0.11664,
1.1664 ÷ 100 = 0.011664,
1.1664 ÷ 1000 = 0.0011664,
1.1664 ÷ 10000 = 0.00011664

Question 6.

Evaluate :
(i) 9.75 + 5
(ii) 4.4064 + 4
(iii) 27.69 + 30
(iv) 19.25 + 25
(v) 20.64+ 16
(vi) 3.204 + 9
(vii) 0.125 + 25

(viii) 0.14616 + 72
(ix) 0.6227+ 1300
(x) 257.894+ 0-169
(xi) 6.3 + $(0.3)^2$

Answer:

(*i*) $9{\cdot}75 \div 5 = 1{\cdot}95$ **Ans.**

$$
\begin{array}{r}
1{\cdot}95 \\
5\overline{)\ 9{\cdot}75} \\
-5 \\
\hline
47 \\
-45 \\
\hline
25 \\
-25 \\
\hline
\times
\end{array}
$$

(*ii*) $4{\cdot}4064 \div 4 = 1{\cdot}1016$ **Ans.**

(*iii*) $27{\cdot}69 \div 30 = 0{\cdot}923$ **Ans.**

$$
\begin{array}{r}
0{\cdot}923 \\
30\overline{)\ 27{\cdot}690} \\
-270 \\
\hline
69 \\
-60 \\
\hline
90 \\
-90 \\
\hline
\times
\end{array}
$$

(*iv*) 19·25 ÷ 25 = 0·77 **Ans.**

$$
\begin{array}{r}
0{\cdot}77 \\
25\overline{)\ 19{\cdot}25} \\
-175 \\
\hline
175 \\
-175 \\
\hline
\times
\end{array}
$$

(*v*) 20·64 ÷ 16 = 1·29 **Ans.**

$$
\begin{array}{r}
1{\cdot}29 \\
16\overline{)\ 20{\cdot}64} \\
-16 \\
\hline
46 \\
-32 \\
\hline
144 \\
-144 \\
\hline
\times
\end{array}
$$

(*vi*) 3·204 ÷ 9 = 0·356 **Ans.**

$$
\begin{array}{r}
0{\cdot}356 \\
9\overline{)\ 3{\cdot}204} \\
-27 \\
\hline
50 \\
-45 \\
\hline
54 \\
-54 \\
\hline
\times
\end{array}
$$

(*vii*) 0·125 ÷ 25 = 0·005 **Ans.**

$$
\begin{array}{r}
0{\cdot}005 \\
25\overline{)\ 0{\cdot}125} \\
-125 \\
\hline
\times
\end{array}
$$

(*viii*) $0{\cdot}14616 \div 72 = 0{\cdot}00203$ **Ans.**

```
        0·00203
72 ) 0·14616
     −144
       216
      −216
        ×
```

(*ix*) $0{\cdot}6227 \div 1300 = 0{\cdot}000479$

```
          0·000479
1300 ) 0·62270
       −5200
        10270
        −9100
         11700
        −11700
           ×
```

(*x*) $257{\cdot}894 \div 0{\cdot}169$

$= 257894 \div 169 = 1526$

```
        1526
169 )  257894
      −169
        888
       −845
         439
        −338
         1014
        −1014
           ×
```

(*xi*) $6{\cdot}3 \div (0{\cdot}3)^2 = 6{\cdot}3 \div (0{\cdot}3 \times 0{\cdot}3)$

$= 6{\cdot}3 \div (0{\cdot}09) = 630 \div 09$

$= 630 \div 9 = 70$

Question 7.

Evaluate:

(i) 4.3 x 0.52 x 0.3

(ii) 3.2 x 2.5 x 0.7

(iii) 0.8 x 1.5 x 0.6

(iv) 0.3 x 0.3 x 0.3

(v) 1.2 x 1.2 x 0.4

(vi) 0.4 x 0.04 x 0.004

(vii) 0.5 x 0.6 x 0.7

(Viii) 0.5 x 0.06 x 0.007

Answer:

(*i*) 4.3 × 0.52 × 0.3

$$
\begin{array}{r}
0.52 \\
\times 4.3 \\
\hline
156 \\
208\times \\
\hline
2.236 \\
\times 0.3 \\
\hline
6708 \\
0000\times \\
\hline
0.6708
\end{array}
$$

(Sum of decimal places = 1 + 2 + 1 = 4)

$\therefore$ $4.3 \times 0.52 \times 0.3 = 0.6708$

(*ii*) $3.2 \times 2.5 \times 0.7$

$$\begin{array}{r} 3.2 \\ \times 2.5 \\ \hline 160 \\ 64\times \\ \hline 8.00 \\ \times 0.7 \\ \hline 5600 \\ 000\times \\ \hline 5.600 \end{array}$$

(Sum of decimal places = 1 + 1 + 1 = 3)

$\therefore$ $3.2 \times 2.5 \times 0.7 = 5.600$ or 5.6

(*iii*) $0.8 \times 1.5 \times 0.6$

$$\begin{array}{r} 1.5 \\ \times 0.8 \\ \hline 120 \\ 00\times \\ \hline 1.20 \\ \times 0.6 \\ \hline 720 \\ 000\times \\ \hline 0.720 \end{array}$$

(Sum of decimal places = 1 + 1 + 1 = 3)

$\therefore$ $0.8 \times 1.5 \times 0.6 = 0.720$ or 0.72

(*iv*) $0.3 \times 0.3 \times 0.3$

$$\begin{array}{r} 0.3 \\ \times 0.3 \\ \hline 09 \\ 00\times \\ \hline 0.09 \\ \times 0.3 \\ \hline 0.027 \end{array}$$

(Sum of decimal places = 1 + 1 + 1 = 3)

$\therefore$ $0.3 \times 0.3 \times 0.3 = 0.027$

(*v*) $1.2 \times 1.2 \times 0.4$

1.2
×1.2
.24
12×
1.44
×0.4
576
000×
0.576

(Sum of decimal places = 1 + 1 + 1 = 3)

$\therefore$ $1.2 \times 1.2 \times 0.4 = 0.576$

(*vi*) $0.4 \times 0.04 \times 0.004$

0.004
×0.04
0016
0000×
0000××
0.00016
×0.4
0.000064

(Sum of decimal places = 1 + 2 + 3 = 6)

$\therefore$ $0.4 \times 0.04 \times 0.004 = 0.000064$

(*vii*) $0.5 \times 0.6 \times 0.7$

0.5
×0.6
.30
00×
0.30
×0.7
210
000×
0.210

(Sum of decimal places = 1 + 1 + 1 = 3)

$\therefore$ $0.5 \times 0.6 \times 0.7 = 0.210$ or 0.21

(*viii*) $0.5 \times 0.06 \times 0.007$

$$\begin{array}{r} 0.007 \\ \times 0.06 \\ \hline 0.00042 \\ \times 0.5 \\ \hline 0.00021 \end{array}$$

(Sum of decimal places = 1 + 2 + 3 = 5)

$\therefore$ $0.5 \times 0.06 \times 0.007 = 0.00021$

Question 8.

Evaluate:

(i) $(0.9)^2$

(ii) $(0.6)^2 \times 0.5$

(iii) $0.3 \times (0.5)^2$

(iv) $(0.4)^3$

(v) $(0.2)^3 \times 5$

(vi) $(0.2)^3 \times 0.05$

Answer:

(i) $(0.9)^2$

$\Rightarrow 0.9 \times 0.9 = 0.81$

(Sum of decimal places 1 + 1=2)

(ii) $(0.6)^2 \times 0.5$

$\Rightarrow 0.6 \times 0.6 \times 0.5$

$\Rightarrow 0.36 \times 0.5 = 0.180$ or 0.18

(Sum of decimal places = 1 + 1 + 1 = 3)

(iii) $0.3 \times (0.5)^2$

$\Rightarrow 0.3 \times 0.5 \times 0.5$

$\Rightarrow 0.3 \times 0.25 = 0.075$

(Sum of decimal places 1 + 1 + 1 = 3)

(iv) $(0.4)^3$

$\Rightarrow 0.4 \times 0.4 \times 0.4$

⇒ 0.16 x 0.4 = 0.064
(Sum of decimal places 1 + 1 + 1 = 3)

(v) $(0.2)^3$ x 5
⇒ 0.2 x 0.2 x 0.2 x 5
⇒ 0.08 x 5 = 0.40 or 0.4
(Sum of decimal places 1 + 1 + 1 = 3)

(vi) $(0.2)^3$ x 0.05
⇒ 0.2 x 0.2 x 0.2 x 0.05
⇒ 0.008 x 0.05 = 0.00040
(Sum of decimal places = 5)

Question 9.

Find the cost of 36.75 kg wheat at the rate of ₹12.80 per kg.

Answer:

Total weight of wheat = 36.75 kg

Cost of 1 kg of wheat = ₹12.80

∴ Cost of 36.75 kg of wheat

= 36.75 × 12.80 = ₹470.40

$$\begin{array}{r} 36.75 \\ \times 12.80 \\ \hline 470.40 \end{array}$$

Question 10.

The cost of a pen is ₹56.15. Find the cost of 16 such pens.

Answer:

Cost of one pen = ₹56.15

∴ Cost of 16 pens

= ₹56.15 × 16 = ₹898.40

$$\begin{array}{r} 56.15 \\ \times 16 \\ \hline 898.40 \end{array}$$

Question 11.

Evaluate:

(i) 0.0072 ÷ 0.06

(ii) 0.621 ÷ 0.3

(iii) 0.0532 ÷ 0.005

(iv) 0.01162 ÷ 0.14

(v) (7.5 x 40.4) ÷ 25

(vi) 2.1 ÷ (0.1 x 0.1)

Answer:

$(i)\ 0.0072 \div 0.06$

$$= \frac{0.0072 \times 100}{0.06 \times 100}$$

$$= \frac{0.72}{6} = 0.12$$

$(ii)\ 0.621 \div 0.3$

$$= \frac{0.621 \times 10}{0.3 \times 10}$$

$$= \frac{6.21}{3} = 2.07$$

$(iii)\ 0.0532 \div 0.005$

$$= \frac{0.0532 \times 1000}{0.005 \times 1000} = \frac{53.2}{5} = 10.64$$

$(iv)\ 0.01162 \div 0.14$

$$= \frac{0.01162 \times 100}{0.14 \times 100}$$

$$= \frac{1.162}{14} = 0.083$$

$(v)\ (7.5 \times 40.4) \div 25$

$$= \frac{303}{25} = 12.12$$

$(vi)\ 2.1 \div (0.1 \times 0.1)$

$$= \frac{2.1 \times 100}{0.01 \times 100} = \frac{210}{1} = 210$$

Question 12.
Fifteen indentical articles weigh 31.50 kg. Find the weight of each article.
Answer:
Weight of 15 articles = 31.50 kg
∴ Weight of one article
= 31.50- 15 = 2.1 kg

Question 13.
The product of two numbers is 211.2. If one of these two numbers is 16.5, find the other number.
Answer:

The product of two numbers = 211.2

One number = 16.5

$\therefore$ Second number = $211.2 \div 16.5$

$$= \frac{211.2 \times 10}{16.5 \times 10}$$

$$= \frac{2112}{165} = 12.8$$

Question 14.
One dozen identical articles cost ₹45.96. Find the cost of each article.
Answer:
∴ Weight of one dozen articles = ₹45.96
One dozen = 12
∴ Cost of one article = 45.96 + 12 = ₹3.83

EXERCISE 4 (D)

Question 1.
Find whether the given division forms a terminating decimal or a non-terminating decimal:
(i) 3 ÷ 8
(ii)8 ÷ 3
(iii) 6÷ 5
(iv) 5 ÷ 6
(v) 12.5 ÷ 4
(vi) 23 ÷ 0.7
(vii) 42 ÷ 9
(viii) 0.56÷ 0.11

Answer:

(*i*) $3 \div 8 = 0{\cdot}375$

Hence it is terminating decimal.

$$
\begin{array}{r}
0{\cdot}375 \\
8\overline{)\,3{\cdot}00} \\
24 \\
\hline
60 \\
56 \\
\hline
40 \\
40 \\
\hline
\times
\end{array}
$$

(*ii*) $8 \div 3 = 2{\cdot}666.....$

Hence it is non-terminating dec l.

$$
\begin{array}{r}
2{\cdot}666..... \\
3\overline{)\,8{\cdot}000} \\
6 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
2
\end{array}
$$

(*iii*) $6 \div 5 = 1{\cdot}2$

Hence it is terminating decimal.

$$
\begin{array}{r}
1{\cdot}2 \\
5\overline{)\,6{\cdot}0} \\
5 \\
\hline
10 \\
10 \\
\hline
\times
\end{array}
$$

(*iv*) $5 \div 6 = 0{\cdot}8333.....$

Hence it is non-terminating decimal.

$$
\begin{array}{r}
0{\cdot}8333..... \\
6\overline{)\,5{\cdot}0000} \\
48 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
2
\end{array}
$$

(*v*) $12{\cdot}5 \div 4 = 3{\cdot}125$

Hence it is terminating decimal.

$$
\begin{array}{r}
3{\cdot}125 \\
4\overline{)\,12{\cdot}500} \\
12 \\
\hline
5 \\
4 \\
\hline
10 \\
8 \\
\hline
20 \\
20 \\
\hline
\times
\end{array}
$$

(*vi*) $23 \div 0{\cdot}7 = 230 \div 7 = 32{\cdot}8571428.....$

Hence it is non-terminating decimal. **Ans.**

```
      32·8571428.....
   ___________
7 ) 230·000000
    21
    ----
     20
     14
     --
      60
      56
      --
       40
       35
       --
        50
        49
        --
         10
          7
          --
          30
          28
          --
           20
           14
           --
            60
            56
            --
             4
```

(*vii*) $42 \div 9 = 4{\cdot}666.....$

Hence it is non-terminating decimal. **Ans.**

```
      4·666.....
   _________
9 ) 42·000
    36
    --
     60
     54
     --
      60
      54
      --
       60
       54
       --
        6
```

(*viii*) $0{\cdot}56 \div 0{\cdot}11 = 56 \div 11 = 5{\cdot}0909.....$

Hence it is non-terminating decimal. **Ans.**

$$
\begin{array}{r}
5{\cdot}0909..... \\
11\overline{)\,56{\cdot}0000} \\
\underline{55} \\
100 \\
\underline{99} \\
100 \\
\underline{99} \\
1
\end{array}
$$

Question 2.

Express as recurring decimals :

(*i*) $1\frac{1}{3}$ (*ii*) $\frac{10}{11}$

(*iii*) $\frac{5}{6}$ (*iv*) $\frac{2}{13}$

(*v*) $\frac{1}{9}$ (*vi*) $\frac{17}{90}$

(*vii*) $\frac{5}{18}$ (*viii*) $\frac{7}{12}$

Answer:

(*i*) $1\frac{1}{3} = \frac{4}{3} = 1{\cdot}333.....$

$= 1{\cdot}\bar{3}$ **Ans.**

$$
\begin{array}{r}
1{\cdot}333..... \\
3\overline{)\,4{\cdot}000} \\
3 \\
\hline
10 \\
9 \\
\hline
10 \\
9 \\
\hline
10 \\
9 \\
\hline
1
\end{array}
$$

(*ii*) $\frac{10}{11} = 0{\cdot}909090.....$

$= 0{\cdot}\overline{90}$ **Ans.**

$$
\begin{array}{r}
0{\cdot}909090..... \\
11\overline{)\,10{\cdot}0000000} \\
99 \\
\hline
100 \\
99 \\
\hline
100 \\
99 \\
\hline
100 \\
99 \\
\hline
1
\end{array}
$$

(*iii*) $\frac{5}{6} = 0.8333.....$

$$
\begin{array}{r}
0.8333 \\
6\overline{)5.0000} \\
48 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
20 \\
18 \\
\hline
2
\end{array}
$$

$= 0.8\overline{3}$

(*iv*) $\frac{2}{13} = 0{\cdot}153846153846... = 0{\cdot}\overline{153846}$

$$
\begin{array}{r}
0{\cdot}153846153846..... \\
13\overline{)2{\cdot}000000000000} \\
13 \\
\hline
70 \\
65 \\
\hline
50 \\
39 \\
\hline
110 \\
104 \\
\hline
60 \\
52 \\
\hline
80 \\
78 \\
\hline
20 \\
13 \\
\hline
70 \\
65 \\
\hline
50 \\
39 \\
\hline
110 \\
104 \\
\hline
60 \\
52 \\
\hline
80 \\
78 \\
\hline
2
\end{array}
$$

(v) $\frac{1}{9} = 0{\cdot}1111.....$

$= 0{\cdot}\overline{1}$ **Ans.**

$0{\cdot}1111.....$

$9 \overline{)}\ 1{\cdot}0000$

9

10

9

10

9

10

9

1

(vi) $\frac{17}{90} = 0{\cdot}1888.....$

$= 0{\cdot}1\overline{8}$ **Ans.**

$0{\cdot}1888.....$

$90 \overline{)}\ 17{\cdot}0000$

90

800

720

800

720

800

720

80

(*vii*) $\frac{5}{18}$

$= 0.2777.....$

$$
\begin{array}{r}
18\overline{)5.000(0.2777} \\
36 \\
\hline
140 \\
126 \\
\hline
140 \\
126 \\
\hline
14
\end{array}
$$

$= 0.2\bar{7}$

(*viii*) $\frac{7}{12}$

$= 0.58333.....$

$$
\begin{array}{r}
12\overline{)7.0000(0.58333} \\
60 \\
\hline
100 \\
96 \\
\hline
40 \\
36 \\
\hline
40 \\
36 \\
\hline
40 \\
36 \\
\hline
4
\end{array}
$$

$= 0.58\bar{3}$

Question 3.

Convert into vulgar fraction :

(i) $0.\bar{3}$

(ii) $0.\bar{8}$

(iii) $4.\bar{4}$

(iv) $23.\bar{7}$

Answer:

$$(i)\ 0.\bar{3} = \frac{3}{9}$$

$$= \frac{3-0}{9} = \frac{3}{9} = \frac{1}{3}$$

$$(ii)\ 0.\bar{8} = \frac{8}{9}$$

$$= \frac{8-0}{9} = \frac{8}{9}$$

$$(iii)\ 4.\bar{4} = \frac{44}{9}$$

$$= \frac{44-4}{9} = \frac{40}{9}$$

$$= 4\frac{4}{9}$$

$$(iv)\ 23.\bar{7} = \frac{237}{9}$$

$$= \frac{237-23}{9} = \frac{214}{9}$$

$$= 23\frac{7}{9}$$

Question 4.

Convert into vulgar fraction :

(i) $0.\overline{35}$

(ii) $2.\overline{23}$

(iii) $1.\overline{28}$

(iv) $5.\overline{234}$

Answer:

$$(i)\ 0.\overline{35} = \frac{35}{99}$$

$$= \frac{35-0}{99} = \frac{35}{99}$$

$$(ii)\ 2.\overline{23} = 2 + 0.\overline{23}$$

$$= 2 + \frac{23-0}{99}$$

$$= 2 + \frac{23}{99} = 2\frac{23}{99}$$

$$(iii)\ 1.\overline{28} = 1 + 0.\overline{28}$$

$$= 1 + \frac{28-0}{99}$$

$$= 1 + \frac{28}{99} = 1\frac{28}{99}$$

$$(iv)\ 5.\overline{234} = 5 + 0.\overline{234}$$

$$= 5 + \frac{234-0}{999} = 5\frac{234}{999}$$

Question 5.

Convert into vulgar fraction :

(i) $0\ 0.3\overline{7}$

(ii) $0.2\overline{45}$

(iii) $0.68\overline{5}$

(iv) $0.4\overline{42}$

Answer:

$$(i)\ 0.\overline{37} = \frac{37-3}{90}$$

$$= \frac{34}{90} = \frac{17}{45}$$

$$(ii)\ 0.\overline{245} = \frac{245-2}{990}$$

$$= \frac{243}{990} = \frac{81}{330}$$

$$= \frac{27}{110}$$

$$(iii)\ 0.68\overline{5} = \frac{685-68}{900}$$

$$= \frac{617}{900}$$

$$(iv)\ 0.\overline{442} = \frac{442-4}{990}$$

$$= \frac{438}{990} = \frac{219}{495}$$

EXERCISE 4 (E)

Question 1.

Round off:

(i) 0 .07, 0.112, 3.59, 9.489 to the nearest tenths.

(ii) 0.627, 100.479, 0 065 and 0.024 to the nearest hundredths.

(iii) 4.83,0.86,451 .943 and 9.08 to the nearest whole number.

Answer:

(i) 0.07 = 0.1,

0.112 = 0.1

3 . 59 = 3.6, 9.489 = 9.5

(ii) 0.627 = 0.63,
100.479 = 100.48
0.065 = 0.07,
0.024 = 0.02
(iii) 4.83 = 5,
0.86= 1,
451.943 = 452
9.08 = 9

Question 2.

Simplify, and write your answers correct to the nearest hundredths :
(i) 18 .35 x 1.2
(ii) 62.89 x 0.02

Answer:

(*i*) 18·35 × 1·2 = 22·02

$$\begin{array}{r} 18{\cdot}35 \\ \times 1{\cdot}2 \\ \hline 36{\cdot}70 \\ 1835\times \\ \hline 22{\cdot}020 \end{array}$$

(*ii*) 62·89 × 0·02 = 1·2578 = 1·26

$$\begin{array}{r} 62{\cdot}89 \\ \times 0{\cdot}02 \\ \hline 1{\cdot}2578 \end{array}$$

Question 3.

Write the number of significant figures (digits) in:
(i) 35.06
(ii) 0.35
(iii) 7.0068
(iv) 19 .0
(v) 0.0062
(vi) 0 4.2 x 0.6
(vii) 0.08 x 25
(viii) 3.6 ÷ 0.12 .

Answer:
(i) 35.06 : In this significant figures i.e. digits are 4
(ii) In 0.35, significant figures are 2
(iii) In 7.0068, significant figures are 5
(iv) In 19.0, significant figures are 3
(v) In 0.0062, significant figures are 2
(vi) In 4.2 x 0.6 = 2.52, significant figure are 3
(vii) In 008 x 25 = 2.00 = 2 significant figure is 1
(viii) In 3.6 ÷0 .12 or 360 ÷ 12 = 30, significant figure are 2.

Question 4.
Write :
(i) 35.869,0 008426,4.952 and 382.7, correct lo three significant figures.
(ii) 60.974. 2.8753, 0.001789 and 400.04, correct to four significant figures.
(iii) 14.29462, 19.2, 46356.82 and 69, correct to five significant figures.

Answer:
(i) Correct to three significant figures are
35.869 → 35.9
0.008426 →0.00843
4. 952→ 4.95
382.7 →383
(ii) Correct to four significant figures
60.974 →60.97
2. 8753 → 2.875
0.001789 → 0.001789
400.04 → 400.0
(iii) Correct to five significant figures
14.29462→ 14.295
19.2 → 19.200
46356.82 →46357
69 → 69.000

EXERCISE 4 (F)

Question 1.

The weight of an object is 3 .06 kg. Find the total weight of 48 similar objects.

Answer:

Weight of one object = 3·06 kg.

∴ Weight of 48 objects = 3·06 × 48

= 146·88 kg. **Ans.**

```
  3·06
× 48
------
 2448
1224×
------
14688
------
```

Question 2.

Find die cost of 17.5 m cloth at the rate of Rs. 112.50 per metre.

Answer:

Cost of 1 metre cloth = Rs. 112·5(

∴ Cost of 17·5 m cloth

= Rs. 112·50 × 17·5

= Rs. 1968·750

= 1968·75 **Ans.**

```
 112·50
  17·5
------
 56250
78750×
11250××
-------
1968750
-------
```

Question 3.
One kilogramme of oil costs Rs. 73.40. Find the cost of 9.75 kilogramme of the oil.

Answer:
Cost of 1 kg oil = Rs. 73·40
∴ Cost of 9·75 kg oil = Rs. 73·40 × 9·75
= Rs. 715·6500
= Rs. 715·65 **Ans.**

$$\begin{array}{r} 73{\cdot}40 \\ \times 9{\cdot}75 \\ \hline 36700 \\ 51380\times \\ 66060\times\times \\ \hline 7156500 \\ \hline \end{array}$$

Question 4.
Total weight of 8 identical objects is 51.2 kg. Find the weight of each object.
Answer:
Weight of 8 objects = 51-2 kg
∴ Weight of 1 object = 51 -2 + 8 kg = 6-4 kg Ans.

Question 5.
18.5 m of cloth costs Rs. 666. Find the cost of 3.8 m cloth.

Answer:
Cost of 18.5 m cloth = Rs. 666
Cost of 1 m cloth = Rs. 666 ÷18.5 and cost of 3.8 m cloth
= Rs. (666 ÷18.5) x 3-8 = Rs. (6660 ÷ 185) x 3.8 = Rs. 36 x 3.8 = Rs. 136.80

$$\begin{array}{r|l} & 36 \\ \hline 185 & 6660 \\ & 555 \\ \hline & 1110 \\ & 1110 \\ \hline & \times \\ \hline \end{array}$$

$$\begin{array}{r} 3{\cdot}8 \\ \times 36 \\ \hline 228 \\ 114\times \\ \hline 1368 \\ \hline \end{array}$$

Question 6.

Find die value of:

(i) 0.5 of Rs. 7.60 + 1.62 of Rs. 30

(ii) 2.3 of 7.3 kg + 0.9 of 0.48 kg

(iii) 6.25 of 8.4 – 4.7 of 3.24

(iv) 0.98 of 235 – 0 .09 of 3.2

Answer:

(*i*) 0·5 of Rs. 7·60 + 1·62 of Rs. 30

= Rs. 3·80 + Rs. 48·60

= Rs. 52·40 **Ans.**

7·60	1·62
×0·5	×30
3·800	48·60

(*ii*) 2·3 of 7·3 kg + 0·9 of 0·48 kg

= 16·79 kg + 0·432 kg = 17·222 kg **Ans.**

7·3	0·48	16·790
×2·3	×0·9	+0·432
219	0·432	17·222
146×		
1679		

(*iii*) 6·25 of 8·4 – 4·7 of 3·24

= 52·500 – 15·228 = 37·272 **Ans.**

6·25	3·24
×8·4	×4·7
2500	2268
5000×	1296×
52500	15228

(*iv*) 0·98 of 235 – 0·09 of 3·2 = 230·30 – 0·288

= 230·012 **Ans.**

		235
230·300	3·20	× ·98
–0·288	·09	1880
230·012	·2880	2115×
		23030

Question 7.

Evaluate:

(i) 5.6 – 1 .5 of 3.4

(ii) 4.8 ÷ 0.04 of 5

(iii) 0.72 of 80 + 0.2

(iv) 0.72 ÷ 80 of 0.2

(v) 6.45 + (3.9 – 1.75)

(vi) 0.12 of(0.104 – 0.02)+ 0.36 x 0.5

Answer:

(*i*) 5·6 – 1·5 of 3·4 = 5·6 – 5·1

$$\begin{array}{r} 3{\cdot}4 \\ \times\ 1{\cdot}5 \\ \hline 170 \\ 34\times \\ \hline 5{\cdot}1\,0 \end{array}$$

= 5·6 – 5·1 = 0·5 **Ans.**

(*ii*) 4·8 ÷ 0·04 of 5 = 4·8 ÷ 0·20

= 4·8 ÷ 0·2 = 48 ÷ 2 = 24 **Ans.**

(*iii*) 0·72 of 80 ÷ 0·2 = 57·60 ÷ 0·2

= 57·6 ÷ 0·2 = 576 ÷ 2 = 288 **Ans.**

(*iv*) 0·72 ÷ 80 of 0·2 = 0·72 ÷ 16·0

= 0·72 ÷ 16 = 72 ÷ 1600

$$\begin{array}{r} 0{\cdot}045 \\ 1600\overline{)72,000(} \\ -6400 \\ \hline 8000 \\ -8000 \\ \hline \times \end{array}$$

= 0·045 **Ans.**

(*v*) 6·45 ÷ (3·9 – 1·75) = 6·45 ÷ (3·90 – 1·75)

= 6·45 ÷ 2·15 = 645 ÷ 215 = 3 **Ans.**

$$\begin{array}{r} 3 \\ 215\overline{)\ 645(} \\ -645 \\ \hline \times \end{array}$$

(*vi*) 0·12 of (0·104 – 0·02) + 0·36 × 0·5

= 0·12 of 0·084 + 0·36 × 0·5

= 0·01008 + 0·180 = 0·19008 **Ans.**

$$\begin{array}{r} 0{\cdot}104 \\ -\ 0{\cdot}020 \\ \hline 0{\cdot}084 \end{array} \qquad \begin{array}{r} {\cdot}084 \\ \times{\cdot}12 \\ \hline 0{\cdot}01008 \end{array} \qquad \begin{array}{r} 0{\cdot}01008 \\ +\ 0{\cdot}180 \\ \hline 0{\cdot}19008 \end{array}$$