SELECTION

⑦ MATHS

TERM - III

✆ 94430 43338
✆ 94430 46662

Publishers:

ANBU NILAYAM

15, PUDHUMANDAPAM MADURAI - 625001.
Email ID : selectionpublisher@gmail.com

CONTENT

SELECTION
7 MATHS
TERM - III

Chapter-1 . NUMBER SYSTEM

Exercise 1.1

1. Round each of the following decimals to the nearest whole number.

(i) 8.71 (ii) 26.01 (iii) 69.48
(iv) 103.72 (v) 49.84 (vi) 101.35
(vii) 39.814 (viii) 1.23

Solution :

i) 9
ii) 26
iii) 69
iv) 104
v) 50
vi) 101
vii) 40
viii) 1

---

2. Round each decimal number to the given place value.
(i) 5.992 to tenth place
(ii) 21.805 to hundredth place
(iii) 35.0014 to thousandth place

Solution :

(i) 6.0
(ii) 21.81
(iii) 35.001

---

3. Round the following decimal numbers upto 1 places of decimal
(i) 123.37 (ii) 19.99 (iii) 910.546

Solution :

(i) 123.4
(ii) 20.0
(iii) 910.5

---

4. Round the following decimal numbers upto 2 places of decimal
(i) 87.755 (ii) 301.513 (iii) 79.997

Solution :

(i) 87.76
(ii) 301.51
(iii) 80.00

---

5. Round the following decimal numbers upto 3 place of decimal
(i) 24.4003 (ii) 1251.2345 (iii) 61.00203

Solution :

(i) 24.400
(ii) 1251.235
(iii) 61.002

Try these

1.Represent the fraction $\frac{1}{4}$ in decimal form

Solution :

$\frac{1}{4} = 0.25$

```
     0.25
   ┌─────
 4 │ 10
   │  8
   ├─────
   │  20
   │  20
   ├─────
   │   0
```

---

2. What is the place value of 5 in 63.2$\underline{5}$7.

Solution :

$\frac{1}{100}$

---

3. Identify the digit in the tenth place of 75.036

Solution :

7

---

4. Express the decimal number 3.75 as a fraction.

Solution :

$3.75 = \frac{375}{100} = \frac{75}{20} = \frac{15}{4}$

---

5. Write the decimal number for the fraction $5\frac{1}{5}$.

Solution :

$5\frac{1}{5} = 5.2$

$5 \overline{)10} \quad 0.2$

10

0

---

6. Identify the bigger number : 0.567 or 0.576.

Solution :

$0.567 < 0.576$

---

7. Compare 3.30 and 3.03 and identify the smaller number.

Solution :

$3.30 > 3.03$

The smaller number = 3.03

---

8. Put the appropriate sign (<, >, =).

2.57 ☐ 2.570

Solution :

$2.57 = 2.570$

---

9. Arrange the following decimal numbers in ascending order.

5.14, 5.41, 1.54, 1.45, 4.15, 4.51

Solution :

$1.45 < 1.54 < 4.15 < 4.51 < 5.14 < 5.41$

Exercise 1.2

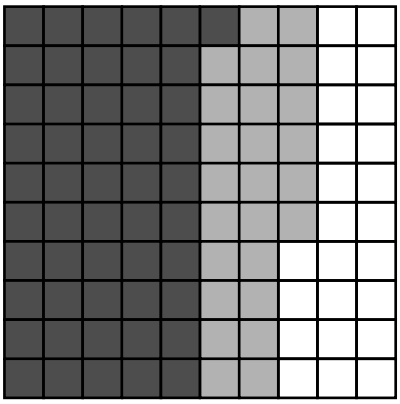
1. Add by using grid 0.51 + 0.25

Solution :

$0.51 = \frac{51}{100}$ $0.25 = \frac{25}{100}$

First shade the region 0.51 and then shade 0.25

So, 0.51 + 0.25 = 0.76



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2. Add the following by using place value grid.

(i) 25.8 + 18.53

Solution :

Decimal No.	Tens	Ones	Tenth	Hundredths
25.80	2	5	8	0
18.53	1	8	5	3
44.33	4	4	3	3

Therefore 25.8 + 18.53 = 44.33

(ii) 17.4 + 23.435

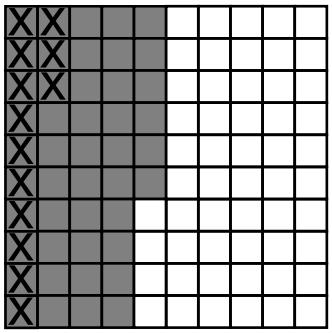
Solution :

Decimal No.	Tens	Ones	Tenths	Hundre-dths	Thousandths
17.400	1	7	4	0	0
23.435	2	3	4	3	5
40.835	4	0	8	3	5

Therefore 17.4 + 23.435 = 40.835

---

3. Find the value of 0.46 - 0.13 by grid model.
Solution :



Therefore 0.46 - 0.13 = 0.33

4. Subtract the following by using place value grid.
(i) 6.567 from 9.231
Solution :

Decimal No.	Ones	Tenths	Hundre -dths	Thous andths
9.231	9	2	3	1
6.567	6	5	6	7
2.664	2	6	6	4

Therefore 9.231 - 6.567 = 2.664

(ii) 3.235 from 7
Solution :

Decimal No.	Ones	Tenths	Hundre -dths	Thous andths
7.000	7	0	0	0
3.235	3	2	3	5
3.765	3	7	6	5

Therefore 7.000 - 3.235 = 3.765

5. Simplify: 23.5 – 27.89 + 35.4 – 17.
Solution :

23.5 -27.89
35.4 - 17.00
58.9 -44.89

58.9
-44.89
14.01

6. Sulaiman bought 3.350 *kg* of Potato, 2.250 *kg* of Tomato and some Onions. If the weight of the total items are 10.250 *kg*, then find the weight of Onions?
Solution :

Weight of Potato = 3.350 kg
Weight of Tomato = 2.250 kg
5.600 kg

Weight of Onion = Total weight - Weight of Potato and Tomato
= 10.250 – 5.600 = 4.650 kg

7. What should be subtracted from 7.1 to get 0.713?
Solution :

7.100
0.713
6.387

6.387 must be subtracted from 7.1

8. How much is 35.6 *km* less than 53.7 *km*?
Solution :

53.7 km
35.6 km
18.1 km

9. Akilan purchased a geometry box for ₹25.75, a pencil for ₹3.75 and a pen for ₹ 17.90. He gave ₹50 to the shopkeeper. What amount did he get back?
Solution :

Price of geometry box = 25.75
Price of pencil = 3.75
Price of pen = 17.90
Total cost = 47.40

Balance amount = 50 – 47.40 = ₹ 2.60

10. Find the perimeter of an equilateral triangle with a side measuring 3.8 *cm*.
Solution :

Perimeter of the equilateral triangle = 3 a
= 3 x 3.8 = 11.4 cm

Objective type questions

11. 1.0 + 0.83=?
(i) 0.17 (ii) 0.71 (iii) 1.83 (iv) 1.38
Solution :
(iii) 1.83

---

12. 7.0 - 2.83 = ?
(i) 3.47 (ii) 4.17 (iii) 7.34 (iv) 4.73
Solution :
(ii) 4.17
Hint:

$$\begin{array}{r} 7.00 \\ 2.83 \\ \hline 4.17 \end{array}$$

---

13. Subtract 1.35 from 3.51
(i) 6.21 (ii) 4.86 (iii) 8.64 (iv) 2.16
Solution :
(iv) 2.16
Hint:

$$\begin{array}{r} 3.51 \\ -\ 1.35 \\ \hline 2.16 \end{array}$$

---

14. Sum of two decimals is 4.78. If one decimal is 3.21, then the other one is
(i)1.57 (ii) 1.75 (iii)1.59 (iv) 1.58
Solution :
(i) 1.57
Hint:

$$\begin{array}{r} 4.78 \\ 3.21 \\ \hline 1.57 \end{array}$$

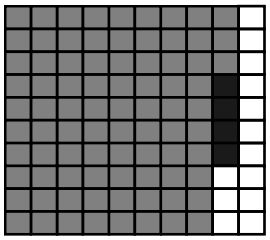
---

15. The difference of two decimals is 86.58 and one of the decimal is 42.31 Find the other one.
(i) 128.89 (ii) 128.69
(iii) 128.36 (iv) 128.39
Solution :
(i) 128.89
Hint:

$$\begin{array}{r} 86.58 \\ 42.31 \\ \hline 128.89 \end{array}$$

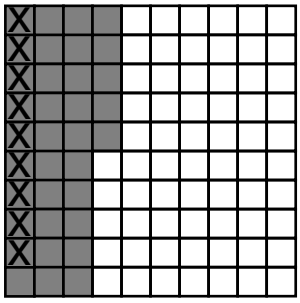
Try this

Find the following using grid models:
(i) 0.83 + 0.04
Solution :
First shade the region 0.83 and then shade 0.04



So 0.83 + 0.04 = 0.87

(ii) 0.35 - 0.09
Solution :
First shade the region 0.35 and then unshade 0.09



So 0.35 - 0.09 = 0.26

Try this

Using the area models solve the following:
(i) 1.2 + 3.5
Solution :
1.2 + 3.5 = 4.7

(ii) 3.5 - 2.3
Solution :

$$\begin{array}{r} 3.5 \\ -2.3 \\ \hline 1.2 \end{array}$$

Try this

Complete the magic square in such a way that rows, columns and diagonals give the same sum 1.5.

0.8		0.6
	0.5	
0.4		

Solution :

0.8	0.1	0.6
0.3	0.5	0.7
0.4	0.9	0.2

Exercise 1.3

1. Find the product of the following

(i) 0.5 x 3

Solution :

$$\begin{array}{r} 0.5 \\ \times\ \ 3 \\ \hline 1.5 \end{array}$$

(ii) 3.75 x 6

Solution :

$$\begin{array}{r} 3.75 \\ \times\ \ 6 \\ \hline 22.50 \end{array}$$

(iii) 50.2 x 4

Solution :

$$\begin{array}{r} 50.2 \\ \times\ \ 4 \\ \hline 200.8 \end{array}$$

(iv) 0.03 x 9

Solution :

$$\begin{array}{r} 0.03 \\ \times\ \ 9 \\ \hline 0.27 \end{array}$$

(v) 453.03 x 7

Solution :

$$\begin{array}{r} 453.03 \\ \times\ \ 7 \\ \hline 3171.21 \end{array}$$

(vi) 4 x 0.7

Solution :

$$\begin{array}{r} 4 \\ \times\ 0.7 \\ \hline 2.8 \end{array}$$

2. Find the area of the parallelogram whose base is 6.8 *cm* and height is 3.5 *cm*.

Solution :

Area of parallelogram = bh

= 6.8 x 3.5 = 23.80 sq.cm

3. Find the area of the rectangle whose length is 23.7 *cm* and breadth is 15.2 *cm*.

Solution :

Area of rectangle = lb

= 23.7 x 15.2 = 360.24 sq.cm

4. Multiply the following

(i) 2.57 ×10 **(ii) 0.51×10**
(iii) 125.367 ×100 **(iv) 34.51×100**
(v) 62.735 ×100 **(vi) 0.7 ×10**
(vii) 0.03 ×100 **(viii) 0.4 ×1000**

Solution :

(i) 2.57 ×10 = 25.7
(ii) 0.51×10 = 5.1
(iii) 125.367 ×100 = 12536.7
(iv) 34.51×100 = 3451
(v) 62.735 ×100 = 6273.5
(vi) 0.7 ×10 = 7
(vii) 0.03 ×100 = 3
(viii) 0.4 ×1000 = 400

5. A wheel of a baby cycle covers 49.7 *cm* in one rotation. Find the distance covered in 10 rotations.

Solution :

Distance covered in 10 rotations

= 49.7 x 10 = 497 cm

6. A picture chart costs ₹1.50. Radha wants to buy 20 charts to make an album. How much does she have to pay?

Solution :

Cost of a picture chart = ₹1.50

Cost of 20 picture charts = 1.50 x 20

= ₹ 30

7. Find the product of the following.

(i) 3.6 × 0.3

Solution :

$$\begin{array}{r} 3.6 \\ \times\ 0.3 \\ \hline 1.08 \end{array}$$

(ii) 52.3 × 0.1

Solution :

$$\begin{array}{r} 52.3 \\ \times\ 0.1 \\ \hline 5.23 \end{array}$$

(iii) 537.4 × 0.2

Solution :

$$\begin{array}{r} 537.4 \\ \times\ 0.2 \\ \hline 107.48 \end{array}$$

(iv) 0.6 × 0.06

Solution :

$$\begin{array}{r} 0.6 \\ \times\ 0.06 \\ \hline 0.036 \end{array}$$

(v) 62.2 × 0.23

Solution :

$$\begin{array}{r} 62.2 \\ \times\ 0.23 \\ \hline 1866 \\ 1244 \\ \hline 14.306 \end{array}$$

(vi) 1.02 × 0.05

Solution :

$$\begin{array}{r} 1.02 \\ \times\ 0.05 \\ \hline 0.0510 \end{array}$$

(vii) 10.05 ×1.05

Solution :

$$\begin{array}{r} 10.05 \\ \times\ 1.05 \\ \hline 5025 \\ 0000 \\ 1005 \\ \hline 10.5525 \end{array}$$

(viii) 101.01× 0.01

Solution :

$$\begin{array}{r} 101.01 \\ \times\ 0.01 \\ \hline 1.0101 \end{array}$$

(ix) 100.01×1.1

Solution :

$$\begin{array}{r} 100.01 \\ \times\ 1.1 \\ \hline 10001 \\ 10001 \\ \hline 110.011 \end{array}$$

Objective type questions

8. 1.07 x 0.1 = _____

(i) 1.070 (ii) 0.107 (iii) 10.70 (iv) 11.07

Solution :

(ii) 0.107

9. 2.08 x 10 = _____

(i) 20.8 (ii) 208.0 (iii) 0.208 (iv) 280.0

Solution :

(i) 20.8

10. A frog jumps 5.3 *cm* in one jump. The distance travelled by the frog in 10 jumps is _____

(i) 0.53 cm (ii) 530 cm

(iii) 53.0 cm (iv) 53.5 cm

Solution :

(iii) 53.0 cm

Think

How are the products 2.1 x 3.2 and 21x 32 alike? How are they different.

Solution :

$2.1 \times 3.2 = 6.72$

$21 \times 32 = 672$

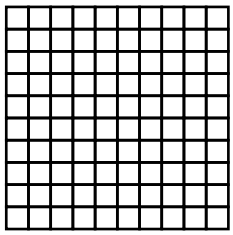
No. They are different

$$\begin{array}{r} 21 \\ 32 \\ \hline 42 \\ 63 \\ \hline 672 \end{array}$$

Try these

(1) Shade the grid to multiply 0.3 x 0.6.

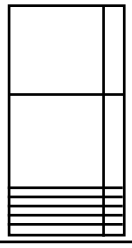
Solution :



$0.3 \times 0.6 = 0.18$

(2) Use the area model to multiply 1.2 x 2.5

Solution :



$1.2 \times 2.5 = 3.0$

Try these

$2.35 \times 10 = \frac{235}{100} \times 10 = \frac{235}{10} = 23.5$	$7.63 \times 10 =$ **76.3**	$63.237 \times 10 =$ **632.37**
$2.35 \times 100 = \frac{235}{100} \times 100 = 235 = 235.0$	$7.63 \times 100 =$ **763**	$63.237 \times 100 =$ **6323.7**
$2.35 \times 1000 = \frac{235}{100} \times 1000 = 2350.0$	$7.63 \times 1000 =$ **7630**	$63.237 \times 1000 =$ **63237**
$0.6 \times 10 = \frac{6}{10} \times 10 = 6$	$0.6 \times 100 = \frac{6}{10} \times 100 =$ **60**	$0.6 \times 1000 = \frac{6}{10} \times 1000 =$ **600**

Try these

Find

(i) 9.13 x 10

(ii) 9.13 x 100

(iii) 9.13 x 1000

Solution :

(i) 91.3 (ii) 913 (iii) 9130

Try this

Complete the following table :

11.6×0.1	$\frac{116}{10} \times \frac{1}{10}$	$\frac{116}{100}$	= **1.16**
11.6×0.01	$\frac{116}{10} \times \frac{1}{100}$	$\frac{116}{1000}$	= **0.116**
11.6×0.001	$\frac{116}{10} \times \frac{1}{1000}$	$\frac{116}{10000}$	= **0.0116**

Exercise 1.4

1. Simplify the following.

(i) 0.6÷ 3

Solution :

$$\frac{0.6}{3} = 0.2$$

(ii) 0.90÷ 5

Solution :

$$\frac{0.90}{5} = 0.18$$

(iii) 4.08÷ 4

Solution :

$$\frac{4.08}{4} = 1.02$$

(iv) 21.56÷ 7

Solution :

$$\frac{21.56}{7} = 3.08$$

(v) 0.564 ÷ 6

Solution :

$$\frac{0.564}{6} = 0.094$$

(vi) 41.36÷ 4

Solution :

$$\frac{41.36}{4} = 10.34$$

(vii) 298.2÷ 3

Solution :

$$\frac{298.2}{3} = 99.4$$

2. Simplify the following.

(i) 5.7 ÷ 10
Solution :

$$\frac{5.7}{10} = 0.57$$

(ii) 93.7 ÷ 10
Solution :

$$\frac{93.7}{10} = 9.37$$

(iii) 0.9 ÷ 10
Solution :

$$\frac{0.9}{10} = 0.09$$

(iv) 301.301 ÷ 10
Solution :

$$\frac{301.301}{10} = 30.1301$$

(v) 0.83÷ 10
Solution :

$$\frac{0.83}{10} = 0.083$$

(vi) 0.062 ÷ 10
Solution :

$$\frac{0.062}{10} = 0.0062$$

3. Simplify the following.

(i) 0.7 ÷ 100
Solution :

$$\frac{0.7}{100} = 0.007$$

(ii) 3.8÷ 100
Solution :

$$\frac{3.8}{100} = 0.038$$

(iii) 49.3÷ 100
Solution :

$$\frac{49.3}{100} = 0.493$$

(iv) 463.85 ÷ 100
Solution :

$$\frac{463.85}{100} = 4.6385$$

(v) 0.3÷ 100
Solution :

$$\frac{0.3}{100} = 0.003$$

(vi) 27.4 ÷ 100
Solution :

$$\frac{27.4}{100} = 0.274$$

4. Simplify the following.

(i) 18.9 ÷1000
Solution :

$$\frac{18.9}{1000} = 0.0189$$

(ii) 0.87 ÷ 1000
Solution :

$$\frac{0.87}{1000} = 0.00087$$

(iii) 49.3 ÷ 1000
Solution :

$$\frac{49.3}{1000} = 0.0493$$

(iv) 0.3÷ 1000
Solution :

$$\frac{0.3}{1000} = 0.0003$$

(v) 382.4 ÷ 1000
Solution :

$$\frac{382.4}{1000} = 0.3824$$

(vi) 93.8÷ 1000
Solution :

$$\frac{93.8}{1000} = 0.0938$$

5. Simplify the following.

(i) 19.2 ÷ 2.4

Solution :

$$\frac{19.2}{2.4} = \frac{19.2 \times 10}{2.4 \times 10}$$

$$= \frac{192}{24} = 8$$

	8
24	192
	192
	0

(ii) 4.95 ÷ 0.5

Solution :

$$\frac{4.95 \times 10}{0.5 \times 10} = \frac{49.5}{5}$$

$$= 9.9$$

	9.9
5	49.5
	45
	45
	45
	0

(iii) 19.11 ÷ 1.3

Solution :

$$\frac{19.11 \times 10}{1.3 \times 10} = \frac{191.1}{13}$$

$$= 14.7$$

	14.7
13	191.1
	13
	61
	52
	91
	91
	0

(iv) 0.399 ÷ 2.1

Solution :

$$\frac{0.399 \times 10}{2.1 \times 10} = \frac{3.99}{21}$$

$$= 0.19$$

	0.19
21	3.99
	21
	189
	189
	0

(v) 5.4 ÷ 0.6

Solution :

$$\frac{5.4 \times 10}{0.6 \times 10} = \frac{54}{6} = 9$$

(vi) 2.197 ÷ 1.3

Solution :

$$\frac{2.197 \times 10}{1.3 \times 10} = \frac{21.97}{13}$$

$$= 1.69$$

	1.69
13	21.97
	13
	89
	78
	117
	117
	0

6. Divide 9.55 kg of sweet among 5 children. How much will each child get?

Solution :

Weight of sweet each child get = 9.55 ÷ 5

$$= \frac{9.55}{5} = 1.91 \text{ kg}$$

	1.91
5	9.55
	5
	45
	45
	5
	5
	0

7. A vehicle covers a distance of 76.8 km for 1.2 litre of petrol. How much distance will it cover for one litre of petrol?

Solution :

Distance covered in one litre of petrol = 76.8 ÷ 1.2

$$= \frac{76.8 \times 10}{1.2 \times 10} = \frac{768}{12}$$

$$= 64 \text{ km}$$

	64
12	768
	72
	48
	48
	0

8. Cost of levelling a land at the rate of 15.50 sq. ft is ₹ 10,075. Find the area of the land.

Solution :

$$\text{Area of the land} = \frac{\text{Total cost}}{\text{Cost per sq.ft}}$$

$$= \frac{10075 \times 10}{15.50 \times 10}$$

$$= \frac{100750}{155}$$

$$= 650 \text{ sq.ft}$$

	650
155	100750
	930
	775
	775
	0

9. The cost of 28 books are ₹ 1506.4. Find the cost of one book.

Solution :

Cost of 28 books = ₹ 1506.4

Cost of 1 book = 1506.4 ÷ 28

$$= \frac{1506.4}{28}$$

$$= ₹ 53.80$$

	53.8
28	1506.4
	140
	106
	84
	224
	224
	0

10. The product of two numbers is 40.376. One number is 14.42. Find the other number.

Solution :

Product of two numbers = 40.376

One number = 14.42

Other number = 40.376 ÷ 14.42

```
        2.8
    ┌──────
1442 | 4037.6
       2884
       ----
       11536
       11536
       -----
           0
```

$= \frac{40.376}{14.42} \times \frac{100}{100} = \frac{4037.6}{1442} = 2.8$

Objective type questions

11. 5.6÷ 0.5 = ?
(i) 11.4 (ii) 10.4 (iii) 0.14 (iv) 11.2
Solution :
(iv) 11.2
Hint :

$= \frac{5.6}{0.5} \times \frac{10}{10} = \frac{56}{5} = 11.2$

12. 2.01÷ 0.03 = ?
(i) 6.7 (ii) 67.0 (iii) 0.67 (iv) 0.067
Solution :
(ii) 67.0
Hint :

$= \frac{2.01}{0.03} \times \frac{100}{100} = \frac{201}{3} = 67$

13. 0.05÷ 0.5 = ?
(i) 0.01 (ii) 0.1 (iii) 0.10 (iv) 1.0
Solution :
(ii) 0.1
Hint :

$= \frac{0.05}{0.5} \times \frac{10}{10} = \frac{0.5}{5} = 0.1$

Try these

36.7 ÷ 10 = 3.67	436.7 ÷ 10 = 43.67	2.3 ÷ 10 = 0.23	27.17 ÷ 10 = **2.717**
36.7 ÷ 100 = 0.367	436.7 ÷ 100 = **4.367**	2.3 ÷ 100 = **0.023**	27.17 ÷ 100 = **0.2717**
36.7 ÷ 1000 = 0.0367	436.7 ÷ 1000 = **0.4367**	2.3 ÷ 1000 = **0.0023**	27.17 ÷ 1000 = **0.02717**

Try these

Divide the following
(i) 17.237 ÷ 10
(ii) 17.237 ÷ 100
(iii) 17.237 ÷1000
Solution :
(i) 1.7237
(ii) 0.17237
(iii) 0.017237

Try these

Find the value of the following.
(i) 46.2 ÷ 3 = ?
(ii) 71.6÷ 4 = ?
(iii) 23.24 ÷ 2 = ?
(iv) 127.35÷ 9 = ?
(v) 47.201÷ 7 = ?
Solution :
(i) 15.4
(ii) 17.9
(iii) 11.62
(iv) 14.15
(v) 6.743

Try these

Divide the following.

(i) $\frac{9.25}{0.25}$

Solution :

$\frac{9.25}{0.25} \times \frac{100}{100} = \frac{925}{25} = 37$

```
        37
    ┌──────
25  | 925
      75
      ---
      175
      175
      ---
        0
```

(ii) $\frac{8.6}{4.3}$

Solution :

$\frac{8.6}{4.3} \times \frac{10}{10} = \frac{86}{43} = 2$

```
        2
    ┌──────
43  | 86
      86
      --
       0
```

(iii) $\frac{44.1}{0.21}$

Solution :

$$\frac{44.1}{0.21} \times \frac{100}{100} = \frac{4410}{21}$$

$$= 210$$

	210
21	4410
	42
	21
	21
	0

(iv) $\frac{9.6}{1.2}$

Solution :

$$\frac{9.6}{1.2} \times \frac{10}{10} = \frac{96}{12} = 8$$

	8
12	96
	96
	0

Think

The price of a tablet strip containing 30 tablets is ₹ 22.63 Then how will you find the price of each tablet?

Solution :

Price of each tablet = 22.63 ÷ 30

$= \frac{22.63}{30} =$ ₹ 7.54

	7.543
30	22.63
	210
	163
	150
	130
	120
	100
	90
	10

Exercise 1.5
Miscellaneous Practice problems

1. Malini bought three ribbons of length 13.92 m, 11.5 m and 10.64 m. Find the total length of the ribbons?

Solution :

Total length of the ribbons = 13.92 + 11.5 + 10.64

= 36.06 m

$$\begin{array}{r} 13.92 \\ 11.5 \\ 10.64 \\ \hline 36.06 \end{array}$$

2. Chitra has bought 10 kg 35 g of ghee for preparing sweets. She used 8 kg 59 g of ghee. How much ghee will be left?

Solution :

	kg	g
Total weight of ghee	= 10	35
Used weight of ghee	= 8	59
Ghee left out	= 1 kg	976 g

$$\begin{array}{r} 10.035 \\ - \ 8.059 \\ \hline 1.976 \end{array}$$

3. If the capacity of a milk can is 2.53 l, then how much milk is required to fill 8 such cans?

Solution :

Capacity of a milk can = 2.53 l

Milk filled in 8 cans = 2.53 x 8 = 20.24 l

4. A basket of orange weighs 22.5 kg. If each family requires 2.5 kg of orange, how many families can share?

Solution :

Weight of Orange basket = 22.5 kg

Weight required for each family = 2.5 kg

Number of families can share = 22.5 ÷ 2.5

$$= \frac{22.5}{2.5} \times \frac{10}{10} = \frac{225}{25} = 9$$

5. A baker uses 3.924 kg of sugar to bake 10 cakes of equal size. How much sugar is used in each cake?

Solution :

Sugar needed for 10 cakes = 3.924 kg

Sugar needed for 1 cake = 3.924 ÷ 10

= 0.3924 kg

6. Evaluate:
(i) 26.13 × 4.6
Solution :

$$\begin{array}{r} 26.13 \\ \times\ \ 4.6 \\ \hline 15678 \\ 10452 \\ \hline 120.198 \end{array}$$

$26.13 \times 4.6 = 120.198$

(ii) 3.628+ 31.73 -2.1
Solution :
$3.628 + 31.73 - 2.1$
$= 35.358 - 2.1$
$= 33.258$

$$\begin{array}{r} 3.628 \\ 31.73 \\ \hline 35.358 \\ 35.358 \\ -\ 2.1 \\ \hline 33.258 \end{array}$$

7. Murugan bought some bags of vegetables. Each bag weights 20.55 *kg*. If the total weight of all the bags is 308.25 *kg*, how many bags did he buy?
Solution :
Total weight of all bags = 308.25 kg
Weight of each bags = 20.55 kg
Number of bags = 308.25 ÷ 20.55

$$\begin{array}{r|l} & 15 \\ \hline 2055 & 30825 \\ & 2055 \\ \hline & 10275 \\ & 10275 \\ \hline & 0 \end{array}$$

$$= \frac{308.25}{20.55} \times \frac{100}{100} = \frac{30825}{2055} = 15$$

8. A man walks around a circular park of distance 23.761 *m*. How much distance will he cover in 100 rounds?
Solution :
Distance covered in 1 round = 23.761m
Distance covered in 100 rounds
= 23.761 x 100
= 2376.1 m

9. How much 0.0543 is greater than 0.002?
Solution :

$$\begin{array}{r} 0.0543 \\ -\ 0.002 \\ \hline 0.0523 \end{array}$$

10. A printer can print 15 pages per minute. How many pages can it print in 4.6 minutes?
Solution :
Number of pages print per minute = 15
Number of pages print 4.6 minutes = 15 x 4.6
= 69 pages

$$\begin{array}{r} 15 \\ 4.6 \\ \hline 90 \\ 60 \\ \hline 69.0 \end{array}$$

Challenge Problems

11. The distance travelled by Prabhu from home to Yoga centre is 102 m and from Yoga centre to school is 165 m. What is the total distance travelled by him in kilometres (in decimal form)?
Solution :
Distance covered from home to yoga centre = 102 m
Distance covered from yoga centre to school = 165 m
Total distance = 102 + 165 m = 267 m

$$= \frac{267}{1000} \text{ km} = 0.267 \text{ km}$$

12. Anbu and Mala travelled from A to C in two different routes. Anbu travelled from place A to place B and from there to place C. A is 8.3 km from B and B is 15.6 km from C. Mala travelled from place A to place D and from there to place C. D is 7.5 km from A and C is 16.9 km from D. Who travelled more and by how much distance?
Solution :
Anbu :
Distance covered from A to B = 8.3 km
Distance covered from B to C = 15.6 km
Total distance = 23.9 km

Mala :

Distance covered from A to D = 7.5 km
Distance covered from D to C = 16.9 km

Total distance = 24.4 km

Distance covered by Mala more than anbu
= 24.4 – 23.9 = 0.5 km

13. Ramesh paid ₹ 97.75 per hour for a taxi and he used 35 hours in a week. How much he has to pay totally as taxi fare for a week?

Solution :

Cost of taxi fare per hour = ₹ 97.75
Total fare for 35 hours = ₹ 97.75 x 35
= ₹ 3421.25

```
  97.75
x  35
-------
 48875
29325
-------
3421.25
-------
```

14. An Aeroplane travelled 2781.20 kms in 6 hours. Find the average speed of the aeroplane in km/hr.

Solution :

Distance covered in 6 hours = 2781.20 km
The average speed of the aeroplane = 2781.20 ÷ 6
= 463.53 km/hr

```
463.533
6 | 2781.20
    24
    ---
     38
     36
     --
     21
     18
     --
      32
      30
      --
      20
      18
      --
       20
       18
       --
        2
```

15. Kumar's car gives 12.6 km mileage per litre. If his fuel tank holds 25.8 litres then how far can he travel?

Solution :

Distance covered per litre = 12.6 km
Distance covered by 25.8 litres
= 12.6 x 25.8
= 325.08 km

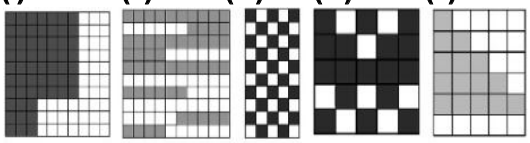
```
  12.6
x 25.8
------
 1008
 630
 252
------
325.08
------
```

Unit - 2. PERCENTAGE AND SIMPLE INTEREST

Exercise 2.1

1. In each of the following grid, find the number of coloured squares and express it as a fraction, decimal and percentage.

(i) (ii) (iii) (iv) (v)



Solution :

i) $\frac{58}{100} = 0.58 = 58\%$

ii) $\frac{53}{100} = 0.53 = 53\%$

iii) $\frac{25}{50} = \frac{50}{100} = 0.50 = 50\%$

iv) $\frac{17}{25} = \frac{68}{100} = 0.68 = 68\%$

v) $\frac{15}{30} = 0.50 = 50\%$

---

2. A picture of chess board is given. (i) Find the percentage of the white coloured squares. (ii) Find the percentage of grey coloured squares. (iii) Find the percentage of the squares that have the pieces and (iv) The squares that do not have the pieces.

Solution :

(i) Percentage of the white coloured squres $= \frac{32}{64} = 50\%$

(ii) Percentage of the grey coloured squres $= \frac{32}{64} = 50\%$

(iii) Percentage of the squares that have the pieces $= \frac{20}{64} = \frac{20}{64} \times 100 = \frac{2000}{64}$

$= \frac{1000}{32} = \frac{500}{16} = 31\frac{4}{16}\%$

(iv) Percentage of the squares that do not have the pieces $= \frac{44}{64} = \frac{44}{64} \times 100 = \frac{4400}{64}$

$= \frac{1100}{16} = 68\frac{12}{16}\%$

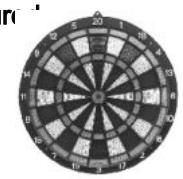
---

3. A picture of dart board is given. Find the percentage of white coloured portion and black coloured portion.

Solution :

Percentage of white coloured portion $= \frac{40}{80} = \frac{40}{80} \times 100$

$= \frac{4000}{80} = 50\%$



Percentage of black coloured portion $= \frac{40}{80}$

$= \frac{40}{80} \times 100 = \frac{4000}{80} = 50\%$

---

4. Write each of the following fraction as percentage.

(i) $\frac{36}{50}$

Solution :

$\frac{36}{50} = \frac{36}{50} \times 100 = \frac{3600}{50} = 72\%$

(ii) $\frac{81}{30}$

Solution :

$\frac{81}{30} = \frac{81}{30} \times 100 = \frac{8100}{30} = 270\%$

(iii) $\frac{42}{56}$

Solution :

$$\frac{42}{56} = \frac{42}{56} \times 100 = \frac{4200}{56} = \frac{600}{8} = 75\%$$

(iv) $2\frac{1}{4}$

Solution :

$$2\frac{1}{4} = \frac{9}{4} \times 100 = \frac{900}{4} = \frac{450}{2} = 225\%$$

(v) $1\frac{3}{5}$

Solution :

$$1\frac{3}{5} = \frac{8}{5} \times 100 = \frac{800}{5} = 160\%$$

---

5. Anbu scored 436 marks out of 500 in his exams. What was the percentage he scored?

Solution :

Percentage of marks

$$= \frac{436}{500} \times 100 = 87.2\%$$

$$\begin{array}{r|l} & 87.2 \\ \hline 5 & 436 \\ & 40 \\ \hline & 36 \\ & 35 \\ \hline & 10 \\ & 10 \\ \hline & 0 \end{array}$$

---

6. Write each of the following percentage as fraction.

(i) 21% (ii) 93.1% (iii) 151%
(iv) 65% (v) 0.64%

Solution :

(i) $21\% = \frac{21}{100}$

(ii) $93.1\% = \frac{93.1}{100} = \frac{931}{1000}$

(iii) $151\% = \frac{151}{100}$

(iv) $65\% = \frac{65}{100} = \frac{13}{20}$

(v) $0.64\% = \frac{0.64}{100} = \frac{64}{10000} = \frac{4}{625}$

---

7. Iniyan bought 5 dozen eggs. Out of that 5 dozen eggs, 10 eggs are rotten. Express the number of good eggs as percentage.

Solution :

Total eggs = 5 dozen
= 5 x 12 = 60 eggs
Rotten eggs = 10 eggs
Good eggs = 60 - 10 = 50 eggs

Percentage of Good eggs $= \frac{50}{60} \times 100$

$$= \frac{5000}{60} = \frac{500}{6} = 83.33\%$$

---

8. In an election, Candidate X secured 48% of votes. What fraction will represent his votes?

Solution :

Fraction represent his votes = 48%

$$= \frac{48}{100} = \frac{24}{50} = \frac{12}{25}$$

---

9. Ranjith's total income was ₹ 7,500. He saved 25% of his total income. Find the amount saved by him.

Solution :

Total income = ₹ 7500
Percentage of income saved = 25 %

Amount saved by him $= \frac{25}{100} \times 7500 =$ ₹ 1875

Objective type Questions

10. Thendral saved one fourth of her salary. Her savings percentage is

(i) $\frac{3}{4}\%$ **(ii)** $\frac{1}{4}\%$ **(iii) 25% (iv) 1%**

Solution : (iii) 25 %

Hint:

$$\frac{1}{4} \times 100 = \frac{100}{4} = 25\%$$

---

11. Kavin scored 15 out of 25 in a test. The percentage of his marks is
(i) 60% (ii) 15% (iii) 25% (iv) 15/25
Solution :
(i) 60 %
Hint:

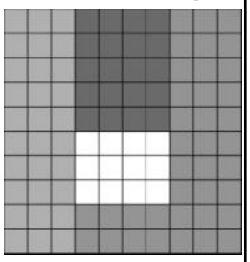
$$\frac{15}{25} \times 100 = \frac{1500}{25} = 60\,\%$$

12. 0.07%is
(i) $\frac{7}{10}$ (ii) $\frac{7}{100}$ (iii) $\frac{7}{1000}$ (iv) $\frac{7}{10,000}$
Solution :
(iv) $\frac{7}{10,000}$
Hint :

$$0.07\% = \frac{0.07}{100} = \frac{7}{10,000}$$

Activity

Take a 10 × 10 square grid to recall the previous knowledge on fraction. The grid is shaded using 5 different colours. The particulars related to blue colour shaded portion shown in the grid is given in the table below. Observe the grid and complete the table.



Colour	Number of Squares	Fraction	Percentage
Blue	30	$\frac{30}{100}$	30%
Red	20	$\frac{20}{100}$	20%
Yellow	12	$\frac{12}{100}$	12%
Green	24	$\frac{24}{100}$	24%
Pink	14	$\frac{14}{100}$	14%

From this we can understand that percentage can be written as a fraction with denominator hundred.

Try these

Find the percentage of children whose scores fall in different categories given in table below.

Category	Number of students	Fraction	Percentage
Below 60	25	$\frac{25}{100}$	25 %
60–80	23	$\frac{23}{100}$	23%
81–90	42	$\frac{42}{100}$	42%
91–99	9	$\frac{9}{100}$	9%
Centum	1	$\frac{1}{100}$	1%
Total	100		

Try these

There are 50 students in class VII of a school. The number of students involved in these activities are :
Scout – 7 Red Ribbon Club – 6
Junior Red Cross – 9 Green Force – 3
Sports – 14 Cultural activity – 11
Find the percentage of students who involved in various activities.
Solution :
Percentage of students in Scout

$$= \frac{7}{50} \times 100 = \frac{700}{50} = 14\%$$

Percentage of students in Green Force

$$= \frac{3}{50} \times 100 = \frac{300}{50} = 6\%$$

Percentage of students in Red Ribbon Club

$= \frac{6}{50} \times 100 = \frac{600}{50} = 12\%$

Percentage of students in Sports

$= \frac{14}{50} \times 100 = \frac{1400}{50} = 28\%$

Percentage of students in Junior Red Cross

$= \frac{9}{50} \times 100 = \frac{900}{50} = 18\%$

Percentage of students in Cultural Activity

$= \frac{11}{50} \times 100 = \frac{1100}{50} = 22\%$

Try these

Convert the fractions as percentage.

(i) $\frac{1}{20}$ **(ii)** $\frac{13}{25}$ **(iii)** $\frac{45}{50}$ **(iv)** $\frac{18}{5}$

(v) $\frac{27}{10}$ **(vi)** $\frac{72}{90}$

Solution :

(i) $\frac{1}{20} = \frac{1}{20} \times 100 = \frac{100}{20} = 5\%$

(ii) $\frac{13}{25} = \frac{13}{25} \times 100 = \frac{1300}{25} = 52\%$

(iii) $\frac{45}{50} = \frac{45}{50} \times 100 = \frac{4500}{50} = 90\%$

(iv) $\frac{18}{5} = \frac{18}{5} \times 100 = \frac{1800}{5} = 360\%$

(v) $\frac{27}{10} = \frac{27}{10} \times 100 = \frac{2700}{10} = 270\%$

(vi) $\frac{72}{90} = \frac{72}{90} \times 100 = \frac{7200}{90} = 80\%$

Try these

Convert the following percentage as fractions.

(i) 50 % (ii) 75% (iii) 250 % (iv) $30\frac{1}{5}\%$

(v) $\frac{7}{20}\%$ **(vi) 90 %**

Solution :

(i) $50\% = \frac{50}{100} = \frac{1}{2}$

(ii) $75\% = \frac{75}{100} = \frac{3}{4}$

(iii) $250\% = \frac{250}{100} = \frac{5}{2}$

(iv) $30\frac{1}{5}\% = \frac{151}{500}$

(v) $\frac{7}{20}\% = \frac{7}{2000}$

(vi) $90\% = \frac{90}{100} = \frac{9}{10}$

Think

1. What is the difference between 0.01 and 1%

Solution :

$0.01 = \frac{1}{100}$

$1\% = \frac{1}{100}$ ∴ They are equal

2. In a readymade shop there will be a board showing upto 50% off. Most of the people will realize that everything is half of its original price, Is that true?

Solution :

No. It is not true.

Exercise 2.2

1. Write each of the following percentage as decimal.
(i) 21% (ii) 93.1% (iii) 151%
(iv) 65% (v) 0.64%
Solution :

(i) $21\% = \frac{21}{100} = 0.21$

(ii) $93.1\% = \frac{93.1}{100} = 0.931$

(iii) $151\% = \frac{151}{100} = 1.51$

(v) $65\% = \frac{65}{100} = 0.65$

(ii) $0.64\% = \frac{0.64}{100} = 0.0064$

2 Convert each of the following decimal as percentage
(i) 0.282 (ii) 1.51 (iii) 1.09 (iv) 0.71 (v) 0.858
Solution :

(i) $0.282 = 0.282 \times 100\% = 28.2\%$
(ii) $1.51 = 1.51 \times 100\% = 151\%$
(iii) $1.09 = 1.09 \times 100\% = 109\%$
(iv) $0.71 = 0.71 \times 100\% = 71\%$
(v) $0.858 = 0.858 \times 100\% = 85.8\%$

3. In an examination a student scored 75% of marks. Represent the given percentage in decimal form?
Solution :
Percentage of Marks in decimal form

$= 75\% = \frac{75}{100} = 0.75$

4. In a village 70.5% people are literate. Express it as a decimal.
Solution :
Percentage of literate in decimals

$= 70.5\% = \frac{70.5}{100} = 0.705$

5. Scoring rate of a batsman is 86%. Write his strike rate as decimal.
Solution :
Percentage of scoring rate in decimal

$= 86\% = \frac{86}{100} = 0.86$

6. The height of a flag pole in a school is 6.75m. Express it as percentage.
Solution :
Height of flag pole in percentage
$= 6.75\text{ m} \times 100 = 675\%$

7. The weights of two chemical substances are 20.34 g and 18.78 g. Write the difference in percentage.
Solution :
Difference of their weight
$= 20.34\text{ g} - 18.78\text{ g} = 1.56\text{g}$
Difference of their weight in percentage
$= 1.56 \times 100 = 156\%$

8. Find the percentage of shaded region in the following figure.
Solution :
Percentage of shaded region

$= \frac{1}{4} \times 100 = \frac{100}{4} = 25\%$

Objective type Questions

9. Decimal value of 142.5% is
(i) 1.425 (ii) 0.1425 (iii) 142.5
(iv) 14.25
Solution :
(i) 1.425
Hint :

$142.5\% = \frac{142.5}{100} = 1.425$

10. The percentage of 0.005 is
(i) 0.005% (ii) 5% (iii) 0.5% (iv) 0.05%
Solution :
(iii) 0.5%
Hint :
$0.005 = 0.005 \times 100\% = 0.5\%$

11. The percentage of 4.7 is
(i) 0.47% (ii) 4.7% (iii) 47% (iv) 470%
Solution :
(iv) 470 %
Hint :
$4.7 = 4.7 \times 100\% = 470\%$

Try these

Convert these decimals to percentage.
(i) 0.25 (ii) 0.07 (iii) 0.8 (iv) 0.375 (v) 3.75
Solution :
(i) $0.25 = 0.25 \times 100\% = 25\%$
(ii) $0.07 = 0.07 \times 100\% = 7\%$
(iii) $0.8 = 0.8 \times 100\% = 80\%$
(iv) $0.375 = 0.375 \times 100\% = 37.5\%$
(v) $3.75 = 3.75 \times 100\% = 375\%$

Try these

Write these percentage as decimals.
(i) 3% (ii) 25% (iii) 80% (iv) 67%
(v) 17.5% (vi) 135% (vii) 0.5%

Solution :
(i) $3\% = \frac{3}{100} = 0.03$
(ii) $25\% = \frac{25}{100} = 0.25$
(iii) $80\% = \frac{80}{100} = 0.8$
(iv) $67\% = \frac{67}{100} = 0.67$
(v) $17.5\% = \frac{17.5}{100} = 0.175$
(vi) $135\% = \frac{135}{100} = 1.35$
(vii) $0.5\% = \frac{0.5}{100} = 0.005$

Exercise 2.3

1. 14 out of the 70 magazines at the bookstore are comedy magazines. What percentage of the magazines at the bookstore are comedy magazines?
Solution :
Percentage of comedy magazines
$= \frac{14}{70} \times 100 = \frac{1400}{70} = \frac{140}{7} = 20\%$

2. A tank can hold 50 litres of water. At present, it is only 30 % full. How many litres of water will fill the tank, so that it is 50 % full?
Solution :
30 % of 50 litres $= \frac{30}{100} \times 50 = \frac{1500}{100} = 15\,l$
50 % of 50 litres $= \frac{50}{100} \times 50 = \frac{2500}{100} = 25\,l$
Number of litres to fill 50 %
$= 25 - 15 = 10\,l$

3. Karun bought a pair of shoes at a sale of 25%. If the amount he paid was ₹1000, then find the marked price.
Solution :
Sale = 25 %
Paid = 75 %
75 % of marked price = 1000
∴ Marked price $= \frac{1000}{75\%}$
$= \frac{1000}{75/100} = \frac{1000 \times 100 \times 4}{75 \times 3} = \frac{4000}{3}$
$= ₹1333.33 = ₹1334$

4. An agent of an insurance company gets a commission of 5% on the basic premium he collects. What will be the commission earned by him if he collects ₹ 4800?
Solution :
Commission earned by him
$= 5\% \times 4800$
$= \frac{5}{100} \times 4800 = ₹240$

5. A biology class examined some flowers in a local Grass land. Out of the 40 flowers they saw, 30 were perennials. What percentage of the flowers were perennials?

Solution :

Percentage of flowers were perennials

$$= \frac{30}{40} \times 100 = \frac{3000}{40} = 75\,\%$$

6. Ismail ordered a collection of beads. He received 50 beads in all. Out of that 15 beads were brown. Find the percentage of brown beads?

Solution :

$$\text{Percentage of brown beads} = \frac{15}{50} \times 100$$

$$= \frac{1500}{50} \times = 30\,\%$$

7. Ramu scored 20 out of 25 marks in English, 30 out of 40 marks in Science and 68 out of 80 marks in mathematics. In which subject his percentage of marks is best?

Solution :

Percentage of marks in English

$$= \frac{20}{25} \times 100 = \frac{2000}{25} = 80\%$$

Percentage of marks in English

$$= \frac{30}{40} \times 100 = \frac{3000}{40} = 75\%$$

Percentage of marks in Maths

$$= \frac{68}{80} \times 100 = \frac{6800}{80} = 85\%$$

In Maths subject his percentage is best and it is equal to 85%

8. Peter requires 50% to pass. If he gets 280 marks and falls short by 20 marks, what would have been the maximum marks of the exam?

Solution :

Pass marks $= 280 + 20 = 300$

50 % of maximum marks = 300

$$\therefore \text{Maximum marks} = \frac{300}{50\%}$$

$$= \frac{300}{50/100} = \frac{300 \times 100}{50} = \frac{30000}{50}$$

$$= 600$$

9. Kayal scored 225 marks out of 500 in revision test 1 and 265 out of 500 marks in revision test 2. Find the percentage of increase in her score.

Solution :

Percentage of marks in revision test 1

$$= \frac{225}{500} \times 100 = \frac{22500}{500} = 45\,\%$$

Percentage of marks in revision test 2

$$= \frac{265}{500} \times 100 = \frac{26500}{500} = 53\,\%$$

Increase Percentage = 53% - 45% = 8 %

10. Roja earned ₹18,000 per month. She utilized her salary in the ratio 2:1:3 for education, savings and other expenses respectively. Express her usage of income in percentage.

Solution :

Ratio utilized for education, savings and other expenses = 2 : 1 : 3

Total number of parts

$= 2 + 1 + 3 = 6$

Amount utilized for education

$$= \frac{2}{6} \times \overset{3000}{\cancel{18000}} = ₹6000$$

Percentage of amount utilized for

$$\text{education} = \frac{\overset{1}{\cancel{6000}}}{\underset{3}{\cancel{18000}}} \times 100 = 33.33\%$$

Amount utilized for saving

$$= \frac{1}{6} \times \overset{3000}{\cancel{18000}} = ₹3000$$

Percentage of amount utilized for

$$\text{savings} = \frac{\overset{1}{\cancel{3000}}}{\underset{6}{\cancel{18000}}} \times 100 = 16.67\%$$

Amount utilized for other expenses

$= \frac{3}{\cancel{6}} \times \cancel{18000}^{3000} = ₹9000$

Percentage of amount utilized for other expenses $= \frac{1\cancel{9000}}{\cancel{18000}_{2}} \times 100 = 50\%$

Try these

Level of water in a tank is increased from 35 litres to 50 litres in 2 minutes, what is the percentage of increase?

Solution :

Percentage of increase $= \frac{15}{35} \times 100$

$= \frac{1500}{35}$

$= \frac{300}{7} = 42\frac{6}{7}\%$

Exercise 2.4

1. Find the simple interest on ₹35,000 at 9% per annum for 2 years?
Solution :

p = ₹35000
n = 2 years
r = 9% per annum

Simple interest (I) $= \frac{pnr}{100}$

$= \frac{\cancel{35000} \times 2 \times 9}{\cancel{100}} = ₹6300$

2. Aravind borrowed a sum of ₹ 8,000 from Akash at 7% per annum. Find the interest and amount to be paid at the end of two years.
Solution :

p = ₹8000
n = 2 years
r = 7% per annum

Simple interest (I) $= \frac{pnr}{100}$

$= \frac{\cancel{8000} \times 2 \times 7}{\cancel{100}} = ₹1120$

Amount = p + I = 8000 + 1120
= ₹9120

3. Sheela has paid simple interest on a certain sum for 4 years at 9.5% per annum is ₹ 21,280. Find the sum.
Solution :

I = ₹21,280
n = 4 years
r = 9.5% per annum

$\frac{pnr}{100} = I$

$= \frac{p \times 4 \times 9.5}{100} = 21280$

$p = \frac{21280 \times 100}{4 \times 9.5} = \frac{\cancel{21280}^{\cancel{5320}^{56}} \times 100 \times 10}{\cancel{4} \times \cancel{95}}$

= ₹56,000

4. Basha borrowed ₹ 8,500 from a bank at a particular rate of simple interest. After 3 years, he paid ₹11,050 to settle his debt. At what rate of interest he borrowed the money?
Solution :

n = 3 years
A = ₹11,050
p = ₹8,500
I = A - P
= 11050 - 8500
= ₹2,550

$\frac{pnr}{100} = I$

$= \frac{8500 \times 3 \times r}{100} = 2550 \quad r = \frac{\cancel{850}^{10} \times \cancel{100}}{\cancel{8500} \times 3}$

r = 10%

5. In What time will ₹16,500 amount to ₹22,935 at 13% per annum?

Solution :

$A = ₹22,935$

$p = ₹16,500$

$I = A - P$

$= 22935 - 16500$

$= ₹6,435$

$r = 13\%$

$$\frac{pnr}{100} = I$$

$$= \frac{16500 \times n \times 13}{100} = 6435$$

$$n = \frac{\cancel{6435} \times \cancel{100}}{\cancel{16500} \times \cancel{13}}$$

$n = 3$ years

---

6. In what time will ₹ 17800 amount to ₹19936 at 6% per annum?

Solution :

$A = ₹19,936$

$p = ₹17,800$

$I = A - P$

$= 19,936 - 17,800$

$= ₹2,136$

$r = 6\%$

$$\frac{pnr}{100} = I$$

$$= \frac{17800 \times n \times 6}{100} = 2136$$

$$n = \frac{\cancel{2136} \times \cancel{100}}{\cancel{17800} \times \cancel{6}}$$

$n = 2$ years

---

7. A sum of ₹48,000 was lent out at simple interest and at the end of 2 years and 3 months the total amount was ₹ 55,560. Find the rate of interest per year.

Solution :

$A = ₹55,560$

$p = ₹48,000$

$I = A - P$

$= 55,560 - 48,000$

$= ₹7,560$

$n = 2$ years 3 months

$$= 2\frac{3}{12} = 2\frac{1}{4} = \frac{9}{4}$$

$$\frac{pnr}{100} = I$$

$$= \frac{48000 \times 9 \times r}{4 \times 100} = 7560$$

$$r = \frac{\cancel{7560} \times 4 \times \cancel{100}}{\cancel{48000} \times 9}$$

$r = 7\%$

---

8. A principal becomes ₹17,000 at the rate of 12% in 3 years. Find the principal.

Solution :

$A = ₹17,000$

$n = 3$ years

$r = 12\%$

$P + I = A$

$$P + \frac{pnr}{100} = A$$

$$P + \frac{p \times 3 \times 12}{100} = 17,000$$

$$P + \frac{36p}{100} = 17,000$$

$$\frac{100p + 36p}{100} = 17,000$$

$$\frac{136p}{100} = 17,000$$

$$P = \frac{\cancel{17000} \times 100}{\cancel{136}}$$

$P = ₹12,500$

Objective type Questions.

9. The interest for a principle of ₹4,500 which gives an amount of ₹5,000 at end of certain period is
(i) ₹500 (ii) ₹200 (iii) 20% (iv) 15%
Solution :
(i) ₹500

---

10. Which among the following is the simple interest for the principle of ₹1,000 for one year at the rate of 10% interest per annum?
(i) ₹200 (ii) ₹10 (iii) ₹100 (iv) ₹1000
Solution :
(iii) ₹100
Hint :

$$I = \frac{pnr}{100} = \frac{1000 \times 1 \times 10}{100}$$

$= ₹100$

---

11. Which among the following rate of interest yields an interest of ₹200 for the principle of ₹2,000 for one year.
(i) 10% (ii) 20% (iii) 5% (iv) 15%
Solution :
(i) 10%
Hint :

$$\frac{pnr}{100} = I$$

$$= \frac{2000 \times I \times r}{100} = 200$$

$$r = \frac{^{10}\cancel{200} \times \cancel{100}}{\cancel{2000}} \quad 10\%$$

Try these

1. Arjun borrowed a sum of . 5,000 from a bank at 5% per annum. Find the interest and amount to be paid at the end of three year.
Solution :
P = ₹5,000
n = 3 years
r = 5 % per annum

$$I = \frac{pnr}{100} = \frac{5000 \times 3 \times 5}{\cancel{100}} = ₹750$$

A = P + I = 5000 + 750 = ₹ 5,750

---

2. Shanti borrowed ₹6,000 from a Bank for 7 years at 12% per annum. What amount will clear off her debt?
Solution :
P = ₹6,000
n = 7 years
r = 12 % per annum

$$I = \frac{pnr}{100} = \frac{6000 \times 7 \times 12}{\cancel{100}} = ₹5040$$

A = P + I = 6000 + 5040 = ₹ 11,040
Amount to clear off her debt = ₹ 11,040

Think

In simple interest, a sum of money doubles itself in 10 years. In how many years it will get triple itself.
Solution :
P = P
A = 2P
n = 10 years
I = A - P = 2P - P = P

$$\frac{pnr}{100} = I$$

$$\frac{p \times 10 \times r}{100} = P$$

$$r = \frac{\cancel{P} \times 100}{\cancel{P} \times 10} \quad r = 10\,\%$$

P = P
A = 3P
r = 10 %
I = 3P - P = 2P

$$\frac{pnr}{100} = I$$

$$\frac{p \times n \times 10}{100} = 2P$$

$n = \frac{2P \times 100}{P \times 10}$ $n = 20$ years

Exercise 2.5
Miscellaneous Practice problems

1. When Mathi was buying her flat she had to put down a deposit of $\frac{1}{10}$ of the value of the flat. What percentage was this?

Solution :

Percentage of put down deposit $= \frac{1}{10} \times 100$

$= 10\,\%$

2. Yazhini scored 15 out of 25 in a test. Express the marks scored by her in percentage.

Solution :

Percentage of Yazhini marks $= \frac{15}{25} \times 100$

$\frac{1500}{25} = 60\,\%$

3. Out of total 120 teachers of a school 70 were male. Express the number of male teachers as percentage.

Solution :

Male teachers Percentage $= \frac{70}{120} \times 100$

$\frac{7000}{120} = \frac{350}{6} = 58.33\,\%$

4. A cricket team won 70 matches during a year and lost 28 matches and no results for two matches. Find the percentage of matches they won.

Solution :

Total number of matches

$= 70 + 28 + 2 = 100$

Percentage of matches the won

$= \frac{70}{100} \times 100 = 70\,\%$

5. There are 500 students in a rural school. If 370 of them can swim, what percentage of them can swim and what percentage cannot?

Solution :

Total number of students $= 500$

Number of students can swim $= 370$

Percentage of students can swim

$= \frac{370}{500} \times 100 = 74\,\%$

Percentage of students cannot swim

$= 100 - 74 = 26\%$

6. The ratio of Saral's income to her savings is 4 : 1. What is the percentage of money saved by her?

Solution :

Ratio of Sarala's income to her savings $= 4 : 1$

Sum of ratio $= 4+1 = 5$

Percentage of her savings $= \frac{1}{5} \times 100 = 20\,\%$

7. A salesman is on a commission rate of 5%. How much commission does he make on sales worth ₹1,500?

Solution :

Commission amount $= 1500 \times 5\%$

$= 1500 \times \frac{5}{100} = ₹75$

8. In the year 2015 ticket to the world cup cricket match was ₹1,500. This year the price has been increased by 18%. What is the price of a ticket this year?

Solution :

Increase percentage $= 100\,\% + 18\% = 118\,\%$

Increase price of a ticket $= 118\,\% \times 1500$

$= \frac{118}{100} \times 1500 = ₹1,770$

9. 2 is what percentage of 50?

Solution :

$$= \frac{2}{50} \times 100 = \frac{200}{50} = 4\%$$

10. What percentage of 8 is 64?

Solution :

$$8 \times r\% = 64$$

$$8 \times \frac{r}{100} = 64$$

$$r = \frac{64 \times 100}{8} \qquad r = 800\%$$

11. Stephen invested ₹10,000 in a savings bank account that earned 2% simple interest. Find the interest earned if the amount was kept in the bank for 4 years.

Solution :

p = ₹10,000
n = 4 years
r = 2% per annum

$$\text{Simple interest (I)} = \frac{pnr}{100}$$

$$= \frac{10000 \times 4 \times 2}{100} = ₹\,800$$

12. Riya bought ₹15,000 from a bank to buy a car at 10% simple interest. If she paid ₹9,000 as interest while clearing the loan, find the time for which the loan was given.

Solution :

p = ₹15,000
I = ₹9,000
r = 10%

$$\frac{pnr}{100} = I$$

$$\frac{15000 \times n \times 10}{100} = 9000$$

$$n = \frac{9000 \times 100}{15000 \times 10} \qquad n = 6 \text{ years}$$

13. In how much time will the simple interest on ₹3,000 at the rate of 8% per annum be the same as simple interest on ₹4,000 at 12% per annum for 4 years?

Solution :

p = ₹3,000	p = ₹4,000
r = 8%	r = 12%
n = ?	n = 4 years

$$\frac{3000 \times n \times 8}{100} = \frac{4000 \times 4 \times 12}{100}$$

$$n = \frac{4000 \times 4 \times 12}{100} \times \frac{100}{3000 \times 8}$$

$$n = 8 \text{ years}$$

Challenge Problems

14. A man travelled 80 km by car and 320 km by train to reach his destination. Find what percent of total journey did he travel by car and what per cent by train?

Solution :

Total distance travelled = 80 + 320 = 400 km
Distance travelled by car = 80 km
Distance travelled by train = 320 km

Percentage of distance travelled by car

$$= \frac{80}{400} \times 100 = 20\%$$

Percentage of distance travelled by train

$$= \frac{320}{400} \times 100 = 80\%$$

15. Lalitha took a math test and got 35 correct and 10 incorrect answers. What was the percentage of correct answers?

Solution :

Total number of answers
= 35 + 10 = 45

Percentage of correct answers

$$= \frac{35}{45} \times 100 = \frac{3500}{45} = 77.78\%$$

16. Kumaran worked 7 months out of the year. What percentage of the year did he work?

Solution :

Percentage of the years he worked

$$= \frac{7}{12} \times 100 = \frac{700}{12} = \frac{175}{3}$$

$$= 58.33\ \%$$

---

17. The population of a village is 8000. Out of these, 80% are literate and of these literate people, 40% are women. Find the percentage of literate women to the total population?

Solution :

Population of village = 8000

Percentage of literate = 80 %

Population of literate

$$= \frac{80}{100} \times 8000 = 6400$$

Population of literate women

$$= \frac{40}{100} \times 6400 = 2560$$

Percentage of literate women

$$= \frac{2560}{8000} \times 100 = 32\%$$

---

18. A student earned a grade of 80% on a math test that had 20 problems. How many problems on this test did the student answer correctly?

Solution :

Number of questions answered correctly

$$= \frac{80}{100} \times 20 = \frac{1600}{100} = 16$$

---

19. A metal bar weighs 8.5 *kg*. 85% of the bar is silver. How many kilograms of silver are in the bar?

Solution :

Weight of silver

$$= \frac{85}{100} \times 8.5\ \text{kg} = \frac{722.5}{100}$$

$$= 7.225\ \text{kg}$$

---

20. Concession card holders pay ₹ 120 for a train ticket. Full fare is ₹ 230. What is the percentage of discount for concession card holders?

Solution :

Full fare = ₹ 230

Concession fare = ₹ 120

Discount = 230 – 120 = ₹ 110

Percentage of discount

$$= \frac{110}{230} \times 100 = \frac{11000}{230} = 47.83\%$$

---

21. A tank can hold 200 litres of water. At present, it is only 40 % full. How many litres of water to fill in the tank, so that it is 75 % full?

Solution :

40 % of tank

$$= \frac{40}{100} \times 200 = 80\ l$$

75 % of tank

$$= \frac{75}{100} \times 200 = 150\ l$$

Number of litres of water needed

$$150 - 80 = 70\ l$$

---

22. Which is greater

$16\frac{2}{3}$ or $\frac{2}{5}$ **or 0.17?**

Solution :

$$16\frac{2}{3} = 16.67$$

$\frac{2}{5} = 0.40$

$0.17 = 0.17$

$\therefore \quad 16\frac{2}{3}$ is greager

23. The value of a machine depreciates at 10% per year. If the present value is ₹1,62,000, what is the worth of the machine after two years.

Solution :

p = 1,62,000
n = 2 years
r = 10%

Decreased value in the first year

$= \frac{162000 \times 10}{100} = ₹16,200$

Worth of machine after one year

= 1,62,000 - 16,200 = ₹1,45,800

Decreased value in the second year

$= \frac{145800 \times 10}{100} = ₹14,580$

Worth of machine after two year

= 1,45,800 - 14,580 = ₹1,31,220

24. In simple interest, a sum of money amounts to ₹6,200 in 2 years and ₹6,800 in 3 years. Find the principal and rate of interest.

Solution :

Amount at the end of 2 years = 6200
Amount at the end of 3 years = 6800
$\therefore$ Interest for 1 year = 6800–6200 = ₹600
Interest for 2 years = 600 x 2 = ₹1200

A = 6200
I = 1200
P = A - P = 6200 - 1200 = 5000
P = 5000
I = 1200
n = 2 years

$\frac{pnr}{100} = I$

$\frac{5000 \times 2 \times r}{100} = 1200$

$r = \frac{1200 \times 100}{5000 \times 2}$ $\quad r = 12\%$

25. A sum of ₹46,900 was lent out at simple interest and at the end of 2 years, the total amount was ₹53,466.Find the rate of interest per year

Solution :

A = ₹53, 466
P = ₹46, 900
I = A - P
= 53, 466 - 46, 900 = 6, 566
n = 2 years

$\frac{pnr}{100} = I$

$\frac{46900 \times 2 \times r}{100} = 6566$

$r = \frac{6566 \times 100}{46900 \times 2}$ $\quad r = 7\%$

26. Arun lent ₹5,000 to Balaji for 2 years and ₹3,000 to Charles for 4 years on simple interest at the same rate of interest and received ₹2,200 in all from both of them as interest. Find the rate of interest per year.

Solution :

Balaji	**Charles**
p = ₹5,000	p = ₹3,000
n = 2 years n	n = 4 years
r = r%	r = r%

Balaji's interest

$\frac{pnr}{100} = I$

$\frac{5000 \times 2 \times r}{100} = 100r$

Charle's interest

$$\frac{pnr}{100} = I$$

$$\frac{3000 \times 4 \times r}{100} = 120r$$

Total interest $= 100r + 120r = 220r$

$$220r = 2200$$

$$r = \frac{2200}{220} \qquad r = 10\%$$

27. If a principal is getting doubled after 4 years, then calculate the rate of interest. (Hint : Let P = ₹100).

Solution :

Let P = ₹100

A = ₹200

I = A - P = 200 - 100 = ₹100

n = 4 years

$$\frac{pnr}{100} = I$$

$$\frac{100 \times 4 \times r}{100} = 100$$

$$r = \frac{100 \times 100}{100 \times 4} \qquad r = 25\ \%$$