10 Unitary Method

1. ∵ Saving in 8 months = ` 48000
∴ Saving in 1 month = 48000 ÷ 8 = ` 6000
So, Ramesh saves ` 6,000 in a month.

2. ∵ Cost of 5 dozen bananas = ` 265
∴ Cost of 1 dozen bananas = 265 ÷ 5
= ` 53
So, the cost of 1 dozen bananas is ` 53.

```
5)265(53
 −25
   15
  −15
    ×
```

3. ∵ Production of toys in 30 days = 82,440
∴ Production of toys in 1 day = 82,440 ÷ 30 = 2748
∴ Production of toys in 7 days = 2748 × 7 = 19,236 toys

```
  2 7 4 8
  ×     7
1 9 2 3 6
```

```
30)82440(2748
  −60
   224
  −210
    144
   −120
    240
   −240
     ×
```

So, the factory will produce 19236 toys in 7 days.

4. No. of bricks transported by 1 truck = 4550
No. of bricks transported by 25 trucks = 4550 × 25
= 1,13,750 bricks
So, 1,13,750 bricks can be transported using 25 such trucks.

```
    4 5 5 0
    ×   2 5
  2 2 7 5 0
  9 1 0 0 ×
1 1 3 7 5 0
```

5. ∴ Distance walked in 30 days = 165 km.
∴ Distance walked in 1 day = 165 ÷ 30

∴ Distance walked in 105 days = $\dfrac{\overset{11}{\cancel{165}}}{\underset{2}{\cancel{30}}} \times 105 = \dfrac{11 \times 105}{2}$

= 11 × 52.5 = 577.5 km.

So, Ankur will walk 577.5 km. in 105 days.

6. ∵ Volume of water in 19 bottles = 570*l*
∴ Volume of water in 1 bottle = 570 ÷ 19
= 30*l*
So, one bottle contains 30*l* of water.

```
19)570(30
  −570
    ×
```

7. ∵ Cost of 18 books = ` 8100
∴ Cost of 1 book = 8100 ÷ 18
= ` 450
∴ Cost of 36 books = 450 × 36
= ` 16,200
So, the cost of 36 books is ` 16,200.

```
18)8100(450
  −72
    90
   −90
     0
```

```
    4 5 0
    × 3 6
  2 7 0 0
1 3 5 0 ×
1 6 2 0 0
```

8. ∵ No. of bags for 5 kg. of sugar = 1

∴ No. of bags for 1 kg. of sugar = 1 ÷ 5

∴ No. of bags for 235 kg. of sugar = $\dfrac{1}{5} \times 235$

$$= \dfrac{235}{5}$$

$$= 47 \text{ bags.}$$

$$5\overline{)235}(47$$
$$\underline{-20}$$
$$35$$
$$\underline{-35}$$
$$\times$$

So, 47 bags will be needed to pack 235 kg. of sugar.

9. ∵ Cost of 25 computer = ` 3,75,000

∴ Cost of 1 computer = 3,75,000 ÷ 25

$$= ` 15,000$$

So, one computer costs ` 15,000.

$$25\overline{)375000}(15000$$
$$\underline{-25}$$
$$125$$
$$\underline{-125}$$
$$\underline{000}$$

10. ∵ No. of watches manufactured in 5 days = 1785

∴ No. of watches manufactured in 1 day = 1785 ÷ 5

∴ No. of watches manufactured in 2 days = (1785 ÷ 5) × 2

$$= 357 \times 2 = 714 \text{ watches}$$

$$5\overline{)1785}(357$$
$$\underline{-15}$$
$$28$$
$$\underline{-25}$$
$$35$$
$$\underline{-35}$$
$$\times$$

$$\begin{array}{r} 3\ 5\ 7 \\ \times\ 2 \\ \hline 7\ 1\ 4 \end{array}$$

So, 714 watches can be manufactured in 2 days.

MCQ's

1. a   **2.** b   **3.** a.

11   Average

Exercise 11.1

1. a. Average = $\dfrac{\text{Sum of the given quantities}}{\text{No. of given quantities}} = \dfrac{12 + 15 + 18 + 25 + 30}{5} = \dfrac{100}{5} = 20$

So, the average of 12, 15, 18, 25 and 30 is 20.

b. Average = $\dfrac{\text{Sum of the given quantities}}{\text{No. of given quantities}}$

$$= \dfrac{0.3 + 0.5 + 0.7 + 0.9 + 0.12}{5} = \dfrac{2.52}{5} = 0.504$$

c. Sum of the given quantities = $2\dfrac{1}{2} + 3\dfrac{1}{3} + \dfrac{2}{4} = \dfrac{5}{2} + \dfrac{10}{3} + \dfrac{1}{2}$

$$= \dfrac{15 + 20 + 3}{6} = \dfrac{38}{6} = \dfrac{19}{3}$$

No. of given quantities = 3

Average = $\dfrac{\text{Sum of the given quantities}}{\text{No. of given quantities}} = \dfrac{19}{3} \div 3 = \dfrac{19}{3} \times \dfrac{1}{3} = \dfrac{19}{9} = 2\dfrac{1}{9}$

The average of $2\frac{1}{2}, 3\frac{1}{3}$ and $\frac{2}{4}$ is $2\frac{1}{9}$.

2. Sum of the rainfalls $= 200 + 150 + 240 + 160 + 77 + 225 + 161 + 240 + 160$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad + 85 + 205$
$\qquad\qquad\qquad\quad = 1903$
   No. of years $= 11$

   Average annual rainfall $= \dfrac{\text{Sum of rainfall}}{\text{No. of years}} = \dfrac{1903}{11} = 173\,\text{cm}.$

   So, the average annual rainfall in the city was 173 cm.

3. Sum of weights $= 24 + 27 + 33 + 26 + 25 = 135$
   No. of children $= 5$

   Average weight $= \dfrac{\text{Sum of weights}}{\text{No. of children}} = \dfrac{135}{5} = 27\,\text{kg}.$

   So, their average weight is 27 kg.

4. Total distance $= 60 + 45 + 50 + 55 + 35 = 245$
   Total time $= 5$ hrs.

   Average speed $= \dfrac{\text{Total distance}}{\text{Total time}} = \dfrac{\overset{49}{\cancel{245}}}{\underset{1}{\cancel{5}}} = 49$

   So, the average speed of the car is 49 km/h.

5. Total marks $= 45 + 56 + 79 + 95 + 48 = 323$
   No. of subjects $= 5$

   Average marks $= \dfrac{\text{Total marks}}{\text{No. of subjects}} = \dfrac{323}{5} = 64.6$

   So, the average of her marks is 64.6

6. a. His total saving $= 1060 + 1250 + 1360 + 1610 + 1520 + 3165 + 4108 + 4114$
   $\qquad\qquad + 5280 + 5313 + 3917 + 4005 = ` \ 36702$

   b. No. of months in a year $= 12$

   $\qquad$ His average saving $= \dfrac{\text{His total saving}}{\text{No. of months in a year}}$

   $\qquad\qquad\qquad\qquad\quad = \dfrac{36702}{12} = 3058.5$

7. The average $= 492$
   The no. of quantities $= 6$
   Sum of numbers $=$ The average $\times$ the no. of quantites
   $\qquad\qquad\qquad = 492 \times 6 = 2952$
   So, their total is 2952.

8. The average $= 73$ runs.
   No. of matches $= 5$
   His score $=$ The average $\times$ no. of matches
   $\qquad\qquad = 73 \times 5 = 365$ runs
   So, he scored 365 runs altogether.

9. The average distance $= 460$ km.
   No. of days $= 7$
   Total distance $=$ The average distance $\times$ No. of days
   $\qquad\qquad\quad = 460 \times 7 = 3220\,\text{km}.$

10. The average income $= ` \ 14,600$

No. of days = 7

Actual income for first 6 days

$$= 12,278 + 13622 + 15500 + 13700 + 16800 + 14100$$
$$= ` 86,000$$

Actual income for 7 days = The average income × No. of days

$$= 14600 \times 7 = ` 1,02,200$$

The income for sunday = Actual income for 7 days – Actual income for first 6 days

$$= 1,0,2,200 - 86,000 = ` 16,200$$

MCQ's

1. c **2.** b **3.** c **4.** b

<div style="text-align:center">

12

Speed, Distance and Time

</div>

Exercise 12.1

1. **a.** Distance = 1600 m., Time taken = 80 sec.
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{1600}{80} = 20 \,\text{m/sec.}$$

b. Distance = 420 m., Speed = 14 m/sec.
$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{420}{14} = 30 \,\text{sec.}$$

c. Time taken = 8 hrs., Speed = 85 km/hr.
$$\text{Distance} = \text{Speed} \times \text{Time taken} = 85 \times 8 = 680 \,\text{km.}$$

d. Distance = 325 km.
Time taken = 13 hrs.
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{325}{13} = 25 \,\text{km/h.}$$

e. Distance = 500 km., Speed = 50 km.hr.
$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{500}{50} = 10 \,\text{hrs.}$$

f. Time taken = 12 sec., Speed = 62 m/sec.
$$\text{Distance} = \text{Speed} \times \text{Time taken} = 62 \times 12 = 744 \,\text{m.}$$

2. **a.** Distance (d) = 600 km., Time taken (t) = 4 hrs.
$$\text{Speed } (s) = \frac{\text{Distance } (d)}{\text{Time } (t)} = \frac{600}{4} = 150 \,\text{km/h.}$$

b. Distance (d) = 8 km., Time taken (t) = 2 hrs.
$$\text{Speed } (s) = \frac{\text{Distance } (d)}{\text{Time } (t)} = \frac{8}{2} = 4 \,\text{km/hr.}$$

c. Distance (d) = 225 km., Time taken (t) = 5 hrs.
$$\text{Speed } (s) = \frac{\text{Distance } (d)}{\text{Time } (t)} = \frac{225}{5} = 45 \,\text{km/hr.}$$

d. Distance (d) = 35 km., Time taken (t) = 5 hrs.
$$\text{Speed } (s) = \frac{\text{Distance } (d)}{\text{Time } (t)} = \frac{35}{5} = 7 \,\text{km/hr.}$$

3. **a.** Speed (s) = 70 km/hr., Time taken (t) = 8 hrs.
$$\text{Distance } (d) = \text{speed } (s) \times \text{time } (t)$$

$$d = 70 \times 8 = 560 \,\text{km}.$$

b. Speed $(s) = 85\,\text{km/hr.}$, Time taken $(t) = 7\,\text{hrs.}$

$$\text{Distance } (d) = \text{Speed } (s) \times \text{time } (t)$$
$$d = 85 \times 7 = 595 \,\text{km}.$$

4. Speed $(s) = 85\,\text{km/hr.}$, Distance $(d) = 382.5\,\text{km.}$

$$\text{Time taken } (t) = \frac{\text{Distance } (d)}{\text{Speed } (s)} = \frac{382.5}{85} = 4.5\,\text{hrs.}$$

5. Speed of the aeroplane $(s) = 840\,\text{km/hr.}$

Time taken $(t) = 3.5\,\text{hrs.}$

$$\text{Distance covered } (d) = \text{Speed } (s) \times \text{time } (t)$$
$$d = 840 \times 3.5 = 2940\,\text{km.}$$

Exercise 14.2

1. a. $90\,\text{km/hr} = \dfrac{90 \times 1000}{60 \times 60}\,\text{m/sec} = \dfrac{90 \times 10}{6 \times 6}\,\text{m/sec} = 25\,\text{m/sec.}$

b. $72\,\text{km/hr.} = \dfrac{72 \times 1000}{60 \times 60}\,\text{m/sec} = \dfrac{72 \times 10}{6 \times 6}\,\text{m/sec} = 20\,\text{m/sec.}$

c. $36\,\text{km/hr.} = \dfrac{36 \times 1000}{60 \times 60}\,\text{m/sec} = \dfrac{36 \times 10}{6 \times 6}\,\text{m/sec} = 10\,\text{m/sec.}$

d. $45\,\text{km/hr.} = \overset{5}{\cancel{45}} \times \dfrac{5}{\underset{2}{\cancel{18}}}\,\text{m/sec} = \dfrac{25}{2}\,\text{m/sec.} = 12.5\,\text{m/sec.}$

e. $144\,\text{km/hr} = \overset{16}{\cancel{144}} \times \dfrac{5}{\underset{2}{\cancel{18}}}\,\text{m/sec} = 8 \times 5\,\text{m/sec} = 40\,\text{m/sec.}$

2. a. $25\,\text{m/sec} = 25 \times \dfrac{\frac{1}{1000}}{\frac{1}{60 \times 60}}\,\text{km/hr.} = \dfrac{25 \times 3600}{1000}\,\text{km/hr}$

$$= \dfrac{\overset{5}{\cancel{25}} \times \overset{18}{\cancel{36}}}{\underset{2}{\cancel{10}}}\,\text{km/hr} = 90\,\text{km/hr.}$$

b. $95\,\text{m/sec} = \dfrac{95 \times \frac{1}{1000}\,\text{km}}{\frac{1}{60 \times 60}\,\text{hr}} = \dfrac{95 \times 3600}{1000}\,\text{km/hr}$

$$= \dfrac{\overset{19}{\cancel{95}} \times \overset{18}{\cancel{36}}}{\underset{1}{\cancel{10}}}\,\text{km/hr} = 342\,\text{km/hr.}$$

c. $100\,\text{m/sec} = \dfrac{100 \times \frac{1}{1000}\,\text{km}}{\frac{1}{60 \times 60}\,\text{hr}}$

$$= \dfrac{100 \times 3600}{1000}\,\text{km/hr.}$$
$$= 10 \times 36\,\text{km/hr.} = 360\,\text{km/hr.}$$

d.   45 m/sec. $= 45 \times \dfrac{18}{5}$ km/hr

$= 9 \times 18$ km/hr $= 162$ km/hr.

e.   35 m/sec. $= 35 \times \dfrac{18}{5}$ km/hr

$= 7 \times 18$ km/hr $= 126$ km/hr.

3.   Distance covered $(d) = 360$ km.

Time taken $(t) = 5$ hrs.

Speed of the truck $(s) = \dfrac{d}{t} = \dfrac{360}{5} = 72$ km/h.

$= \overset{8}{\cancel{72}} \times \dfrac{5}{\underset{2}{\cancel{18}}}$ m/sec.

$= 4 \times 5 = 20$ m/sec.

So, the speed of the train is 20 m/sec.

4.   Distance covered $(d) = 24000$ m.

Time taken $(t) = 300$ sec.

Speed of the train $= \dfrac{d}{t} = \dfrac{24000}{300} = 80$ m/sec.

$= \overset{16}{\cancel{80}} \times \dfrac{18}{\underset{1}{\cancel{5}}}$ km/hr. $= 288$ km/hr.

So, the speed of the train is 288 km/hr.

MCQ's

| **1.** | a | **2.** | c | **3.** | b | **4.** | c | **5.** | b |

13   Percentage

Exercise 13.1

| **1.** | a. | 28% | b. | 21% | c. | 79% | d. | 83% |
| **2.** | a. | 25% | b. | 44% | c. | 70% | d. | 66% |
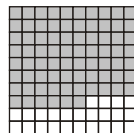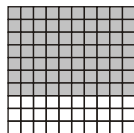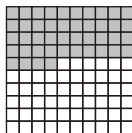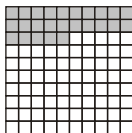
Exercise 13.2

1.   a. $\dfrac{6}{12} = \dfrac{6}{12} \times 100\% = 50\%$
b. $\dfrac{13}{25} = \dfrac{13}{25} \times 100\% = 13 \times 4\% = 52\%$

c. $2\dfrac{2}{5} = \dfrac{12}{5} = \dfrac{12}{5} \times 100\% = 12 \times 20\% = 240\%$

d. $1\dfrac{3}{20} = \dfrac{23}{20} = \dfrac{23}{20} \times 100\% = 23 \times 5\% = 115\%$

e. $7\dfrac{1}{4} = \dfrac{29}{4} = \dfrac{29}{4} \times 100\% = 29 \times 25\% = 725\%$

f. $\dfrac{4}{5} = \dfrac{4}{5} \times 100\% = 4 \times 20\% = 80\%$

g. $2\dfrac{5}{8} = \dfrac{21}{8} = \dfrac{21}{8} \times 100\% = \dfrac{21}{2} \times 25\% = 262.5\%$

h. $\dfrac{9}{50} = \dfrac{9}{50} \times 100\% = 9 \times 2\% = 18\%$

Exercise 13.3

1. a. $0.7 = 0.7 \times 100\% = 70\%$ b. $0.3712 = 0.3712 \times 100\% = 37.12\%$

c. $43.51 = 43.51 \times 100\% = 4351\%$ d. $2.14 = 2.14 \times 100\% = 214\%$

e. $4.6 = 4.6 \times 100\% = 460\%$ f. $5.021 = 5.021 \times 100\% = 502.1\%$

g. $0.158 = 0.158 \times 100\% = 15.8\%$ h. $5.36 = 5.36 \times 100\% = 536\%$

i. $0.43 = 0.43 \times 100\% = 43\%$ j. $0.037 = 0.037 \times 100\% = 3.7\%$

2. a. $\dfrac{9}{24} = 0.375 = 0.375 \times 100\% = 37.5\%$

b. $\dfrac{8}{125} = 0.064 = 0.064 \times 100\% = 6.4\%$

c. $\dfrac{37}{25} = 1.48 = 1.48 \times 100\% = 148\%$ d. $\dfrac{3}{4} = 0.75 = 0.75 \times 100\% = 75\%$

e. $\dfrac{11}{20} = 0.55 = 0.55 \times 100\% = 55\%$ f. $\dfrac{7}{10} = 0.7 = 0.7 \times 100\% = 70\%$

g. $\dfrac{1}{100} = 0.01 = 0.01 \times 100\% = 1\%$ h. $\dfrac{57}{48} = 1.1875 = 1.1875 \times 100\%$

$= 118.75\%$

Exercise 13.4

1. a. $16\dfrac{2}{3}\% = \dfrac{50}{3}\% = \dfrac{50}{3 \times 100} = \dfrac{1}{3 \times 2} = \dfrac{1}{6}$ b. $132\% = \dfrac{132}{100} = \dfrac{33}{25} = 1\dfrac{8}{25}$

c. $9\% = \dfrac{9}{100}$ d. $23\dfrac{2}{5}\% = \dfrac{117}{5}\% = \dfrac{117}{5 \times 100} = \dfrac{117}{500}$

e. $5.6\% = \dfrac{5.6}{100} = \dfrac{56}{1000} = \dfrac{7}{125}$ f. $0.5\% = \dfrac{0.5}{100} = \dfrac{5}{1000} = \dfrac{1}{200}$

g. $7\dfrac{1}{2}\% = \dfrac{15}{2}\% = \dfrac{15}{200} = \dfrac{3}{40}$ h. $2.2\% = \dfrac{2.2}{100} = \dfrac{22}{1000} = \dfrac{11}{500}$

2. a. $0.5\% = \dfrac{0.5}{100} = 0.005$ b. $4.7\% = \dfrac{4.7}{100} = 0.047$

c. $2.2\% = \dfrac{2.2}{100} = 0.022$ d. $4.5\% = \dfrac{4.5}{100} = 0.045$

e. $130\% = \dfrac{130}{100} = 1.3$ f. $125\% = \dfrac{125}{100} = 1.25$

g. $230.5\% = \dfrac{230.5}{100} = 2.305$ h. $85\% = \dfrac{85}{100} = 0.85$

Exercise 13.5

1. a. $0.8 = 0.8 \times 100\% = 80\%$ b. $0.74 = 0.74 \times 100\% = 74\%$

c. $0.81 = 0.81 \times 100\% = 81\%$ d. $9.51 = 9.51 \times 100\% = 951\%$

2. a. $8\% = \dfrac{8}{100} = \dfrac{2}{25}$ b. $42\% = \dfrac{42}{100} = \dfrac{21}{50}$

c. $2\% = \dfrac{2}{100} = \dfrac{1}{50}$ d. $3\% = \dfrac{3}{100}$

Exercise 13.6

1. a. 45% of $100 = \dfrac{45}{100} \times 100 = 45$ b. 50% of $1000 = \dfrac{50}{100} \times 1000 = 500$

   c. 90% of $450 = \dfrac{90}{100} \times 450 = 405$

2. a. $5\dfrac{1}{2}\%$ of 75 kg

   $= \dfrac{11}{2}\%$ of 75 kg $= \dfrac{11}{200} \times 75$ kg $= \dfrac{11 \times 3}{8}$ kg $= \dfrac{33}{8}$ kg $= 4\dfrac{1}{8}$ kg

   b. 40% of $500\,l$

   $= \dfrac{40}{100} \times 500\,l = 40 \times 5\,l = 200\,l$

   c. 25% of 1 kg

   $= \dfrac{25}{100} \times 1000\,g = 25 \times 10 = 250\,g$

3. a. 300 m of 6 km

   $= 300$ m of 6000 m $= \dfrac{300}{6000} \times 100\% = 5\%$

   b. 24 g of 3 kg

   $= 24$ g of 3000 g $= \dfrac{24}{3000} \times 100\% = 0.8\%$

   c. $12\dfrac{1}{2}$ kg of 250 kg

   $= \dfrac{25}{2}$ of 250 g $= \dfrac{25}{2 \times 250} \times 100\% = 5\%$

   d. 420 marks of 600

   $= \dfrac{420}{600} \times 100\% = 70\%$

   e. 10 min of 2 hours

   10 min of 120 min

   $= \dfrac{\overset{5}{\cancel{10}}}{\underset{\underset{3}{\cancel{6}}}{\cancel{120}}} \times \overset{5}{\cancel{500}} = \dfrac{25}{3}\% = 8\dfrac{1}{3}\%$

   f. 250 ml of $1\,l$

   250 ml of 1000 ml

   $= \dfrac{250}{1000} \times 100\% = \dfrac{1}{4} \times 100\% = 25\%$

Exercise 13.7

1. a. Let $x\%$ of 40 min $= 12$ min   b. Let $x\%$ of 50 kg $= 7.5$ kg

   $\dfrac{x}{100} \times 40 = 12$ $\dfrac{x}{100} \times 50 = 7.5$

   $x = \dfrac{12 \times 100}{40}$ $x = \dfrac{7.5 \times 100}{50}$

   $x = 3 \times 10 = 30$ $x = 7.5 \times 2 = 15$

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∴ 30% of 40 min = 12 min   ∴   15% of 50 kg = 7.5 kg

c. Let x% of 1 m = 25 cm

x% of 100 cm = 25 cm

$$\frac{x}{100} \times 100 = 25$$

$$x = 25$$

∴ 25% of 1 m = 25 cm

2. a. 20% of 150   30% of 180

$$\frac{20}{100} \times 150 \qquad\qquad \frac{30}{100} \times 180$$

30   <   54

∴ 20% of 150 < 30% of 180

b. 15% of 300 or 12% of 200

$$\frac{15}{100} \times 300 \qquad \frac{12}{100} \times 200$$

$15 \times 3 \qquad 12 \times 2$

45   >   24

∴ 15% of 300 > 12% of 200

3. Water = 20% of 2.5 l

$$= \frac{20}{100} \times 2.5$$

water = 0.5 l

∴ he mixes 0.5 l of water in the milk

4. Weight of son = 60% of 75 kg

$$= \frac{60}{100} \times 75\,kg = \frac{450}{10}$$

weight of son = 45 kg

5. Amit got = 75% of 540

$$= \frac{\overset{3}{\cancel{75}}}{\underset{4}{\cancel{100}}} \times 540 = 3 \times 135$$

Amit got = 405 marks

6. Weight of mangoes = 30% of 80 kg

$$= \frac{30}{100} \times 80\,kg = 24\ kg$$

MCQ's

Tick (3) the correct choice :

1.   b   2.   c   3.   a   4.   c

14   Profit and Loss

Exercise 14.1

1. a. C.P. = ` 600, S.P. = ` 750

∵   S.P. > C.P.

∴   There will be profit.

Profit = S.P. − C.P. = 750 − 600 = ` 150

b. C.P. = ` 15.50, S.P. = ` 16.50
∵ S.P. > C.P.
∴ There will be profit.
Profit = S.P. – C.P. = 16.50 – 15.50 = ` 1
c. C.P. = ` 500, S.P. = ` 475
∵ C.P. > S.P.
∴ There will be loss.
Loss = C.P. – S.P. = 500 – 475 = ` 25
d. C.P. = ` 128.60, S.P. = ` 149.50
∵ S.P. > C.P.
∴ There will be profit.
Profit = S.P. – C.P. = 149.50 – 128.60 = ` 20.90
e. C.P. = ` 382.75, S.P. = ` 371.80
∵ C.P. > S.P.
∴ There will be loss.
Loss = C.P. – S.P. = 382.75 – 371.80 = ` 10.95
f. C.P. = ` 816.75, S.P. = ` 705.85
∵ C.P. > S.P.
∴ There will be loss.
Loss = C.P. – S.P. = 816.75 – 705.85 = ` 110.90

2. Cost price of a laptop = ` 30,257
The money spent for repairing = ` 425
Total cost price = 30,257 + 425 = ` 30,682
Selling price of a laptop = ` 30,500
∵ C.P. > S.P.
∴ There will be loss.
Loss = C.P. – S.P. = 30682 – 30500 = ` 182.
So, his loss is of ` 182.

3. Cost price of 20 dozen bananas = ` 750
∵ Selling price of 1 dozen bananas = ` 35
∴ Selling price of 20 dozen bananas = 20 × 35 = ` 700
∵ C.P. > S.P.
∴ There will be loss.
Loss = C.P. – S.P. = 750 – 700 = ` 50
So, he has a loss of ` 50

4. Cost of car = ` 6,40,600
The money spent on repairing = ` 20,570
Total cost price = 640,600 + 20,570 = ` 6,61,170
Selling price of the car = ` 6,87,250
∵ S.P. > C.P.
∴ There will be profit.
Profit = S.P. – C.P. = 687250 – 661170 = ` 26,080
So, his gain is of ` 26,080.

5. ∵ Cost price of 1 book = ` 60
∴ Cost price of 10 books = 60 × 10 = ` 600
∵ Cost price of 1 magazine = ` 40
∴ Cost price of 60 magazines = 40 × 60 = ` 2400
Total cost price = 600 + 2400 = ` 3000
∵ Selling price of 1 book or 1 magazines = ` 50

∴   Selling price of 10 books and 60 magazines $= 10 \times 50 + 60 \times 50$

$= 500 + 3000 = `\,3500$

∵   S.P. > C.P.

∴   There will be gain.

Gain = S.P. – C.P. = 3500 – 3000 = ` 500

Exercise 14.2

1. a.   C.P. = ` 675.00, P = `12.50,

S.P. = C.P. + P

= 675.00 + 12.50 = ` 687.50

b.   C.P. = ` 3235.25, P = ` 130.75

S.P. = C.P. + P = 3235.25 + 130.75

= ` 3366.00 = ` 3366

c.   C.P. = ` 750.00, P = ` 25.00

S.P. = C.P. + P = 750.00 + 25.00 = ` 775.00 = ` 775

d.   C.P. = ` 1050, L = ` 175

S.P. = C.P. – L = 1050 – 175 = ` 875

e.   C.P. = ` 925.25, L = ` 13.75

S.P. = C.P. – L

= 925.25 – 13.75 = ` 911.50

f.   C.P. = ` 312.70, L = ` 4.90

S.P. = C.P. – L = 312.70 – 4.9 = ` 307.8

2. a.   S.P. = ` 1475, L = ` 350

C.P. = S.P. + Loss

= 1475 + 350 = ` 1825

b.   S.P.= ` 85.25, L = ` 2.75

C.P. = S.P. + L = 85.25 + 2.75 = ` 88.00 = ` 88

c.   S.P. = ` 6055.00, P = ` 601.25

C.P. = S.P. – P = 6055.00 – 601.25 = ` 5453.75

d.   S.P. = ` 1335.65, P = ` 12.75

C.P. = S.P. – P = 1335.65 – 12.75 = ` 1322.9

e.   S.P. = ` 44675.00, L = ` 1235.00

C.P. = S.P. + L = 44675.00 + 1235.00 = ` 45910

f.   S.P. = ` 530.45, L = ` 15.35

C.P. = S.P. + L = 530.45 + 15.35 = ` 545.80

3. Cost price of the wrist watch = ` 1550,

Profit = ` 120

Selling price of the wrist watch   = C.P. + Profit

= 1550 + 120 = ` 1670

So, the selling price of the wrist watch is ` 1670.

4. C.P. of the refrigerator = ` 9990,

Profit = ` 450

S.P. of the refrigerator = C.P. + Profit = 9990 + 450 = ` 10,440

So, the selling price of the refrigerator is ` 10,440.

5. C.P. of the mobile = ` 12,250,

Loss = ` 200

S.P. of the mobile = C.P. – Loss = 12250 – 200 = ` 12,050

So, the selling price of the mobile is ` 12,050.

6. S.P. of the television set = ` 5,625,

Loss = ` 475

C.P. of the television set = S.P. + Loss = 5625 + 475 = ` 6100

So, the cost price of the television is ` 6100.

Exercise 14.3

1. **a.** C.P. = ` 360, S.P. = ` 240

∵ C.P. > S.P.

∴ There will be loss.

Loss = C.P. – S.P. = 360 – 240 = ` 120

∴ Los % = $\dfrac{\text{Loss}}{\text{C.P.}} \times 100 = \dfrac{\overset{1}{\cancel{120}}}{\underset{3}{\cancel{360}}} \times 100 = \dfrac{100}{3} = 33.33\%$

b. C.P. = ` 3,000, S.P. = ` 3,600

∵ S.P. > C.P.

∴ There will be profit

Profit = S.P. – C.P. = 3600 – 3000 = ` 600

Profit % = $\dfrac{\text{Profit}}{\text{C.P.}} \times 100 = \dfrac{600}{3000} \times 100 = 20\%$

c. C.P. = ` 250, S.P. = ` 300

∵ S.P. > C.P.

∴ There will be profit.

Profit = S.P. – C.P. = 300 – 250 = ` 50

Profit % = $\dfrac{\text{Profit}}{\text{C.P.}} \times 100 = \dfrac{\overset{1}{\cancel{50}}}{\underset{5}{\cancel{250}}} \times 100 = \dfrac{\overset{20}{\cancel{100}}}{\underset{1}{\cancel{5}}} = 20\%$

d. C.P. = ` 2250, S.P. = ` 1795

∵ C.P. > S.P.

∴ There will be loss.

Loss = C.P. – S.P. = 2250 – 1795 = ` 455

Loss % = $\dfrac{\text{Loss}}{\text{C.P.}} \times 100 = \dfrac{\overset{91}{\cancel{455}}}{\underset{9}{\cancel{2250}}} \times \overset{2}{\cancel{100}}$

$= \dfrac{91 \times 2}{9} = \dfrac{182}{9} = 20.22\%$

e. C.P. = ` 3856, S.P. = ` 2642

∵ C.P. > S.P.

∴ There will be loss.

Loss = C.P. – S.P. = 3856 – 2642 = ` 1214

Loss % = $\dfrac{\text{Loss}}{\text{C.P.}} \times 100 = \dfrac{\overset{607}{\cancel{1214}}}{\underset{482}{\cancel{3856}}} \times \overset{25}{\cancel{100}}$

$= \dfrac{607 \times 25}{482} = \dfrac{15175}{482} = 31.48\%$

f. C.P. = ` 675, S.P. = ` 900

∵ S.P. > C.P.

∴ There will be profit.

Profit = S.P. – C.P. = 900 – 675 = ` 225

$$\text{Profit \%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{\overset{9}{\cancel{225}}}{\underset{27}{\cancel{675}}} \times 100$$

$$= \frac{\overset{1}{\cancel{9}}}{\underset{3}{\cancel{27}}} \times 100 = \frac{100}{3} = 33.33\%$$

2.   a.   C.P. = ` 750, Profit % = 5%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{750 \times 5}{100} = \frac{750}{20} = \frac{75}{2} = ` \ 37.5$$

   b.   C.P. = 1500, Profit % = 10%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{1500 \times 10}{100} = 15 \times 10 = ` \ 150$$

   c.   C.P. = ` 800, Loss % = 15%

$$\text{Loss} = \frac{\text{C.P.} \times \text{L\%}}{100} = \frac{800 \times 15}{100} = 8 \times 15 = ` \ 120$$

   d.   C.P. = ` 10,500, Loss % = 30%

$$\text{Loss} = \frac{\text{C.P.} \times \text{L\%}}{100} = \frac{10500 \times 30}{100} = 105 \times 30 = ` \ 3150$$

   e.   C.P. = ` 775, Profit % = 75%

$$\text{Profit} = \frac{\text{C.P.} \times \text{P\%}}{100} = \frac{775 \times 75}{100} = \frac{775 \times 3}{4} = ` \ 581.25$$

   f.   C.P. = ` 25000, Loss % = 12%

$$\text{Loss} = \frac{\text{C.P.} \times \text{L\%}}{100} = \frac{25000 \times 12}{100} = 250 \times 12 = ` \ 3000$$

3.   a.   C.P. = ` 400, Profit % = 2%

$$\text{S.P.} = \frac{100 + \text{P\%}}{100} \times \text{C.P.} = \frac{100 + 2}{100} \times 400$$

$$= \frac{102}{100} \times 400 = 102 \times 4 = ` \ 408$$

   b.   C.P. = ` 750, Loss % = 5%

$$\text{S.P.} = \frac{100 - \text{L\%}}{100} \times \text{C.P.} = \frac{100 - 5}{100} \times 750$$

$$= \frac{95}{10} \times 75 = \frac{95 \times 15}{2} = ` \ 712.5$$

   c.   C.P. = ` 200, Profit % = 10%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 10}{100} \times 200$$

$$= 110 \times 2 = ` \ 220$$

   d.   C.P. = ` 500, Loss % = 20%

$$\text{S.P.} = \frac{100 - L\%}{100} \times \text{C.P.} = \frac{100 - 20}{100} \times 500 = 80 \times 5 = ` \ 400$$

   e.   C.P. = ` 800, Profit % = 12%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 12}{100} \times 800$$

$$= 112 \times 8 = ` \ 896$$

   f.   C.P. = ` 450, Profit % = 17%

$$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 17}{100} \times 450 = \frac{117}{10} \times 45 = \text{`} 526.5$$

4. C.P. of the shirt = ` 6000
    S.P. of the shirt = ` 650
    Profit = S.P. – C.P. = 650 – 600 = ` 50
    $$\text{Profit \%} = \frac{\text{Profit}}{\text{C.P.}} \times 100 = \frac{50}{600} \times 100 = \frac{50}{6} = \frac{25}{3} = 8\frac{1}{3}\%$$
    So, his profit percent is $8\frac{1}{3}\%$.

5. C.P. of the saree = ` 2500
    S.P. of the saree = ` 2000
    Loss = C.P. – S.P. = 2500 – 2000 = ` 500
    $$\text{Loss \%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{500}{2500} \times 100 = \frac{500}{25} = 20\%$$
    So, his loss% is 20%.

6. C.P. of a bag = ` 1500
    Gain % = 10%
    $$\text{S.P.} = \frac{100 + G\%}{100} \times \text{C.P.} = \frac{100 + 10}{100} \times 1500$$
    $$= \frac{110}{100} \times 1500 = 110 \times 15 = \text{`} 1650$$
    So, the selling price of the bag is ` 1650.

7. C.P. of a pair of shoes = ` 800
    Loss % = 10%
    $$\text{S.P.} = \frac{100 - L\%}{100} \times \text{C.P.} = \frac{100 - 10}{100} \times 800$$
    $$= 90 \times 8 = \text{`} 720$$
    So, the selling price of the shoes is ` 720.

8. C.P. of a bicycle = ` 1250
    The money spent on repairing = ` 250
    Total C.P. = 1250 + 250 = ` 1500
    Profit % = 5%
    $$\text{S.P.} = \frac{100 + P\%}{100} \times \text{C.P.} = \frac{100 + 5}{100} \times 1500$$
    $$= 105 \times 15 = \text{`} 1575$$
    So, the selling price of the bicycle is ` 1,575.

9. ∵   Cost of 1 kg of ordinary rice = ` 20
    ∴   Cost of 30 kg of ordinary rice = 20 × 30 = ` 600
    ∵   Cost of 1 kg of basmati rice = ` 50
    ∴   Cost of 80 kg of basmati rice = 50 × 80 = ` 4000
        Total cost price = 6000 + 4000 = ` 10,000
        Weight of total mixed rice = 30 + 80 = 110 kg.
    ∵   S.P. of 1 kg of mixed rice = ` 90
    ∴   S.P. of 110 kg of mixed rice = 90 × 110 = ` 9,900
    ∵   C.P. > S.P.
    ∴   There will be loss.
    ∴   Loss = C.P. – S.P. = 10,000 – 9,900 = ` 100
    $$\text{Loss \%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{100}{10000} \times 100 = 1\%$$

So, his loss % is 1%.

10. ∵ C.P. of 1 dozen balloons = ` 9.60

∴ C.P. of 10 dozen balloons = 10×9.60 =` 96

$10 \text{ dozen} = 10 \times 12 \text{ things} = 120 \text{ things}$

∴ C.P. of 120 balloons = ` 96

No. of burst balloons = 6

No. of balloons rest = $120 - 6 = 114$

S.P. 1 balloon = `0.70

S.P. of 114 balloons = 114×0.70 =` 79.8

∵ C.P. (= 96) > S.P. (= 79.8)

∴ There will be loss.

Loss = C.P. – S.P. = $96 - 79.8$ = ` 16.2

∴ $\text{Loss \%} = \dfrac{\text{Loss}}{\text{C.P.}} \times 100 = \dfrac{16.2}{96} \times 100 = \dfrac{1620}{96} = \dfrac{135}{8} = 16\dfrac{7}{8}\%$

So, his loss % is $16\dfrac{7}{8}\%$.

MCQ's

1. a   **2.** a   **3.** b   **4.** a

15   Simple Interest

Exercise 15.1

1.

a. $I = \dfrac{P \times r \times t}{100} = \dfrac{5000 \times 10 \times 5}{100}$ = ` 2500

b. $I = \dfrac{P \times r \times t}{100} = \dfrac{4000 \times 8 \times 3}{100}$ = ` 960

c. $I = \dfrac{P \times r \times t}{100} = \dfrac{1200 \times 11 \times 13}{100 \times 2}$ = ` 858

d. $I = \dfrac{P \times r \times t}{100} = \dfrac{1500 \times 8 \times 3}{100 \times 2}$ = ` 180

e. $I = \dfrac{P \times r \times t}{100} = \dfrac{10000 \times 8 \times 5}{100 \times 2}$ = ` 2000

f. $I = \dfrac{P \times r \times t}{100} = \dfrac{5000 \times 15 \times 2}{100 \times 2}$ = ` 750

g. $I = \dfrac{P \times r \times t}{100} = \dfrac{500 \times 5 \times 3}{100 \times 2}$ = ` 37.5

h. $I = \dfrac{P \times r \times t}{100} = \dfrac{3000 \times 9 \times 3}{100 \times 2 \times 2}$ = ` 405

i. $I = \dfrac{P \times r \times t}{100} = \dfrac{6000 \times 15 \times 5}{100 \times 2 \times 2}$ = ` 1125