# Work andRemuneration

**Exercise**

**Solution 1:**

$$\text{Rate of work done by Nimesh} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{1 \text{ work}}{20 \text{ minutes}}$$
$$= \frac{1}{20} \text{ work / minute}$$

Thus, the rate of work done by Nimesh is $\frac{1}{20}$ work / minute.

**Solution 2:**

$$\text{Rate of work done by Rupali} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{1 \text{ work}}{15 \text{ days}}$$
$$= \frac{1}{15} \text{ work / day}$$

Thus, the rate of work done by Rupali is $\frac{1}{15}$ work / day.

**Solution 3:**

$$\text{Rate of work done by Nimesh} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{1 \text{ work}}{8 \text{ days}}$$
$$= \frac{1}{8} \text{ work / day}$$

Thus, the rate of work done by Nimesh is $\frac{1}{8}$ work / day.

**Solution 4:**

$$\text{Rate of work done by Rambhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{180 \text{ boxes}}{3 \text{ hours}}$$
$$= 60 \text{ boxes/hour}$$
$$\text{Rate of work done by Suresbhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{180 \text{ boxes}}{6 \text{ hours}}$$
$$= 30 \text{ boxes/hour}$$

$\therefore$ Combined rate of work done by Rambhai and Sureshbhai
= (60 + 30) boxes/hour
= 90 boxes/hour

Now, time taken to prepare 90 boxes = 1 hour

$\therefore$ Time taken to prepare 180 boxes $= \frac{180}{90} = 2$ hours

Thus, they will take 2 hours to do this work together.

## Solution 5:

$$\text{Rate of work done by Salimbhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{9000 \text{ cubic feet}}{30 \text{ hours}}$$
$$= 300 \text{ cubic feet/hour}$$
$$\text{Rate of work done by Junaidbhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{9000 \text{ cubic feet}}{45 \text{ hours}}$$
$$= 200 \text{ cubic feet/hour}$$

$\therefore$ Combined rate of work doneby Salimbhai and Junaidbhai
= (300 + 200) cubic feet/hour
= 500 cubic feet/hour

Now, time taken to saw 500 cubic feet = 1 hour

$\therefore$ Time taken to saw 9000 cubic feet $= \frac{9000}{500} = 18$ hours

Total remuneration paid is Rs. 3000.

$\therefore$ Remuneration per cubic feet $= \frac{\text{Total Remuneration}}{\text{Total volume in cubic feet}}$
$$= \frac{3000}{9000} = \frac{1}{3} \text{ rupees}$$

$\therefore$ Remuneration of Salimbhai $= 300 \times 18 \times \frac{1}{3} =$ Rs. 1800

And, remuneration of Junaidbhai $= 200 \times 18 \times \frac{1}{3} =$ Rs. 1200

Thus, Salimbhai will get a remuneration of Rs. 1800 and Junaidbhai will get a remuneration of Rs. 1200.

## Solution 6:

$$\text{Rate of work done by Shankarbhai} = \frac{\text{Work done}}{\text{Time taken}} = \frac{30 \text{ acres}}{10 \text{ hours}} = 3 \text{ acres/hour}$$

$$\text{Rate of work done by Yakubbhai} = \frac{\text{Work done}}{\text{Time taken}} = \frac{30 \text{ acres}}{15 \text{ hours}} = 2 \text{ acres/hour}$$

∴ Combined rate of work by Shankarbhai and Yakubbhai
= (3 + 2) acres/hour
= 5 acres/hour

Now, time taken to plough 5 acres of land = 1 hour

∴ Time taken to plough 30 acres of land $= \frac{30}{5} = 6$ hours

Total remuneration to plough 30 acres of land = Rs. 6000

$$\therefore \text{Remuneration to plough 1 acre of land} = \frac{\text{Total remuneration}}{\text{Total acres of land}} = \frac{6000}{30} = \text{Rs. } 200$$

∴ Remuneration of Shankarbhai = 3 x 6 x 200 = Rs. 3600
Remuneration of Yakubbhai = 2 x 6 x 200 = Rs. 2400

Thus, Shankarbhai will get Rs. 3600 and Yakubbhai will get Rs. 2400 as remuneration.

**Solution 7:**

$$\text{Rate of work done by Mariya} = \frac{\text{Work done}}{\text{Time taken}} = \frac{3000 \text{ cookers}}{100 \text{ days}} = 30 \text{ cookers/day}$$

$$\text{Rate of work done by Sofiya} = \frac{\text{Work done}}{\text{Time taken}} = \frac{3000 \text{ cookers}}{150 \text{ days}} = 20 \text{ cookers/day}$$

∴ Combined rate of work done by Mariya and Sofiya
= (30 + 20) cookers/day
= 50 cookers/day

Now, time taken to make 50 cookers = 1 day

∴ Time taken to make 3000 cookers $= \frac{3000}{50} = 60$ days

Total remneration for making 3000 cookers = Rs. 36,000

∴ Remuneration for making 1 cooker $= \frac{36000}{3000} =$ Rs. 12

∴ Remuneration of Mariya = 30 x 60 x 12 = Rs. 21, 600
Remuneration of Sofiya = 20 x 60 x 12 = Rs. 14, 400

Thus, Mariya obtained Rs. 21,600 and Sofiya obtained Rs. 14, 400 as remuneration.

**Solution 8:**

$$\text{Rate of work done by Ramjibhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{640 \text{ square feet}}{16 \text{ hours}}$$
$$= 40 \text{ square feet/hour}$$

$$\text{Rate of work done by Kanjibhai} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{640 \text{ square feet}}{20 \text{ hours}}$$
$$= 32 \text{ square feet/hour}$$

$\therefore$ Combined rate of work done by Ramjibhai and Kanjibhai
$= (40 + 32)$ square feet / hour
$= 72$ square feet/hour

Now, time taken to colour 72 square feet wall = 1 hour

$\therefore$ Time taken to colour 640 square feet wall $= \frac{640}{72} = \frac{80}{9}$ hours

Total remuneration for colouring 640 square feet = Rs. 5760

$\therefore$ Remuneration for colouring 1 square foot $= \frac{5760}{640}$ = Rs. 9

$\therefore$ Remuneration of Ramjibhai $= 40 \times \frac{80}{9} \times 9$ = Rs. 3200

Remuneration of Kanjibhai $= 32 \times \frac{80}{9} \times 9$ = Rs. 2560

Thus, Ramjibhai will get Rs. 3200 and Kanjibhai will get Rs. 2560 as remuneration.

**Solution 9:**

$$\text{Rate of work done by Dhara} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{2400 \text{ toys}}{20 \text{ days}}$$
$$= 120 \text{ toys / day}$$

$$\text{Rate of work done by Samitra} = \frac{\text{Work done}}{\text{Time taken}}$$
$$= \frac{2400 \text{ toys}}{30 \text{ days}}$$
$$= 80 \text{ toys / day}$$

$\therefore$ Combined rate of work done by Dhara and Samrita
$= (120 + 80)$ toys / day
$= 200$ toys / day

Now, time taken to make 200 toys = 1 day

$\therefore$ Time taken to make 2400 toys $= \frac{2400}{200} = 12$ days

Total remuneration for making 2400 toys = Rs. 12,000

$\therefore$ Remuneration for making 1 toy $= \frac{12000}{2400}$ = Rs. 5

$\therefore$ Remuneration of Dhara $= 120 \times 12 \times 5$ = Rs. 7200
Remuneration of Samira $= 80 \times 12 \times 5$ = Rs. 4800

Thus, Dhara will get Rs. 7200 and Samira will get Rs. 4800.

**Solution 10:**

$$\text{Rate of work done by Dipesh} = \frac{\text{Work done}}{\text{Time taken}} = \frac{360 \text{ scales}}{6 \text{ hours}} = 60 \text{ scales/hour}$$

$$\text{Rate of work done by Mustafa} = \frac{\text{Work done}}{\text{Time taken}} = \frac{360 \text{ scales}}{10 \text{ hours}} = 36 \text{ scales/hour}$$

$$\text{Rate of work done by Prakash} = \frac{\text{Work done}}{\text{Time taken}} = \frac{360 \text{ scales}}{15 \text{ hours}} = 24 \text{ scales/hour}$$

$\therefore$ Combined rate of work done by Dipesh, Mustafa and Prakash
$= (60 + 36 + 24)$ scales/hour
$= 120$ scales/hour

Now, time taken to make 120 scales = 1 hour

$\therefore$ Time taken to make 360 scales $= \frac{360}{120} = 3$ hours

Total remuneration for making 360 scales = Rs. 720

$\therefore$ Remuneration for making 1 scale $= \frac{720}{360} =$ Rs. 2

$\therefore$ Remuneration of Dipesh $= 60 \times 3 \times 2 =$ Rs. 360
Remuneration of Mustafa $= 36 \times 3 \times 2 =$ Rs. 216
Remuneration of Prakash $= 24 \times 3 \times 2 =$ Rs. 144

Thus, Dipesh will get Rs. 360, Mustafa will get Rs. 216 and Prakash will get Rs. 144 as remuneration.