

- UNIT METHOD**
1. A man rowing boat covers a distance of 7.5 km/h. What is the distance covered in 40 minutes?

Given Data:

Distance covered in 60 minutes = 7.5 km

To Find:

Distance covered in 40 minutes = ?

Solution:

∴ Unit method is a technique for solving problems by first finding the value of a single unit and then finding the necessary value by multiplying the single unit value.

→ Distance covered in 60 minutes = 7.5 km

Distance covered in 1 minute = $\frac{7.5}{60}$

$$= \frac{75}{60 \times 10} = \frac{75}{600}$$

$$= \frac{81}{408} = \frac{1}{8} \text{ km}$$

Distance covered in 40 minutes = $\frac{1}{8} \times 40$

$$= 5 \text{ km}$$

Hence, the distance covered in 40 minutes is 5 km.

2. Eman can pack 6 cartons in h days. At this rate she can pack 3h in how many days?

Given Data:

Eman can pack 6 cartons = h days

To Find:
Eman can pack 3h in how many days = ?

Solution:
∴ Unit method is a technique for solving problems by first finding the value of a single unit and then finding the necessary value by multiplying the single unit.
→ Eman can pack 6 cartons = h days
She can pack 1 carton = $\frac{h}{6}$ days

$$\begin{aligned} \text{She can produce 3h in days} &= \frac{h \times 3h}{6} \\ &= \frac{h^2}{2} \text{ days} \end{aligned}$$

Eman can produce 3h cartons in $\frac{h^2}{2}$ days.

3. Ahmed reads 24 pages of a book in 15 minutes. No. of pages read per minute will be?

Given Data:

In 15 minutes, Ahmed reads = 24 pages

To Find:

Number of pages read per minute = ?

Solution:

$$\begin{aligned} \text{Number of pages read in 15 minutes} &= 24 \\ \text{Number of pages read per minute} &= \frac{24}{15} \\ &= \frac{8}{5} \end{aligned}$$

Ahmed reads 1.6 page per minute. = 1.6 Page

4. Ali can type at a speed of 25 words per minute. How many words he can type in one hour?

Given Data:

Ali can type words per minute = 25 words

To Find:

Number of words Ali can type in one hour = ?

Solution:

Words Ali can type words in one hour =
 $\because 1 \text{ hr} = 60 \text{ minutes}$

\rightarrow Ali can type words in 60 minutes = 25×60
 $= 1500 \text{ words}$

Therefore, Ali can type 1500 words in one hour.

5. A motorcycle travels 200 km in 1 hour, how many minutes it would take him to travel 120 km?

Given Data:

Distance 200 km travelled = 1 hour = 60 minutes

To Find:

120 km can be travelled in minutes = ?

Solution:

200 km is travelled = 60 minutes

1 km will be travelled = $\frac{60}{200} = \frac{3}{10}$ minutes

120 km can be travelled = $\frac{3}{10} \times 120$

= 36 minutes

Motorcycle will take 36 minutes to travel 120 km.

6. The cost of 114 books is Rs. 456.
What is the cost of 60 books = ?

Given Data:

Cost of 114 books = Rs. 456

To Find:

Cost of 60 books = ?

Solution:

∴ Unit method is a technique for solving problems by first finding the value of a single unit and then finding the necessary value by multiplying the single unit value.

→ Cost of 114 books = Rs. 456

Cost of 1 book = $\frac{456}{114}$ = Rs. 4

Cost of 60 books = 60×4
= Rs. 240

The cost of 60 books will be Rs. 240.

7. If 12 boys earn Rs. 240, then how many boys will earn 420?

Given Data:

Rs. 240 earned by = 12 boys

To Find:

Rs. 420 will be earned by how many boys = ?

Solution

Rs. 240 earned by = 12 boys

Rs. 1 earned = $\frac{12}{240}$ = $\frac{1}{20}$ boys

Rs. 420 will be earned = $\frac{1}{20} \times 420$

= 21 boys
21 boys will earn Rs. 420.

8. A car is travelling with a speed of 50 km/h, how much time will it take to cover 30 km distance?

Given Data:

Car covered 50 km = 1 hour = 60 minutes

To Find:

Time taken to cover 30 km = ?

Solution:

50 km covered = 60 minutes

1 km covered = $\frac{60}{50} = \frac{6}{5} = 1.2$ minutes

30 km covered = 30×1.2
= 36 minutes

Car will take 36 minutes to cover 30 km distance.

9. Asim can type at an average rate of 12 pages per hour. At this rate, how long will it take Asim to type 100 pages?

Given Data:

Asim can type pages per hour = 12 pages

To Find:

Time to type 100 pages = ?

9. Asim can type at an average rate of 12 pages per hour. At this rate, how long will it take Asim to type 100 pages?

Given Data:

Asim can type 12 pages = 1 hour = 60 minutes

To Find:

Time to type 100 pages = ?

Solution:

12 Pages typed = 60 minutes

1 Page typed = $\frac{60}{12} = 5$ minutes

100 Pages typed = $100 \times 5 = 500$ minutes
= 8 hours and 20 minutes

\because 1 hour = 60 minutes

Asim will type 100 pages in 8 hours and 20 minutes

10. If a person can save Rs. 380 in 5 weeks, in how many weeks at the same, can the person save 2.6 times this amount?

Given Data:

Person can save Rs. 380 = 5 weeks

To Find:

Person can save 2.6 times given amount = ?

Solution:

Person can save Rs. 380 = 5 weeks

Person can save Rs. 1 = $\frac{5}{380} = \frac{1}{76}$ weeks

$$2.6 \text{ times of Rs. } 380 = 2.6 \times 380$$

$$= \text{Rs. } 988$$

$$\rightarrow \text{Person can Rs. } 988 = 988 \times \frac{1}{76}$$

The person can save ^{= 13 weeks} 2.6 times of Rs. 380 in 13 weeks.

11. If $\frac{3}{7}$ of a bucket can be filled in 1 minute, how many minutes will it take to fill the rest of the bucket?

Given Data:

$\frac{3}{7}$ part of a bucket can be filled = 1 min.

Minutes to fill the rest of the bucket = ?

$\frac{3}{7}$ part can be filled = 1 minute

$$1 \text{ part can be filled} = \frac{1}{\frac{3}{7}} = 1 \times \frac{7}{3}$$

$$= \frac{7}{3} \text{ minutes}$$

Let '1' be the total part.

$$\text{Rest part of the bucket} = 1 - \frac{3}{7}$$

$$= \frac{7-3}{7} = \frac{4}{7}$$

$$\rightarrow \frac{4}{7} \text{ can be filled} = \frac{4}{7} \times \frac{7}{3}$$

$$= \frac{4}{3}$$

$$= 1.33 \text{ minutes}$$

Therefore, it will take 1.33 minutes to fill the rest of the bucket.

12. It takes 5 complete turns of the crank to raise a fishing rod hook 2 feet. At this rate, how many turns will it take to raise the hook 4.4 feet?

Given Data:

2 feet rise in fishing rod hook = 5 turns

To Find:

Turns to raise the hook 4.4 feet = ?

Solution:

To raise a fishing rod hook 2 feet = 5 turns

To raise a fishing rod hook 1 foot = $\frac{5}{2}$ turns

To raise the hook 4.4 feet = $\frac{5}{2} \times 4.4$

$$= \frac{5}{2} \times \frac{44}{10} = 11$$

= 11 turns

It will take 11 turns to raise the hook 4.4 feet.

13. If A can type 10 pages in 5 min and B can type 5 pages in 10 min, then working together how many pages can they type in 30 minutes?

Given Data:

A can type in 5 minutes = 10 pages

B can type in 10 minutes = 5 pages

To Find:

Both A and B together type in 30 minutes = ?

Solution:

'A' can type in 5 minutes = 10 pages

'A' can type in 1 minute = $\frac{10}{5}$

= 2 pages

'B' can type in 10 minutes = 5 pages

'B' can type in 1 minute = $\frac{5}{10}$

= $\frac{1}{2}$ = 0.5 page

Both 'A' and 'B' working together can type in 1 minute = $2 + 0.5$

= 2.5 pages

Both 'A' and 'B' working together can type in 30 minutes = 30×2.5

= 75 pages.

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