



#### Time and Work Ex 11.1 Q25

**Answer :**

Pipe A can fill the tank in 10 hours, and pipe B can fill the tank in 15 hours.

∴ In 1 hour, A can fill  $\frac{1}{10}$  th part of the tank.

In 1 hour, B can fill  $\frac{1}{15}$  th part of the tank.

∴ In 1 hour, A and B can fill  $\left(\frac{1}{10} + \frac{1}{15}\right)$

$= \frac{3+2}{30} = \frac{5}{30} = \frac{1}{6}$  th part of the tank

∴ In 4 hours, A and B can fill  $\left(\frac{1}{6} \times 4\right) = \frac{2}{3}$  rd part of the tank

Remaining part of the tank  $= 1 - \frac{2}{3} = \frac{1}{3}$

Now, A can fill the tank in 10 hours.

∴  $\frac{1}{3}$  rd part of the tank can be filled by A in  $\left(\frac{1}{3} \times 10\right)$  hours or  $\frac{10}{3}$  hours or  $3\frac{1}{3}$  hours.

#### Time and Work Ex 11.1 Q26

**Answer :**

When there is no leakage, the pipe can fill the cistern in 10 hours.

Thus, the pipe can fill  $\frac{1}{10}$  th part of the cistern in 1 hour.

When there is leakage, the pipe can fill the cistern in 12 hours.

Therefore, in case of leakage, the pipe can fill  $\frac{1}{12}$  th part of the cistern in 1 hour.

Thus, in one hour, due to leakage,  $\left(\frac{1}{10} - \frac{1}{12}\right)$  th or  $\frac{1}{60}$  th part of the cistern is emptied.

Hence, the cistern will be emptied by the leakage in 60 hours.

#### Time and Work Ex 11.1 Q27

**Answer :**

Time taken by tap A to fill the cistern = 12 hours

Time taken by tap B to fill the cistern = 15 hours

Let C be the outlet that can empty the cistern in 10 hours.

Time taken by tap C to empty the cistern = 10 hours

Now,

Tap A fills  $\frac{1}{12}$  th part of the cistern in 1 hour.

Tap B fills  $\frac{1}{15}$  th part of the cistern in 1 hour.

Tap C empties out  $\frac{1}{10}$  th part of the cistern in 1 hour.

Thus, in one hour,  $\left(\frac{1}{12} + \frac{1}{15} - \frac{1}{10}\right)$  th part of the cistern is filled.

We have :

$$\frac{1}{12} + \frac{1}{15} - \frac{1}{10} = \frac{10+8-12}{120} = \frac{6}{120} = \frac{1}{20}$$

Thus, in 1 hour,  $\frac{1}{20}$  th part of the cistern is filled.

Hence, the cistern will be filled completely in 20 hours if all the three taps are opened together.

#### Time and Work Ex 11.1 Q28

**Answer :**

Time taken by the tap to fill the cistern = 4 hours

$\therefore$  Tap fills  $\frac{1}{4}$  th part of the cistern in 1 hour.

Time taken by the pipe to empty the cistern = 6 hours

$\therefore$  Pipe empties out  $\frac{1}{6}$  th part of the cistern in 1 hour.

Thus, in 1 hour,  $\left(\frac{1}{4} - \frac{1}{6}\right)$  th part of the cistern is filled.

We have :

$$\frac{1}{4} - \frac{1}{6} = \frac{6-4}{24} = \frac{2}{24} = \frac{1}{12}$$

Thus, in 1 hour,  $\frac{1}{12}$  th part of the cistern is filled.

Hence, the cistern will be filled in 12 hours.

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