Exercise 13B

Q1.

Answer :

(b) 6 days

A can do a work in 10 days.
A's 1 day work $= \frac{1}{10}$
B can do a work in 15 days.
B's 1 day work $= \frac{1}{15}$
$\left(A+B\right)$'s 1 day work $= \frac{1}{10}+\frac{1}{15}=\frac{5}{30}=\frac{1}{6}$
A and B together will take 6 days to complete the work.

Q2.

Answer :

(c) $7\frac{1}{2}$ ***days***

A man can do a work in 5 days.
The man's 1 day work $= \frac{1}{5}$
The man and the son can do the work in 3 days.
The man and his son's 1 day work $= \frac{1}{3}$
Let the son's 1 day work be $\frac{1}{x}$.
Therefore,
$\frac{1}{3}=\frac{1}{5}+\frac{1}{x}$
or, $\frac{1}{x}=\frac{1}{3}-\frac{1}{5}=\frac{5-3}{15}=\frac{2}{15}$
$x = \frac{15}{2} = 7\frac{1}{2}$ days

Q3.

Answer :

(d) 48 days

A can do a job in 16 days.
B can do the job in 12 days.
Suppose C can do the job in x days.
A's 1 day work $= \frac{1}{16}$
B's 1 day work $= \frac{1}{12}$
C's 1 day work $= \frac{1}{x}$
A, B and C together can complete the work in 6 days.
$\left(A+B+C\right)$'s 1 day work $= \frac{1}{6}$
Therefore, $\frac{1}{6}=\frac{1}{16}+\frac{1}{12}+\frac{1}{x}$

$\Rightarrow \frac{1}{x} = \frac{1}{6} - \frac{1}{16} - \frac{1}{12} = \frac{8-3-4}{48} = \frac{1}{48}$

$x = 48$

Therefore, C alone can complete the job in 48 days.

Q4.

Answer :

(a) 30 days

Let B take x days to complete the work.

Then A takes $\left(x + \frac{50}{100}x\right) = 1.5x$

A's 1 day's work $= \frac{1}{1.5x} = \frac{2}{3x}$

B's 1 day's work $= \frac{1}{x}$

$(A+B)$ *takes 18 days to complete the work.*

$(A+B)$*'s 1 day's net work* $= \frac{1}{18}$

or $\frac{1}{18} = \frac{2}{3x} + \frac{1}{x}$

$\Rightarrow \frac{1}{18} = \frac{5}{3x}$

By cross − multiplication, we get :

$x = 30$ *days*

$\therefore$ *B alone will take 30 days to complete the work.*

Q5.

Answer :

(c) 36 days

Let A take x days to complete the work. Then B takes $2x$ days to complete the work.

A's 1 day's work $= \frac{1}{x}$

B's 1 day's work $= \frac{1}{2x}$

A and B take 12 days to complete the work.

Net work done by $(A+B)$ in 1 day $= \frac{1}{12} = \frac{1}{x} + \frac{1}{2x} = \frac{3}{2x}$

$\Rightarrow 2x = 36$

$\Rightarrow x = 18$

A can complete the work by himself in 18 days.

B will take 36 days, i.e., twice as long as the time taken by A.

********** END **********