

EXERCISE 7C

1. A can do a piece of work in 6 days and B can do it in 8 days. How long will they take to complete it together?

Solution:

It is given that

A can do a piece of work in 6 days

So A's one day work = $\frac{1}{6}$

B can do the same work in 8 days

So B's one day work = $\frac{1}{8}$

Here A and B one day work = $\frac{1}{6} + \frac{1}{8}$

By taking LCM

$$= \frac{(4 + 3)}{24}$$

$$= \frac{7}{24}$$

Similarly A and B can do the same work = $\frac{24}{7} = 3 \frac{3}{7}$ days

2. A and B working together can do a piece of work in 10 days. B alone can do the same work in 15 days. How long will A alone take to do the same work?

Solution:

It is given that

A and B work together to do a piece of work in 10 days

B alone can do the same work in 15 days

So we get

A and B one day work = $\frac{1}{10}$

B's one day work = $\frac{1}{15}$

A's one day work = $\frac{1}{10} - \frac{1}{15}$

Taking LCM

$$= \frac{(3 - 2)}{30}$$

$$= \frac{1}{30}$$

No. of days A can do the same work = 30 days

3. A can do a piece of work in 4 days and B can do the same work in 5 days. Find, how much work can be done by them working together in:

(i) one day

(ii) 2 days.

What part of work will be left, after they have worked together for 2 days?

Solution:

It is given that

A can do a piece of work in 4 days

B can do the same work in 5 days

A's one day work = $\frac{1}{4}$

B's one day work = $\frac{1}{5}$

(i) A and B both one day work = $\frac{1}{4} + \frac{1}{5}$

Taking LCM

$$= \frac{(5 + 4)}{20}$$

$$= \frac{9}{20}$$

(ii) A and B two days' work = $9/20 \times 2 = 9/10$

So the work left after 2 days = $1 - 9/10$

Taking LCM
= $(10 - 9)/10$
= $1/10$

4. A and B take 6 hours and 9 hours respectively to complete a work. A works for 1 hour and then B works for two hours.

(i) How much work is done in these 3 hours?

(ii) How much work is still left?

Solution:

It is given that

A takes 6 hours to finish the work

B takes 9 hours to finish the work

A's 1 hour work = $1/6$

B's 1 hour work = $1/9$

B's 2 hour work = $1/9 \times 2 = 2/9$

(i) A's 1 hour work + B's 2 hours' work = $1/6 + 2/9$

By taking LCM

= $(3 + 4)/18$
= $7/18$

(ii) The work still left = $1 - 7/18$

Taking LCM

= $(18 - 7)/18$
= $11/18$

5. A, B and C can do a piece of work in 12, 15 and 20 days respectively. How long will they take to do it working together?

Solution:

A can do a piece of work in 12 days

B can do a piece of work in 15 days

C can do a piece of work in 20 days

A's one day work = $1/12$

B's one day work = $1/15$

C's one day work = $1/20$

So A, B and C's together one day work = $1/12 + 1/15 + 1/20$

Taking LCM

= $(5 + 4 + 3)/60$
= $12/60$
= $1/5$

Hence, they can do the work in 5 days.

6. Two taps can fill a cistern in 10 hours and 8 hours respectively. A third tap can empty it in 15 hours. How long will it take to fill the empty cistern, if all of them are opened together?

Solution:

It is given that

First tap can fill a cistern in 10 hours

Second tap can fill a cistern in 8 hours

Third tap can empty the cistern in 15 hours

First tap's one hour work = $1/10$

Second tap's one hour work = $1/8$

Third tap's one hour work = $1/15$

Here if all the taps are opened together then their one hour work = $1/10 + 1/8 - 1/15$

Taking LCM

$$= (12 + 15 - 8)/120$$

So we get

$$= (27 - 8)/120$$

$$= 19/120$$

All the taps can fill the cistern in = $120/19$ hours = $6 \frac{6}{19}$ hours

7. Mohit can complete a work in 50 days, whereas Anuj can complete the same work in 40 days.

Find:

(i) work done by Mohit in 20 days.

(ii) work left after Mohit has worked on it for 20 days.

(iii) time taken by Anuj to complete the remaining work.

Solution:

It is given that

Mohit can complete a work in 50 days

Anuj can complete the same work in 40 days

Mohit's one day work = $1/50$

Anuj's one day work = $1/40$

(i) Work done by Mohit in 20 days = $1/50 \times 20 = 2/5$

(ii) Work left after Mohit has worked on it for 20 days = $1 - 2/5 = (5 - 2)/5 = 3/5$

(iii) Time taken by Anuj to complete the remaining work = $40 \times 3/5$ days = 24 days

8. Joseph and Peter can complete a work in 20 hours and 25 hours respectively.

Find:

(i) work done by both together in 4 hrs.

(ii) work left after both worked together for 4 hrs.

(iii) time taken by Peter to complete the remaining work.

Solution:

Time taken by Joseph to complete a work = 20 hours

Time taken by Peter to complete a work = 25 hours

Joseph's one hour work = $1/20$

Peter's one hour work = $1/25$

So both Joseph' and Peter's work in one hour = $1/20 + 1/25$

Taking LCM

$$= (5 + 4)/100$$

$$= 9/100$$

(i) Work done by both together in 4 hrs = $9/100 \times 4 = 9/25$

(ii) Work left after both worked together for 4 hrs = $1 - 9/25$

Taking LCM

$$= (25 - 9)/25$$

$$= 16/25$$

(iii) Time taken by Peter to complete the remaining work = $25 \times 16/25 = 16$ hours

9. A is able to complete 1/3 of a certain work in 10 hrs and B is able to complete 2/5 of the same work in 12 hrs.

Find:

(i) how much work can A do in 1 hour?

(ii) how much work can B do in 1 hour?

(iii) in how much time will the work be completed, if both work together?

Solution:

It is given that

A can complete 1/3 of a certain work in 10 hours

Time in which A can do full work = $(10 \times 3)/1 = 30$ hours

B can complete 2/5 of a certain work in 12 hours

Time in which B can do full work = $(12 \times 5)/2 = 30$ hours

(i) Work done by A in 1 hour = $1/30$

(ii) Work done by B in 1 hour = $1/30$

(iii) Work done by both in 1 hour = $1/30 + 1/30 = 2/30 = 1/15$

Hence, both can finish the work in 15 hours.

10. Shaheed can prepare one wooden chair in 3 days and Shaif can prepare the same chair in 4 days. If they work together, in how many days will they prepare:

(i) one chair?

(ii) 14 chairs of the same kind?

Solution:

Work done by Shaheed in one day = $1/3$

Work done by Shaif in one day = $1/4$

So the work done by both in 1 day = $1/3 + 1/4$

By taking LCM

$$= (4 + 3)/12$$

$$= 7/12$$

So both can prepare the chair in $12/7 = 1 \frac{5}{7}$ days

We know that

One chair can be prepared in $1 \frac{5}{7}$ days

So 14 chairs can be prepared in = $12/7 \times 14 = 24$ days

11. A, B and C together finish a work in 4 days. If A alone can finish the same work in 8 days and B in 12 days, find how long will C take to finish the work.

Solution:

It is given that

A, B and C together finish the work in 4 days

Work done by A, B and C together in 1 day = $\frac{1}{4}$

A's one day work = $\frac{1}{8}$

B's one day work = $\frac{1}{12}$

C's one day work = $\frac{1}{4} - (\frac{1}{8} + \frac{1}{12})$

By taking LCM

= $(6 - [3 + 2]) / 24$

= $\frac{1}{24}$

Hence, C can finish the work in 24 days.



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