EXERCISE 7C   **PAGE: 92**

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 = 1/6
B can do the same work in 8 days
So B's one day work = 1/8
Here A and B one day work = 1/6 + 1/8
By taking LCM
= (4 + 3)/ 24
= 7/24
Similarly A and B can do the same work = 24/7 = 3 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 along 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 = 1/10
B's one day work = 1/15
A's one day work = 1/10 – 1/15
Taking LCM
= (3 – 2)/ 30
= 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 = ¼
B's one day work = 1/5

(i) A and B both one day work = ¼ + 1/5
Taking LCM
= (5 + 4)/ 20
= 9/ 20

(ii) A and B two days' work = 9/20 × 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 × 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 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 × 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 × 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 × 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 × 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 × 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 × 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 = ¼
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 5/7 days
We know that
One chair can be prepared in 1 5/7 days
So 14 chairs can be prepared in = 12/7 × 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 = ¼
A's one day work = 1/8
B's one day work = 1/12
C's one day work = ¼ - (1/8 + 1/12)
By taking LCM
= (6 – [3 + 2])/ 24
= 1/24

Hence, C can finish the work in 24 days.