5. A worker can complete a project in 12 hours. His colleague does it in 8 hours. A third worker can do the same in 16 hours. The first two start working together. After 4 hours, the second worker leaves, and the third one takes over. How long will it take to complete the project?

Sol:

①
$$P(A) + P(B) + P(c) = P(A+B+c)$$

Worker A 12 hours $\frac{1}{12}$

Worker B 8 hours $\frac{1}{8}$

Worker (c) 16 hours $\frac{1}{16}$

② Combine task of H hours of A/B

③
$$\frac{a\;4+}{A}\;\frac{4}{B} = \frac{1}{3} + \frac{1}{2}$$

⑤
$$\frac{2}{6} + 2 = \boxed{\frac{4}{6}}$$

④ LCM

2	3, 2
3	3, 1
	1, 1

$3 \times 2 = 6$

⑥ So, after 4 hours $\frac{5}{6}$

hours work done

⑦ Finding the remaining work $= 1 - \frac{5}{6} = \boxed{\frac{1}{6}}$

$$\frac{1}{12} + \frac{1}{16} =$$

⑨
$$\frac{4+3}{48} = \boxed{\frac{7}{48}}$$

⑩ Simplication

⑧ LCM

2	12, 16
2	6, 8
2	3, 4
2	3, 2
3	3, 1
	1, 1
	48

⑪ Final time

$$\frac{1}{6} \div \frac{7}{48}$$

$$\frac{1}{6} \times \frac{48}{7} = \boxed{\frac{8}{7}}$$

Thus, the work will take $\frac{8}{7}$ hours to be comple

35.

In short, total time taken in both the phases:

First phase $\dfrac{4}{6}$ hours

Second phase $\dfrac{8}{7}$ hours

simplify and write the final answer in the form of statements.