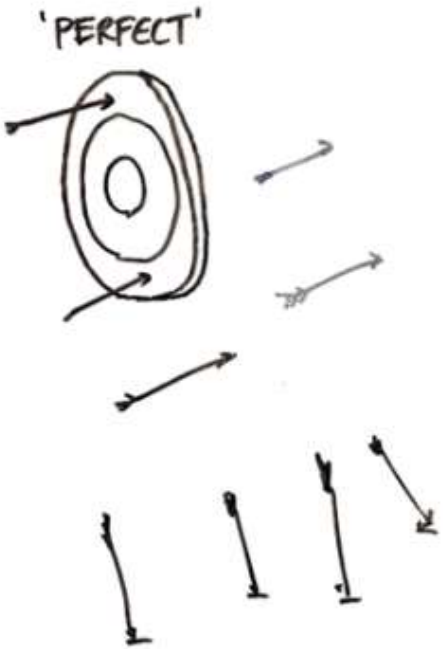
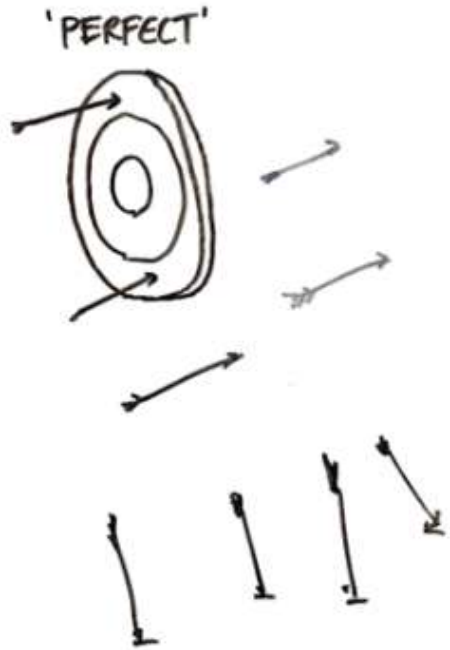
- Practice:

1. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?
2. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?
3. If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be?
4. A does 80% of a work in 20 days. He then calls in B and they together finish the remaining work in 3 days. How long B alone would take to do the whole work?

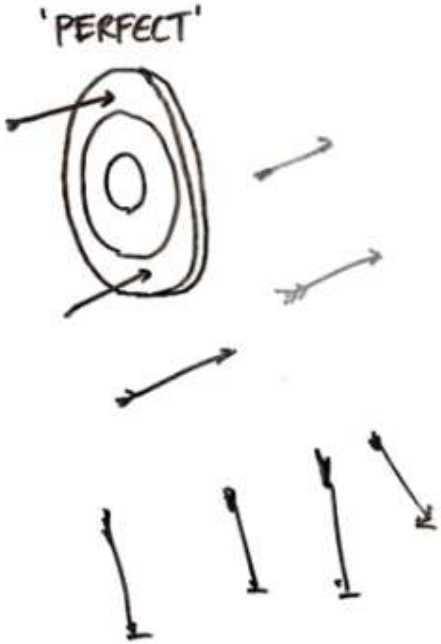


- Practice:
  5. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?
  6. 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?
  7. Ravi and Kumar are working on an assignment. Ravi takes 6 hours to type 32 pages on a computer, while Kumar takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?



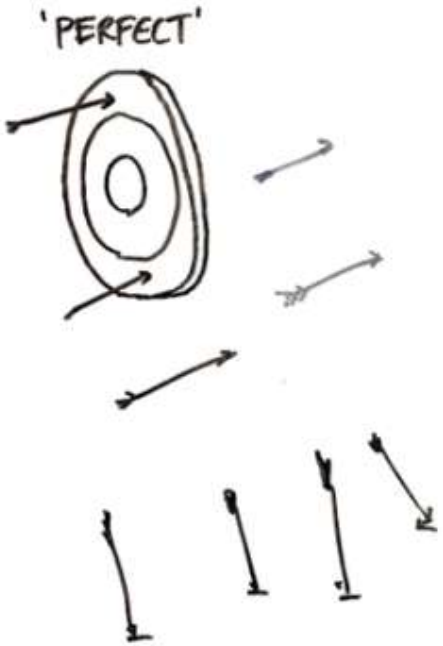
- Practice:

1. Pooja is twice as efficient as Aarti and takes 90 days less than Aarti to complete the job. Find the time in which they can finish the job together.
2. 4 men and 5 boys can do a piece of work in 20 days while 5 men and 4 boys can do the same work in 16 days. In how many days can 4 men and 3 boys do the same work?
3. It is observed that the pipe A can fill the tank in 15 hrs and the same tank is filled by pipe B in 20 hrs. The third pipe C can vacant the tank in 25 hrs. If all the pipes get opened initially and after 10 hrs, the pipe C is closed, then how long will it take to fill the tank?
4. Two pipes A & B can fill a tank in 5 min & 10 min respectively. Both the pipes are opened together but after 2 min, pipe A is turned off. What is the total time required to fill the tank?
5. A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in?



- Practice:

6. A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?
7. P can complete a work in 12 days working 8 hours a day. Q can complete the same work in 8 days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work?
8. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is:
9. A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days?
10. X can do a piece of work in 40 days. He works at it for 8 days and then Y finished it in 16 days. How long will they together take to complete the work?



Time and work

1. A : $\frac{1}{20}$ B : $\frac{1}{30}$ C : $\frac{1}{60}$

1 & 2 : work = $2 \times \frac{1}{20} = \frac{1}{10}$

3 : A, B & C = W = $\frac{1}{20} + \frac{1}{30} + \frac{1}{60} = \frac{1}{10}$

Total work = $\frac{1}{10} + \frac{1}{10} = \frac{1}{5}$

$5 \times 3 = 15$ days

2. A = $\frac{1}{6}$ B = $\frac{1}{8}$

A + B + C = $\frac{1}{3}$ per day

C rate : $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{24}$ per day

$\frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1$

C share : $\frac{1}{8} \times 3200 = 400$

3. $6m + 8b = \frac{1}{10} \times 6$ $36m + 48b = \frac{1}{2}$

$36m + 48b = \frac{3}{5}$

$16m = \frac{1}{10}$, $m = \frac{1}{100}$

$b = \frac{1}{200}$

$W = 75 \times \frac{1}{100} + 20 \times \frac{1}{200} = \frac{1}{4}$ per day

4 days

4] 80% in 20 days ⇒ 4% per day ⇒ $\frac{1}{25}$ days

$A+B = \frac{20\%}{3} = \frac{1}{15}$ per day

$1/15 - 1/25 = 2/25$ per day

$B = \frac{75}{2} = 37.5$ days

5) $B = 10 \times \frac{1}{15} = \frac{2}{3}$

$W = 1 - \frac{2}{3} = \frac{1}{3}$ $A = \frac{1/3}{1/18} = 6$ days

26 Sunday

Week 48

6] 10 women : $1/7$ ⇒ 1 woman = $1/70$ per day

10 children : $1/14$ ⇒ 1 child = $1/140$ per day

Combined rate : $5 \times \frac{1}{70} + 10 \times \frac{1}{140} = \frac{1}{14} + \frac{1}{14} = \frac{1}{7}$ per day

Time : 7

7) Typing rates

Ravi : $\frac{32}{6} = \frac{16}{3}$ Kumar : $\frac{40}{5} = 8$ pages

Combine rate

$\frac{16}{3} + 8 = \frac{40}{3}$ pages/hr

Time $= \frac{110}{40/3} = 8.25$ hrs

1] AT – x days pooja time = x – 90 days

Efficient ratio = 2:1 Time = 1:2

$x - 90 = \frac{x}{2} \Rightarrow x = 180$

$\frac{1}{90} + \frac{1}{180} = \frac{1}{60}$ per day

Time : 60 days

2] $4m + 5b = 1/20$ $5m + 4b = 1/16$

$20m + 25b = \frac{1}{4}$

$20m + 16b = 1/4$

$9b = 0 \Rightarrow b = 0$

$m = \frac{3}{400}$, $b = \frac{1}{400}$

Rate $= 4 \times \frac{3}{400} + 3 \times \frac{1}{400} = \frac{15}{400} = \frac{3}{80}$ per day

$\frac{80}{3} \approx 26.67$ days

3] A : $\frac{1}{15}$ B : $\frac{1}{20}$ C : $-\frac{1}{25}$

$\frac{1}{15} + \frac{1}{20} - \frac{1}{25} = \frac{23}{300}$

$T = \frac{7/30}{1/15 + 1/20} = \frac{7/30}{7/60} = 2h$

Total : 10 + 2 = 12 hrs

$W = 10 \times \frac{23}{300} = \frac{23}{50}$

$W = 1 - \frac{23}{30} = \frac{7}{30}$

4] A : $\frac{1}{5}$ B : $\frac{1}{10}$

$2 \times \left(\frac{1}{5} + \frac{1}{10}\right) = \frac{3}{3}$

$1 - \frac{3}{5} = \frac{2}{5}$

$\frac{2/5}{1/10} = 4$ min Total time : $2 + 4 = 6$ min

5] $B = \frac{1}{9}$ $C = \frac{1}{12}$

Work done $= 3 \times \left(\frac{1}{9} + \frac{1}{12}\right) = \frac{7}{12}$

$1 - \frac{7}{12} = \frac{5}{12}$

Time $= \frac{5/12}{1/24} = 10$ days

6] $A = x$ $B = 2x$ $C = 4x$

$x + 2x + 4x = 7x = \frac{1}{5}$ per hour $\Rightarrow x = \frac{1}{35}$

Time $= \frac{1}{1/35} = 35$ hours

7] $P = 12 \times 8 = 96$

$Q = 8 \times 10 = 80$

$\frac{1}{96} + \frac{1}{80} = \frac{11}{480}$

$8 \times \frac{11}{480} = \frac{11}{60}$

$\frac{60}{11} \approx 5.45$ days

8] Tanya = 1.25x Sarthak

Time ratio = $\frac{1}{1.25} = \frac{4}{5}$

Tanya time = $20 \times \frac{4}{5}$ = 16 days

9] B = x days A = $\frac{x}{1.3}$

A time = 23 days

Combined rate = $\frac{1}{23} + \frac{1}{29.9} \approx 0.0435 + 0.0324 = 0.0759$

Time = $\frac{1}{0.0760} \approx$ 13 days

10] total work = 1

x rate = $\frac{1}{40}$ day

work done by x in 8 days = $8 \times \frac{1}{40} = \frac{1}{5}$

Remaining work = $\frac{4}{5}$ 16 days ⇒ y's route.

$\frac{4/5}{16} = \frac{1}{20}$ per day

Combined rate = $\frac{1}{40} + \frac{1}{20} = \frac{3}{40}$ Per day

Time = $\frac{1}{3/40} = \frac{40}{3} \approx 13.33$ days