

TIME AND WORK



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CONCEPT

- A CAN FINISH WORK IN = 16 DAYS
- 1 DAY WORK OF A IS = $1/16$
- 13 DAYS WORK OF A IS = $13/16$
- REMAINING WORK AFTER 13 DAYS = $1 - 13/16$
= $3/16$

QUESTION

Q. A can do a piece of work in 10 days . B can do it in 15 days. How many days will both of them take to complete the work together ?

EXPLANATION

A = 10 Days , 1 day work = $1/10$

B = 15 Days , 1 day work = $1/15$

1 Day work of both A and B = $[(1/10) + (1/15)]$

Let work complete in X days

$[(1/10) + (1/15)] \text{ X} = 1$

X = 6 Days

RRB JE-2015

Q. A and B undertake to do a piece of work for Rs. 300. A alone can do it in 15 days and B alone can do it in 10 days. Both are working together and finish the work. What is the share of A and B ?

EXPLANATION

A = 15 Days , 1 day work = $1/15$

B = 10 Days , 1 day work = $1/10$

Total Amount = 300 Rs.

A : B = $1/15 : 1/10$

A : B = 2 : 3

$S_A = 2/5 \times 300 = 120$ Rs.

$S_B = 3/5 \times 300 = 180$ Rs.

RRB JE-2015

Q. A is 4 times as efficient as B and takes 15 days less than B to finish of a work. A and B are working together. In how many days is the work completed?

EXPLANATION

$$A = 4B$$

$$A = X \text{ days then } B = 4X$$

$$4X - X = 15$$

$$X = 5 \text{ Days}$$

$$A = 5 \text{ days}$$

$$B = 20 \text{ days}$$

$$[(1/5) + (1/20)] Y = 1$$

$$Y = 4 \text{ Days}$$

NTPC-2010

Q. B takes 3 times as long as A and C together take to do a work. If A,B and C all three together can do the work in 10 days then B alone will take how many days?

EXPLANATION

A , B , C = days

$$\mathbf{3/B = [(1/A) + (1/C)]}$$

$$\mathbf{1/A + 1/B + 1/C = 1/10}$$

$$\mathbf{3/B + 1/B = 1/10}$$

$$\mathbf{B = 40 \text{ Days}}$$

ONGC-2010

Q. A can do a piece of work in 12 days . B can do it in 16 days. In how many days when the work be done if A and B are working alternate days started by “A” ?

EXPLANATION

$$A = 12, B = 16$$

$$1^{\text{st}} \text{ day A will come} = 1/12$$

$$2^{\text{nd}} \text{ day B will come} = 1/16$$

$$2 \text{ days work of A and B} = 1/12 + 1/16 = 7/48$$

$$2 \times 6 = 12 \text{ days work of A and B} = 7/48 \times 6 = 42/48$$

$$\text{After 12 Days Remaining work} = 1 - 42/48 = 6/42$$

$$13^{\text{th}} \text{ day A will come} = 6/42 - 1/12 = 1/24$$

$$14^{\text{th}} \text{ day B will come :-}$$

$$\text{Time} = \text{Remaining work} / \text{Rate of doing capacity}$$

$$= (1/24) / (1/16) = 2/3 \text{ days}$$

$$\text{Total} = 13 \frac{2}{3} \text{ days}$$

IB-2014

Q. A,B and C can do a piece of work in 10,12 and 15 days, respectively.

Maximum 2 persons are allowed to work on any single day with no two consecutive days having same pair of people repeated. Then minimum number of days in which work will be done?

EXPLANATION

$$A = 10, B = 12, C = 15$$

$$(A + B) = 1/10 + 1/12 = 11/60$$

$$(A + C) = 1/10 + 1/15 = 10/60$$

$$(B + C) = 1/12 + 1/15 = 9/60$$

$$1^{\text{st}} \text{ day } (A + B) \text{ will come} = 11/60$$

$$2^{\text{nd}} \text{ day } (A + C) \text{ will come} = 10/60$$

$$2 \text{ days work} = 10/60 + 9/60 = 21/60$$

$$2 \times 2 = 4 \text{ days work} = 21/60 \times 2 = 42/60$$

$$\text{After 4 Days Remaining work} = 1 - 42/60 = 18/60$$

$$5^{\text{th}} \text{ day } (A + B) \text{ will come} = 18/60 - 11/60 = 7/60$$

$$6^{\text{th}} \text{ day } (A + C) \text{ will come :-}$$

$$\text{Time} = \text{Remaining work} / \text{Rate of doing capacity}$$

$$= (7/60) / 10/60 = 7/10 \text{ days}$$

$$\text{Total} = 5 (7/10) \text{ days}$$

SAIL-2010

Q. If A is 20% less efficient than B. If B alone can do the work in 40 days. In how many days can A and B together complete the same work?

(a) $22 \frac{2}{9}$

(b) $20 \frac{1}{9}$

(c) $21 \frac{2}{9}$

(d) $32 \frac{2}{9}$

EXPLANATION

$$A = 0.8 B$$

$$B = 40 \text{ Days}$$

$$A = 40/.8 = 50 \text{ days}$$

$$(1/40 + 1/50) X = 1$$

$$X = 200/9 = 22 \frac{2}{9} \text{ days}$$

IAS

Q. If 4 Men and 3 Women can do a work in 8 days. 6 men and 9 women can do the work in 4 days. In how many days can 20 men and 6 women do the same work?

(a) 2

(b) 4

(c) 5

(d) 6

EXPLANATION

$$(4M + 3W) \times 8 = 1 \text{-----[i]}$$

$$(6M + 9W) \times 4 = 1 \text{-----[ii]}$$

From equation 1 and 2

$$1M = \frac{3}{2} W \text{-----[iii]}$$

$$(20M + 6W) \times X = 1 \text{-----[iv]}$$

From equation 1,3 and 4

$$X = 2 \text{ days}$$

IB-2014

Q. 5 men and 7 boys can do a work in 24 days working 10 hrs per day. 9 men and 18 boys can do the same work in 15 days working 8 hrs per day. In how many days 3 men and 6 boys can do that work working 8 hrs per day?

(a) 40 days

(b) 36 days

(c) 45 Days

(d) 48 days

EXPLANATION

$$(5M + 7B) \times 24 \times 10 = 1 \text{-----[i]}$$

$$(9M + 18B) \times 15 \times 8 = 1 \text{-----[ii]}$$

From equation 1 and 2

$$1M = 4B \text{-----[iii]}$$

$$(3M + 6B) \times X \times 8 = 1 \text{-----[iv]}$$

From equation 1,3 and 4

$$X = 45 \text{ days}$$

GATE

Q. A and B together can do a piece of work in 12 days while B and C together can finish in 16 days. A has worked on it for 5 days, and B for 7 days, C finishes remaining work in 13 days. In how many days can A finish the work alone?

(a) 16

(b) 14

(c) 48

(d) 24

EXPLANATION

$$(A + B) = 1/12$$

$$(B + C) = 1/16$$

$$5/A + 7/B + 13/C = 1$$

$$5 [1/A + 1/B] + 2[1/B + 1/C] + 11/C = 1$$

$$5 \times 1/12 + 2 \times 1/16 + 11/C = 1$$

$$C = 24 \text{ days}$$

$$B = 48 \text{ days}$$

$$A = 16 \text{ days}$$

GATE-2010

Q. 5 skilled workers can build a wall in 20 days; 8 semiskilled workers can build a wall in 25 days 10 unskilled workers can build a wall in 30 days, if a team has 2 skilled, 6 semiskilled and 5 unskilled workers, how long will it take to build the wall?

(a) 20 days

(b) 18 days

(c) 16 days

(d) 15 days

EXPLANATION

5 Skilled worker = 20 days

1 Skilled worker = 100 days

8 Semi Skilled worker = 25 days

1 Semi Skilled worker = 200 days

10 Unskilled worker = 30 days

1 Unskilled worker = 300 days

Team = (2 S + 6 SS + 5 US)

$[2/100 + 6/200 + 5/300] X = 1$

X = 15 days