GATE

ALL BRANCHES

GENERAL APTITUDE

Quantitative Aptitude

Lecture No: 06

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TOPICS TO BE COVERED

1. Understanding Time & Work
2. Direct & Inverse Proportion
3. Concept of Chain Rule
4. Questionnaire on the Topic

Q. A man buys milk at ₹5 per litre and after adding water, sells it at ₹6 per litre, thereby making a profit of $33\frac{1}{3}\%$. What is the proportion of milk to water in the mixture?

$\frac{S.P}{C.P} = \frac{6}{5} \times x = \frac{4}{3}$

$\Rightarrow x = \frac{4}{3} \times \frac{5}{6}$

$x = \frac{20}{18}$

Milk : Water

18 : 2

= 9 : 1

Assignment

A. 1 : 9

B. 9 : 10

C. 9 : 1

D. 4 : 5

Q. A man purchases two mobiles for ₹65390, sells both of them so as to gain 13½ % on one and lose 2¾ % on other. If on the whole he gains 7¼ %, then what would be the cost of cheaper mobile?

$\frac{5}{15} \times 65,340$

$= 25,150$

Assignment

A. ₹32000

B. ₹25150

C. ₹27500

D. ₹31000

113.5 97.25

107.25

10 6.25

8 : 5

cost : chap

= 10 : 6.25

= 1000 : 625

8 : 5

Q. A library has two books each having three copies and three other books each having two copies. In how many ways can all these books be arranged in a shelf so that the copies of the same book are not separated?

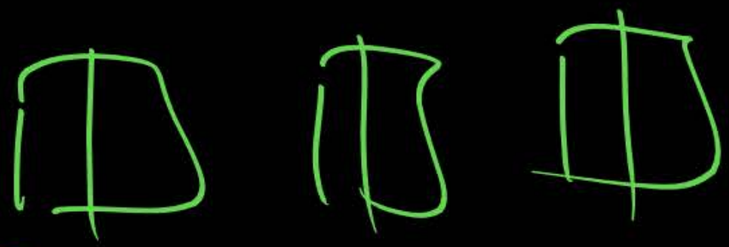
A. 80

B. 100

C. 120

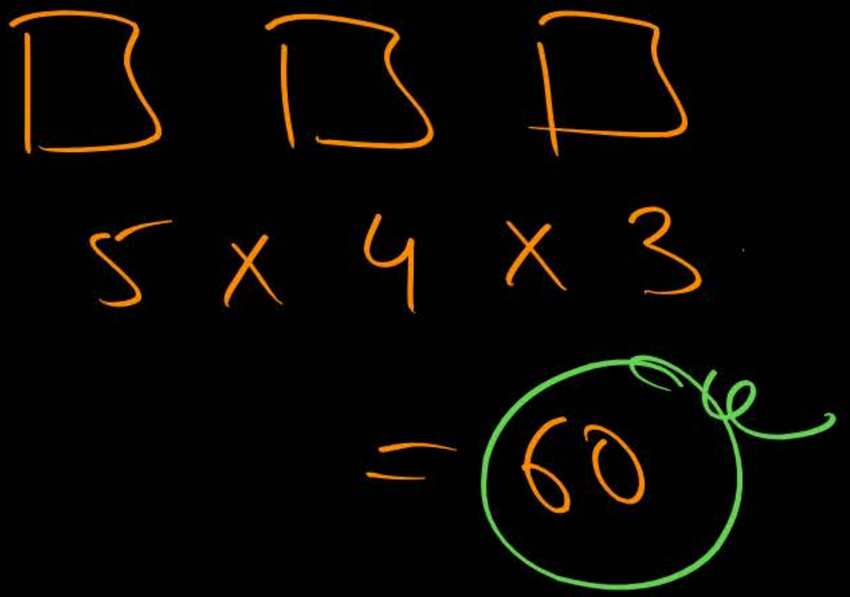
D. 140

Assignment



Q. A license plate begins with 3 letters. If the possible letters are A, B, C, D and E, how many different ways these letters can be written if no letter is used more than once?

Assignment



Direct & Inverse

TIME & WORK

INVERSE

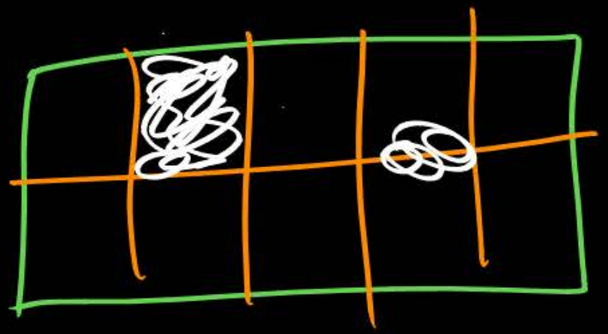
TIME — WORK — MEN

Direct — Direct

$\frac{1}{10} \leftarrow A = \frac{10}{1}$ days

$\frac{1}{20} \leftarrow B = 20$ days

$A \& B = \frac{1}{10} + \frac{1}{20} = \frac{3}{20}$



$\frac{20}{3} = 6.\bar{6}$ days OR $6\frac{2}{3}$ days

Try these:

Q.1 $= \frac{60}{5} = 12$ days

Q.2 $15\frac{5}{13}$

Q. If A and B together can complete a work in 40 days whereas A alone in 60 days, then B alone can complete that work in how many days?

$\frac{1}{60} + \frac{1}{120} = \frac{2+1}{120}$

$= \frac{3}{120}$

$= \frac{1}{40}$

120 days

$A = \frac{1}{60}$

$A+B = \frac{1}{40}$

$\frac{1}{40} - \frac{1}{60} = B$

$\frac{3-2}{120} = B$

$\frac{1}{120} = B$

B 1/120 d

1 2 3 4 5
A B A B A . . . .

Q. A can do a work in 10 days whereas B in 20 days.They started working on alternate days, i.e. 1st day 'A', 2nd day 'B', 3rd day 'A'.....so on. Then in how many days the total work would be completed ?

$\frac{x}{20} = \frac{1}{10}$?

13 days

$A = \frac{1}{10}$ $B = \frac{1}{20}$

$\frac{1}{10} + \frac{1}{20} = \frac{3}{20}$ $\xrightarrow{\times 6}$ $\frac{18}{20}$ $\xrightarrow{\times 6}$ 12 days

2 days

Q. A can do a work in 10 days whereas B in 20 days.They started working on alternate days, i.e. 1st day 'B', 2nd day 'A', 3rd day 'B'.....so on. Then in how many days the total work would be completed ?

$A = \frac{1}{10}$ $B = \frac{1}{20}$

$\frac{x}{20} = \frac{1}{10}$?

$x = 13^{th}$

$\frac{1}{10} - \frac{1}{20} = \frac{1}{20}$?

$13\frac{1}{2}$ days

$\frac{1}{20} + \frac{1}{10} = \frac{3}{20} \Rightarrow 2$ days

$\frac{18}{20} \Rightarrow 12$ days

1 work $A = 10$

$\frac{1}{20} :: n = 18 \times \frac{1}{20} = \frac{1}{2}$

Q. A can do a work in 25 days whereas B in 40 days. They started working on alternate days, i.e. 1st day 'A', 2nd day 'B', 3rd day 'A'.......so on. Then in how many days the work would be completed?

A. $15\ ^5/_8$ days

B. $30\ ^5/_8$ days

C. 31 days

D. 16 days

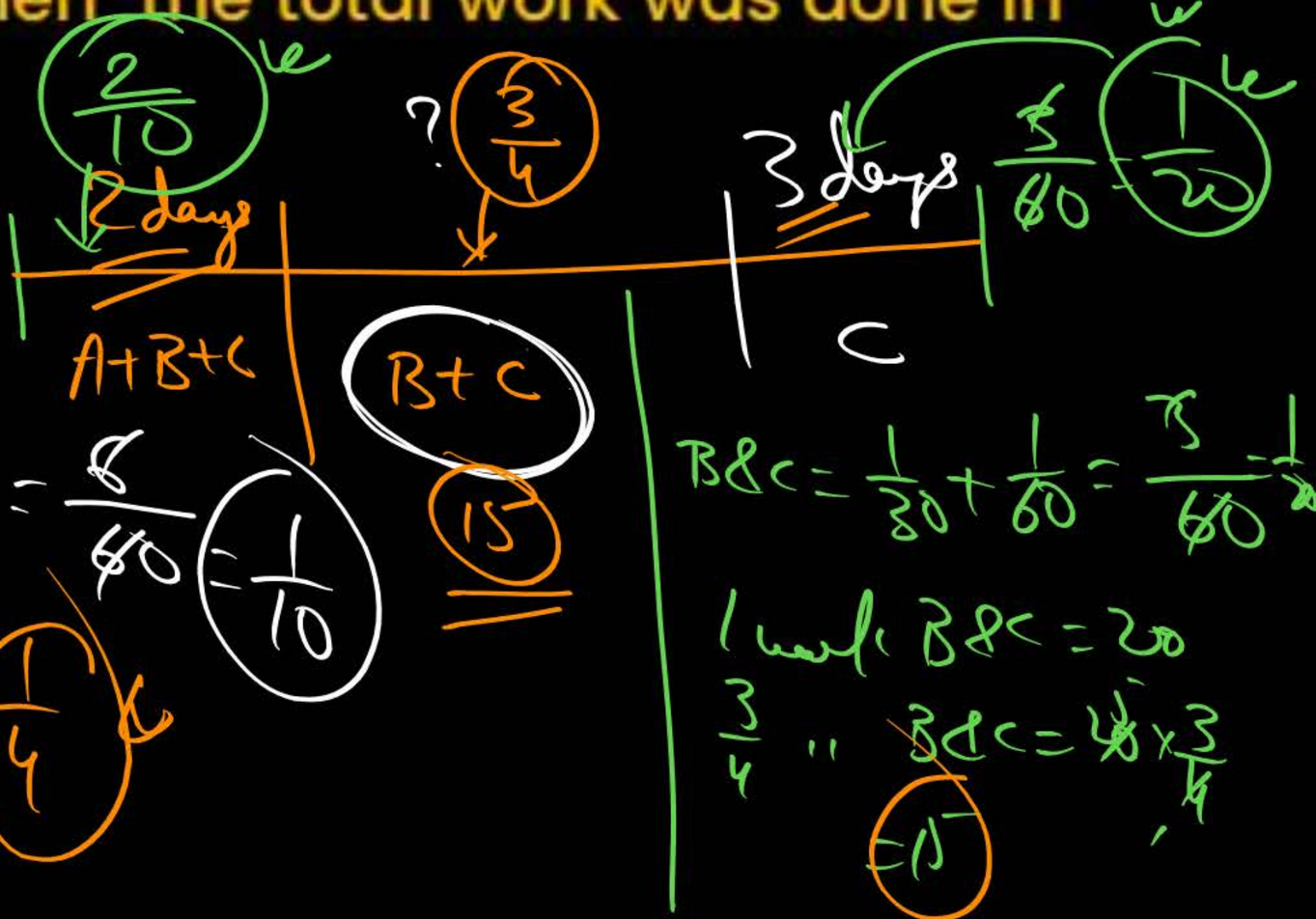
Q. A can do a work in 20 days whereas B in 30 days and C in 60 days. They started the work together. But A left after two days and B left three days before the work got completed. Then the total work was done in how many days?

20 days

$A = \frac{1}{20}$; $B = \frac{1}{30}$ $C = \frac{1}{60}$

$A\&B\&C = \frac{1}{20} + \frac{1}{30} + \frac{1}{60} = \frac{6}{60} = \frac{1}{10}$

$\frac{2}{10} + \frac{1}{20} = \frac{5}{20} = \frac{1}{4}$



Q. A can do a work in 20 days whereas B in 30 days and C in 60 days. They started the work together. But A left after two days and B left three days before the work got completed. Then the total work was done in how many days?

$A = \frac{1}{20}$ ✓

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

$C = \frac{1}{60}$

$$\frac{x}{60} + \frac{x-3}{30} + \frac{2}{20} = 1$$

$$x + 2x - 6 + 6 = 60$$

$$3x = 60$$

$$x = 20$$

Q. A can do a work in 10 days whereas B in 20 days and C in 60 days. They started the work together. But A left at the end of 3rd day and B left at the end of 5th day. Then the remaining work was done by C in how many days?

A. 27

B. 22

C. 35

D. 44

Assignment

Q. If 9 MONKEYS EAT 9 BANANAS IN 9 MINUTES, THEN HOW MANY MONKEYS WILL EAT 45 BANANAS IN 45 MINUTES?

Assignment

Thank You!