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## Mixed Maths Questions for LIC AAO Exam.

### LIC AAO Maths Quiz 12

Direction: Study the following questions carefully and choose the right answer.

1. The ratio of 80% of a number to the 60% of the same number formed by reversing its digits is 128:69. If the sum of digits of the number is 10 then find the number.

- A. 73                      B. 37                      C. 82                      D. 64                      E. 55

2. The maximum amount of drugs that can be dissolved into 100g of water is 25g. If any more quantity of drug is added it remains undissolved and gets settled down. Now, water is evaporated at the rate of 28g/h from 1kg of the mixture which contains 4% drug. Approximately after how long will it start depositing at the base?

- A. 15 h                      B. 23 h                      C. 29 h                      D. 35 h                      E. None of these

3. 20 boys complete a work in 16 days and 25 girls can complete the same work in 18 days. 8 boys and 15 girls started the work together. They worked for some number of days. After they left the work, 48 children joined the work and complete the work in 4 days. If efficiency of 1 boy is double the efficiency of 1 child, how many days they took to complete the whole work?

- A. 16                      B. 18                      C. 20                      D. 22                      E. None of these

4. A man rows to a place 46 km distance and back in 11 hours 30 minutes. He found that he can row 5 km with the stream in the same time as he can row 4 km against the stream. Find the rate of the stream.

- A. 0.6 km/hrs.                      B. 0.7 km/hrs.                      C. 0.8 km/hrs.                      D. 0.9 km/hrs.                      E. None of these

5. A man gave 50% of his savings of Rs. 168200 to his wife and divided the remaining sum among his sons Gautam and Gambhir whose ages are 15 years and 13 years respectively. He divided it in such a way that each of his sons who invested the individual sum at 5% compound interest rate per annum, would receive the same amount when they attain the age of 18 years. The share of Gambhir was:

- A. Rs. 42050                      B. Rs. 40000                      C. Rs. 45000                      D. Rs. 45500                      E. None of these

6. In a race of one kilometre, A gives B a start of 40 meters and still wins by 20 seconds. When A gives B a start of 30 seconds, B wins by 50 meters. The time taken by A to run one kilometre is

- A. 125 seconds                      B. 120 seconds                      C. 100 seconds                      D. 96 seconds                      E. None of these

7. Five times the cost price of an article exceeds twice its selling price by thrice the profit made in selling it. Find the profit percentage made on the article.

- A. 65%                      B. 60%                      C. 55%                      D. 50%                      E. None of these

8. Two brothers A and B are working on a project. The efficiency of A is thrice the efficiency of B. B takes 30 days more than A to finish the entire project alone. If A and B work together, then they can complete the entire project in how many days?

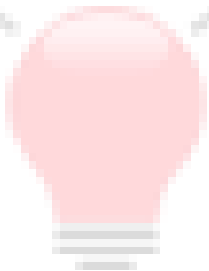
- A. 10.5                      B. 10.75                      C. 11                      D. 11.25                      E. None of these

9. The length of a circular path is 20 km. Three runners start running from a point in same direction with speed of 4 km/hr, 5 km/hr and 8 km/hr respectively. After how many hours will they be together at the starting point again?

- A. 20 hr                      B. 18 hr                      C. 16 hr                      D. 21 hr                      E. None of these

10. Three persons A, B and C are to speak at a function along with 4 other persons. If all of them speak in random order, the probability that A speaks before B and B speaks before C is

- A.  $\frac{5}{6}$                       B.  $\frac{1}{6}$                       C.  $\frac{1}{2}$                       D.  $\frac{1}{3}$                       E. None of these



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**Correct Answers:**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
D	C	A	D	B	C	B	D	A	B

## Explanations:

1. Let the number taken be "xy" i.e.  $10x + y$

$$\Rightarrow x + y = 10 \dots(i)$$

When digits are reversed it becomes  $10y + x$

$$\frac{(10x + y) 80}{100} = \frac{128}{69} \frac{(10y + x) 60}{100}$$

$$\frac{10x + y}{10y + x} = \frac{32}{23}$$

$$230x + 23y = 320y + 32x$$

$$198x - 297y = 0 \dots\dots(ii)$$

Solving (i) and (ii)

$$297x + 198x = 2970$$

$$x = 6 \text{ and } y = 4$$

Hence the number is 64.

Therefore, option D is correct.

2. Depositing at the base will start when the ratio of drug to water becomes 25 : 100 i.e. 1 : 4

Now In 1kg of solution quantity of drug = 4% of 1000g = 40g

i.e. in 1000g solution 40g is drug and 960g is water.

Depositing at the base will start when ratio will be 1 : 4 i.e. 40 : 160, which means that 40g of drug is dissolved in 160g of water.

Then,  $960 - 160 = 800$ g water will be evaporated.

$$\text{Time taken to evaporate 800g water} = \frac{800}{28} = 28.57 \approx 29\text{h}$$

Hence, option C is correct.

3.

20 boys in 16 days, so 8 m in  $20 \times \frac{16}{8} = 40$  days

25 girls in 18 days, so 15 w in  $25 \times \frac{18}{15} = 30$  days

They worked for some no. of days, let it be x

$$\text{so work done} = \left(\frac{1}{40} + \frac{1}{30}\right) \times x = \frac{7x}{120} \dots\dots(i)$$

1 boy can complete work in  $20 \times 16 = 320$  days. So 1 child whose efficiency is half the boy, can complete whole work in  $320 \times 2 = 640$  days.

So 48 children in  $\frac{640}{48}$  days

They worked for 4 days,

$$\text{so did } 4 \times \frac{48}{640} = \frac{3}{10} \text{ of work}$$

So remaining  $7/10$  was done by 8 boys and 15 girls..... (2)

From (1) and (2)

$$\frac{7x}{120} = \frac{7}{10}$$

$$x = 12 \text{ days}$$

So total no. of days =  $12 + 4 = 16$  days

Hence, option A is correct.

4.

Let the downstream speed be u km/hr and upstream speed be v km/hr

$$46 \left(\frac{1}{u} + \frac{1}{v}\right) = \frac{23}{2}$$

$$\frac{1}{u} + \frac{1}{v} = \frac{1}{4} \dots\dots\dots(i)$$

$$\frac{5}{u} = \frac{4}{v} \Rightarrow v = \frac{4}{5}u \dots\dots\dots(ii)$$

$$\frac{1}{u} + \frac{5}{4u} = \frac{1}{4}$$

$$\frac{9}{4u} = \frac{1}{4}$$

$$u = 9$$

$$v = \frac{4}{5} \times 9 = 7.2$$

$$\text{Speed of stream} = \frac{9 - 7.2}{2} = \frac{1.8}{2} = 0.9 \text{ km/hr.}$$

Hence, option D is correct.

5. Total share of Gautam and Gambhir = Rs. 84100

Let share of Gautam = Rs.  $x$

Share of Gambhir = Rs.  $(84100 - x)$

$$x \left(1 + \frac{5}{100}\right)^3 = (84100 - x) \left(1 + \frac{5}{100}\right)^5$$

$$x = 44100$$

Share of Gambhir = Rs.  $(84100 - 44100) = \text{Rs. } 40000$

Hence, option B is correct.

6. Let, time taken by A to run 1 km =  $x$  seconds and time taken by B to run 1 km =  $y$  seconds

When A gives B a start of 40 meters,

A runs = 1000 meters

B runs =  $1000 - 40 = 960$  meters

According to problem,

$$\Rightarrow \frac{y \times 960}{1000} - x = 20$$

$$\Rightarrow 96y - 100x = 2000$$

$$\Rightarrow 24y - 25x = 500$$

$$\Rightarrow 120y - 125x = 2500 \dots\dots (1)$$

When A gives B a start of 30 seconds,

B runs for =  $y$  sec.

A runs for =  $y - 30$  sec.

According to problem,

$$\Rightarrow 1000 - 1000 \times \frac{y - 30}{x} = 50$$

$$\Rightarrow 1000x - 1000y + 30000 = 50x$$

$$\Rightarrow 1000y - 950x = 30000$$

$$\Rightarrow 20y - 19x = 600$$

$$\Rightarrow 120y - 114x = 3600 \dots\dots (2)$$

From (2) - (1) we get,

$$\Rightarrow 125x - 114x = 1100$$

$$\Rightarrow 11x = 1100$$

$$\Rightarrow x = 100$$

$\therefore$  Time taken by A to run 1 km = 100 sec.

Hence, option C is correct.

7. Let the cost price and selling price of the article be CP and Sp respectively.

$$5CP - 2SP = 3(SP - CP)$$

$$\frac{8}{5}CP = SP$$

$$\text{Profit} = \frac{3}{5} \times CP$$

$$\text{Profit percentage} = 60\%$$

Hence, option B is correct.

8. Assume that A can complete the work in x days; then, B can complete the same work in 3x days.

If A takes x days,

B takes 3x days = x + 2x days = x + 30 days

$$\therefore 2x = 30 \text{ or } x = 15 \text{ days}$$

It means that A takes 15 days alone to complete the work, whereas B takes 45 days for the same.

$$\text{A's one-day work} = \frac{1}{15}$$

$$\text{B's one-day work} = \frac{1}{45}$$

$$\text{A's and B's one-day work} = \frac{4}{45}$$

A and B together can complete the work in  $45/4 = 11.25$  days

Hence, option D is correct.

- 9.

$$\text{Time taken by each runner} = \frac{\text{Distance}}{\text{Speed}}$$

Calculating the ratio of each

$$\Rightarrow \frac{20 \text{ km}}{4 \text{ km/hr}} : \frac{20 \text{ km}}{5 \text{ km/hr}} : \frac{20 \text{ km}}{8 \text{ km/hr}}$$

$$= 5 : 4 : 2.5$$

L.C.M. of 5, 4 & 2.5 = 20

Therefore, they will meet again after 20 hours.

Hence, option A is correct.

**10.** Total Number of ways in which 7 ( 4 + 3 = 7) persons can speak is 7!.

The number of ways in which A,B,C speak in the given order is  ${}^7C_3$  ways and remaining 4 persons can be arranged in 4! Ways.

Favourable number of ways =  ${}^7C_3 \times 4!$

$$\text{Reqd. probability} = \frac{{}^7C_3 \times 4!}{7!} = \frac{1}{6}$$

Hence, option B is correct.



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