Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains, SBI Clerk Mains and LIC AAO Pre Exams.

Bank PO Maths Quiz 35

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

1. 8 years ago, the ratio of ages of A and B was 4 : 5. At present, B is 6 years older than A , then how many years before A was 50% as old as B?

A. 30 years B. 26 years C. 24 years D. 20 years E. None of these

2. The average of first 10 natural numbers is how much less than the average of first 10 prime numbers?

A. 7.2 B. 7.6 C. 7.5 D. 7.4 E. None of these

3. Two persons A and B working together can complete a piece of work in 15 days but a third person C can destroy half the completed work in 15 days. In how many days A, B, and C working together can complete one fourth of the piece of work?

A. 8.5 days B. 12.5 days C. 10 days D. 7.5 days E. None of these

4. A and B together invested in a business in the ratio of 5 : x respectively. At the end of 6 months, B withdraws 25% of his initial investment but at the end of 1 year, B's share in profit was 40% more than that of A. What was the value of x?

A. 4 B. 8 C. 10 D. 7 E. None of these

5. A motorboat goes some distance downstream in 2x hours but it returns only 75% of the previous distance in 1.75x hours. What is the ratio of the speed of the motorboat in still water to the speed of stream?

A. 5 : 1 B. 7 : 1 C. 13 : 1 D. 9 : 2 E. None of these

6. If the length and the breadth of a rectangle is increased by 8 cm and 36 cm respectively then the area of the rectangle becomes equal to the area of the square of sides 36 cm. If the length of the rectangle is 2 cm less than the breadth, then find the perimeter of the rectangle?

A. 68 cm B. 64 cm C. 72 cm D. 74 cm E. None of these

7. A and B together take X days to complete a piece of work but B and C together takes 40/3 days to complete the same piece of work. If A takes half of the time taken by B to complete the same piece of work and C alone takes 15 days to complete half of the work then what is the value of x?

A. 10 B. 12 C. 8 D. 9 E. None of these

8. Liou is going to PNBE from MFP by his car at the speed of 30 km per hour and return immediately at the speed of x km per hour. If the distance between PNBE and MFP is 270 km and he take total 15 hours for going and coming back then what is the value of X?

A. 40 km per hour B. 45 km per hour C. 42 km per hour D. 50 km per hour E. None of these

9. In a solution of sulphuric acid and water, when 10 litres of water were added then the concentration of acid in the solution changes to 50% but when 5 litres of acid were added then the concentration of acid change to 80%. What will be the concentration of acid when 4 litres of solution were taken out and the same quantity of waters were added?

A. 75% B. 80% C. 70% D. 60% E. None of these

10. Mr. Bhatia married to Bhanu 10 years ago from now. At time of marriage, Bhanu was 23 years old. 8 years after their marriage, the average age of Bhatia, his wife, and their son Shantanu become 28 years. At present, what is the average of the age of Bhatia and his son Shantanu?

A. 22.5 years B. 28.5 years C. 25 years D. 24.5 years E. None of these

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	A	B	E	A	B	D	B	B	E

Explanations:

1. Let A's age 8 years ago = 4x years then B's age = 5x years

At present, A's age = 4x + 8 years and B's age = 5x + 8 years

According to the question, 5x + 8 – 4x – 8 = x = 6 years

At present, A's age = 4x + 8 = 32 years and B's age = 5x + 8 = 38 years

Let y years before, A was 50% as old as B then,

(32 – y) = 50% of (38 – y)

64 – 2y = 38 – y

64 – 38 = 2y – y = y

y = 26 years

Hence, option B is correct.

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2. The sum of first 10 natural numbers

$= \frac{n(n+1)}{2} = \frac{10 \times 11}{2} = 55$

Average $= \frac{55}{10} = 5.5$

The average of first 10 prime numbers

$= \frac{2+3+5+7+11+13+17+19+23+29}{10} = \frac{129}{10} = 12.9$

The required difference = 12.9 – 5.5 = 7.4

Hence, option D is correct.

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3. Third person C can destroy the half completed work in 15 days therefore, he will destroy the complete work in 15 × 2 = 30 days

The number of days, A, B, and C together will take to complete the work

$= \frac{1}{15} - \frac{1}{30} = \frac{2-1}{30} = \frac{1}{30} = 30$ days

One fourth of the work they will complete in $\frac{30}{4} = 7.5$ days

Hence, option D is correct.

4. B's share in profit was 40% more than that of A.

Therefore, the ratio of share in profit of A to B = 5 : 7

The ratio of share = $5 \times 12 : (x \times 6 + 0.75 \times x \times 6) = 5 : 7$

$10 : 1.75x = 5 : 7$

$x = 8$

Hence, option B is correct.

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5. Let the speed of the motorboat in still water = u km per hour and the speed of stream = v km per hour

Let the total distance = 4a km then

4a = distance travelled in downstream = $(u + v) \times 2x$ .....(i)

3a = distance travelled in upstream = $(u - v) \times 1.75x$ .....(ii)

Divide equation (i) by equation (ii)

$$\frac{4a}{3a} = \frac{4}{3} = \frac{(u + v) \times 2x}{(u - v) \times 1.75x}$$

By solving,

$$\frac{u + v}{u - v} = \frac{3.5}{3} = \frac{7}{6}$$

$$\frac{u}{v} = \frac{13}{1}$$

Hence, option C is correct.

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6. Let the breadth of the rectangle = b cm then the length of the rectangle = b – 2 cm

According to the question,

area of a rectangle = $l \times b = (b - 2 + 8) \times (b + 36)$ = area of square = 36×36

$(b + 6)(b + 36) = 36 \times 36$

$b^2 + 42b + 216 = 1296$

$b^2 + 42b - 1080 = 0$

By solving, b = 18, or – 60

Negative value is not possible so the breadth = 18 cm and length = 18 – 2 = 16 cm

Perimeter = 2(18 + 16) = 68 cm

Hence, option A is correct.

7. Let B takes 2p days then A will take P days to complete the piece of work.
The ratio of the efficiency if A : B = 2 : 1
Let us assume that A's efficiency = 2q and B's efficiency = q units then
Let the total units of work = 40 units then

B + c = 3 units
q + c = 3 ..... (i)

$A + b = \frac{40}{x}$ units

$2q + q = \frac{40}{x}$ units

$q = \frac{40}{3x}$ units

Put the value of q in the equation (i)

$\frac{40}{3x} = 3 - c$ ..... (ii)

C can do half of the work in 15 days then he can do the complete work in 15 × 2 = 30 days

C's efficiency = $\frac{40}{30} = \frac{4}{3}$ units

Put the value of c in the equation (ii)

$\frac{40}{3x} = 3 - \frac{4}{3} = \frac{5}{3}$

By solving, x = 8
Hence, option C is correct.

8.

$\text{Time} = \frac{\text{distance}}{\text{speed}}$

$\text{Average speed} = \frac{\text{total distance}}{\text{total time}} = \frac{270 \times 2}{15} = 36$ km per hour

We know that, the average speed
$= \frac{2 \times s1 \times s2}{s1 + s2} = \frac{2 \times 30 \times x}{30 + x} = 36$

$10x = 180 + 6x$

$x = \frac{180}{4} = 45$ km per hour
Hence, option B is correct.

9. Let the quantity of sulphuric acid = x litres and the quantity of water = y litres

According to the question,

$$\frac{x}{y+10} = \frac{1}{1}$$

$= y + 10$ ..... (i)

$$\frac{x+5}{y} = \frac{4}{1}$$

$x + 5 = 4y$ ..... (ii)

Solving equation (i) and (ii)

$x = 15$ litres and $y = 5$ litres

When 4 litres solution were taken out, the quantity of acid

$$= \frac{4 \times 15}{20} = 3 \text{ litre}$$

And the quantity of water $= \frac{4 \times 5}{20} = 1$ litre

The ratio acid to water after adding 4 litres of water = $(15 - 3) : (5 - 1) + 4 = 12 : 8 = 3 : 2$

The concentration of acid $= \frac{3 \times 100}{5} = 60\%$

Hence, option D is correct.

10. The present age of Bhanu = 23 + 10 = 33 years

Let at the time of marriage, Bhatia's age = x years and the age of Shantanu after 8 years of their marriage = y years then

8 years after the marriage, the sum of their age = $x + 8 + y + 23 + 8 = 28 \times 3 = 84$ years

$x + y = 84 - (8 + 23 + 8) = 45$ years

At present, the sum of their age = $(x + 10) + (y + 2) = x + y + 12 = 45 + 12 = 57$ years

The reqd. average $= \frac{57}{2} = 28.5$ years

Hence, option B is correct.