Class Test on Lecture Sheet 1

1. If A is an integers, which of the following CANNOT be inferred the statement above? [বেজা (সহঃ ব্যবস্থাপক)-২০]

   A. If A is a multiple of 5, then a is a multiple of 10

   B. If A is not a multiple of 5, then a is not a multiple of 10

   C. If A is a multiple of 10 implies that a is a multiple of 5

   D. A necessary condition for A to be a multiple of 10 is that A is a multiple of 5

   সমাধানঃ Multiple of 5 = 5, 10, 15, 20, ... all are not multiple of 10. 50 and A is correct.

2. A natural number when increased by 12, equals to 160 times reciprocal. The number is- [BB Officer-22]

   A. 16 B. 8 C. 6 D. 18

   Solution: Let, the number be x.

   Then, $x + 12 = 160 \times \frac{1}{x}$

   $\Rightarrow x^2 + 12x - 160 = 0$

   $\Rightarrow (x + 20)(x - 8) = 0$

   $\therefore x = -20, 8$

   Therefore, the required number is 8.

3. In a division problem, the divisor is 7 times of quotient and 5 times of remainder. If the dividend is 6 times of remainder, then the quotient is equal to-

   A. 7 B. 5 C. 3 D. 1

   সমাধানঃ Here, Divisor = 7 × quotient

   = 5 × remainder

   & Dividend = 6 × remainder

   Let, remainder = y

   Then, divisor = 5y & dividend = 6y

   On dividing 6y by 5y, we get quotient = 1 & remainder = y

4. If p and q are positive integers with $pq = 36$, then $\frac{p}{q}$ cannot be:

   A. $\frac{1}{4}$ B. $\frac{4}{9}$ C. $\frac{1}{2}$

   D. None of these E. Cannot be determined

   সমাধানঃ Here, p & q are positive integers & pq = 36

   From the given options,

   'A' is possible when, p = 3 & q = 12

   'B' is possible when, p = 4 & q = 9

   But option 'C' is not possible.

5. If m and n are positive integers, then the digit in the unit's place of $5^n + 6^m$ is always-

   A. 1 B. 5 C. 6 D. n + m

   সমাধানঃ In 5^n, we have 5 as unit digit.

   & In 6^m, we have 6 as unit digit

   So, $5 + 6 = 11$ or, the digit in the unit's place of $5^n + 6^m$ is always 1.

6. x, y are positive integers. When x is divided by y, the remainder is 5. If $\frac{x}{y} = 5.20$, what is the value of x?

   A. 130 B. 155 C. 330 D. 425

   Solution: Here, 0.20y = 5

   $\Rightarrow y = \frac{5}{0.20} = 25$

   $\therefore x = 5 \times 25 + 5 = 130$

7. A certain integer 'n' when divided by 5 yield a remainder of 4. Which of these cannot be an integer?
A. $\frac{n}{4}$ B. $\frac{n}{6}$ C. $\frac{n}{7}$ D. $\frac{n}{10}$ E. None of these

সমাধান: Here, $\frac{n}{5}$ is not an integer clearly.

5 | n | Dividend
... ...
4

So, n dividend by any number
Whose factors contain a 5 can't be an integer too.
Here, $\frac{n}{10}$ can't be an integer.

8. If $xy > 0$ and $yz < 0$, which of the following must be negative? [Bank Asia MTO-2017]
A. xyz B. xyz^2 C. xy^2z D. xy^2z^2

সমাধান: $xy > 0$ অর্থাৎ xy এর গুণফল ধনাত্মক সংখ্যা।
$yz < 0$ অর্থাৎ yz এর গুণফল ঋণাত্মক সংখ্যা
এখন, ধনাত্মক সংখ্যা × ঋণাত্মক সংখ্যা = ঋণাত্মক সংখ্যা অর্থাৎ xy^2z

9. Difference between two number is 2 and their sum is 4, then what is the difference of their square?
A. 8 B. 10 C. 6 D. 16 E. 4

সমাধান: Here, $x - y = 2$ & $x + y = 4$
After solving, we get, $2x = 6 \Rightarrow x = 3$ & $y = 4 - 3 = 1$
So, Difference of their square = $x^2 - y^2 = 3^2 - 1^2 = 8$

10. If $a + b + c = 35$ and $a^2 + b^2 + c^2 = 825$, then $ab + bc + ca$ =? [দুদক (সহকারী পরিচালক) ২০২০]
A. 100 B. 200 C. 125 D. 225

সমাধান: দেওয়া আছে $a + b + c = 35$ এবং $a^2 + b^2 + c^2 = 825$
এখন, $2(ab + bc + ca) = (a + b + c)^2 - (a^2 + b^2 + c^2)$

$$\Rightarrow (ab + bc + ca) = \frac{(35)^2 - 825}{2} = \frac{1225 - 825}{2} = \frac{400}{2}$$

$\therefore ab + bc + ca = 200$

Practice Math

1. $(10)^2$ is how many times of $(0.01)^3$? [BB AD 2022]
A. 10^5 B. 10^2 C. 10^1 D. 10^8

Solution: প্রশ্নে বলা হচ্ছে, $(0.01)^3$ এর কত গুণ $(10)^2$?
এখানে, $10^2 = 100$ এবং $(0.01)^3 = 0.000001$

$$\therefore \text{নির্ণেয় গুণ} = \frac{100}{0.000001} = \frac{100 \times 1000000}{1} = 100000000 = 10^8$$

2. In dividing a sum of money, the eldest of three brothers got $\frac{2}{5}^{th}$ of it and the youngest got Tk. 120. What was the total sum in Tk. if amount received by the other brother was $\frac{1}{3}^{rd}$ of the total?
[Agrani Bank (Officer) 2013]
A. 400 B. 425 C. 450 D. 500

সমাধান: ধরি, total amount = x
Eldest brother got = $\frac{2x}{5}$, youngest got = 120
So, other brother got = $x - \left(\frac{2x}{5} + 120\right)$

প্রশ্নমতে, $x - \left(\frac{2x}{5} + 120\right) = \frac{x}{3}$

$\Rightarrow \frac{3x}{5} - 120 = \frac{x}{3}$

$\Rightarrow \frac{3x}{5} - \frac{x}{3} = 120$

$\Rightarrow \frac{4x}{15} = 120$

$\Rightarrow 4x = 15 \times 120$

$\Rightarrow x = 450$

3. In a department, $\frac{3}{5}$ of the worker are men and the rest women. If $\frac{1}{2}$ of the men and $\frac{3}{7}$ of the women in the department are over 35, what fraction of all the worker in the department are over 35?

A. $\frac{33}{70}$ B. $\frac{66}{70}$ C. $\frac{33}{140}$ D. $\frac{35}{140}$

সমাধান: ধরি, total worker = x

$\therefore$ Men = $\frac{3x}{5}$ এবং Women = $\frac{2x}{5}$

Now, Men (over 35) = $\frac{3x}{5} \times \frac{1}{2} = \frac{3x}{10}$

& Women (over 35) = $\frac{2x}{5} \times \frac{3}{7} = \frac{6x}{35}$

$\therefore$ total (over 35) = $\frac{3x}{10} + \frac{6x}{35} = \frac{105x+60x}{350} = \frac{165x}{350} = \frac{33x}{70}$

So, required fraction = $\frac{33x}{70} \times \frac{1}{x} = \frac{33}{70}$

4. If $\frac{x}{y} = \frac{1}{3}$, then the value of $\frac{x^2+y^2}{x^2-y^2}$ is- [BB AD 2022]

A. $\frac{-10}{9}$ B. $\frac{5}{4}$ C. $\frac{-5}{4}$ D. $\frac{-5}{3}$

সমাধান: দেওয়া আছে, $\frac{x}{y} = \frac{1}{3}$

এখানে, $x = 1$ এবং $y = 3$ ধরে প্রদত্ত রাশিমালা হতে মান বের করি।

প্রদত্ত রাশিমালা = $\frac{x^2+y^2}{x^2-y^2} = \frac{1^2+3^2}{1^2-3^2} = \frac{1+9}{1-9} = \frac{10}{-8} = \frac{5}{-4} = \frac{-5}{4}$

5. If $a + b + c = 12$, $a + b = 4$ and $a + c = 7$, what is the value of a? [বেজা (সহঃ ব্যবস্থাপক) ২০২০]

A. 2 B. -1 C. $\frac{3}{23}$ D. 2

সমাধান: Given that,

$a + b + c = 12$ .....(i)

$a + b = 4$ .....(ii)

From (i) and (ii) equation, $4 + c = 12$

$\Rightarrow c = 12 - 4$

$\therefore c = 8$

From (iii) no equations, $a + c = 7 \Rightarrow a + 8 = 7 \Rightarrow a = 7 - 8 \therefore a = -1$

6. The electricity bill of a certain establishment is partially fixed and and partially varies as the number of units of electricity consumed. When in a certain month 540 units are consumed, the bill is Tk. 1800. In another month 620 units are consumed are the bill is Tk. 2040. In yet another month if 500 units are consumed what would be the bill (in Tk.) for that month?

[তিতাস গ্যাস ট্রান্সমিশন অ্যান্ড ডিস্ট্রিবিউশন কো. লি. (সহঃ ব্যবস্থাপক) ২০২১]

A. 1950 B. 1560 C. 1840 D. 1680

সমাধান: ধরি, নির্দিষ্ট অংশের বিল = x টাকা

$\therefore$ প্রতি ইউনিটের দাম = y টাকা

প্রশ্নমতে, $540y + x = 1800$ ... ... (i)
$620y + x = 2040$ ... ... (ii)
$(i) - (ii)$
$-80y = -240$
$\Rightarrow y = 3$
$\therefore (i)$ নং থেকে,
$540 \times 3 + x = 1800$
$\Rightarrow 1620 + x = 1800$
$\Rightarrow x = 1800 - 1620$
$\therefore x = 180$
$\therefore$ 500 ইউনিটের মোট খরচ $= 180 + 500 \times 3 = 180 + 1500 = 1680$

7. In an examination, a student scores 4 marks for every correct answer and loses 1 mark for every wrong answer. If he attempts all 80 questions and secures 120 marks, the number of questions he attempted correctly is- [BISIC Chief Auditor-2021]

A. 30 B. 60 C. 80 D. 40

সমাধান: Let, the number of correct questions = x
and the number of wrong questions = 80 − x
According to the question, $4x - 1 \times (80 - x) = 120 \Rightarrow x = 40$

8. In a class, if 4 students sit in each bench, there are 3 empty benches, but 6 students have to stand if 3 students sit each bench. How many students are there in that class? [GTCL (Asst. Manager) 2021]

A. 50 B. 60 C. 70 D. 80

সমাধান: মনে করি, শ্রেণিতে ছাত্রছাত্রীদের সংখ্যা x
প্রশ্নমতে, $\frac{x}{4} + 3 = \frac{x-6}{3}$
$\Rightarrow \frac{x-6}{3} - \frac{x}{4} = 3$
$\Rightarrow \frac{4x-24-3x}{12} = 3$
$\Rightarrow x - 24 = 36$
$\therefore x = 60$

9. An employee may claim Tk. 7 for each kilometer when he travels by taxi and Tk. 6 for each kilometer when he drives his own car. If in one weak he claimed Tk. 900 for travelling 135 km, how many kilometer did he travel by taxi? [BB AD 2022]

A. 90 km B. 100 km C. 110 km D. 120 km

Solution: ধরি, ট্যাক্সিতে গিয়েছেন x কিলোমিটার এবং গাড়িতে y কিলোমিটার
প্রশ্নমতে, $x + y = 135$
$\therefore x = 135 - y$ ... ... (i)
আবার প্রশ্নমতে, $7x + 6y = 900$
$\Rightarrow 7(135 - y) + 6y = 900$
$\Rightarrow 945 - 7y + 6y = 900$
$\therefore y = 45$
y এর মান (i) নং সমীকরণে বসাই,
$\therefore$ x = $135 - 45 = 90$

10. Shaheen bought some pen for 240 taka. If he got a pen more for the same price, then price of each pen would be 1 taka less. How many pens did he bought? [বিমান বাংলাদেশ এয়ারলাইন্স (সহকারী ব্যবস্থাপক) ২০২১]

A. 16 B. 17 C. 15 D. 18

সমাধান: মনে করি সে xটি কলম কিনে। $\therefore$ প্রতিটির দাম $= \frac{240}{x}$

প্রশ্নমতে, $\frac{240}{x} - 1 = \frac{240}{x+1}$

$\Rightarrow \frac{240-x}{x} = \frac{240}{x+1}$

$\Rightarrow (240 - x)(x + 1) = 240x$

$\Rightarrow 240x + 240 - x^2 - x = 240x$

$\Rightarrow 240 - x^2 - x = 0$

$\Rightarrow x^2 + x - 240 = 0$

$\Rightarrow x^2 + 16x - 15x - 240 = 0$

$\Rightarrow x(x + 16) - 15(x + 16)0$

$\Rightarrow (x + 16)(x - 15) = 0$

হয়, $x = -16$ (গ্রহণযোগ্য নয়) অথবা, $x = 15$

11. If the numerator of a fraction is increased by 2 and the denominator by 1 it becomes 1. Again, if the numerator decreased by 4 and the denominator by 2 it becomes $\frac{1}{2}$. Find the fraction. [BB AD 2022]

A. $\frac{4}{5}$ B. $\frac{5}{6}$ C. $\frac{6}{7}$ D. $\frac{7}{8}$

Solution: অপশন দেখে খুব সহজেই সমাধান পাওয়া যাবে?

অপশন A-তেঃ ১ম শর্তানুযায়ী, $\frac{4}{5} = \frac{4+2}{5+1} = \frac{6}{6} = 1$

২য় শর্তানুযায়ী, $\frac{4}{5} = \frac{4-4}{5-2} = \frac{0}{3} = 0$, তাই অপশন A উত্তর হবে না।

অপশন B-তেঃ ১ম শর্তানুযায়ী, $\frac{5}{6} = \frac{5+2}{6+1} = \frac{7}{7} = 1$

২য় শর্তানুযায়ী, $\frac{5}{6} = \frac{5-4}{6-2} = \frac{1}{4}$, তাই অপশন B উত্তর হবে না।

অপশন C-তেঃ ১ম শর্তানুযায়ী, $\frac{6}{7} = \frac{6+2}{7+1} = \frac{8}{8} = 1$

২য় শর্তানুযায়ী, $\frac{6}{7} = \frac{6-4}{7-2} = \frac{2}{5}$, তাই অপশন C উত্তর হবে না।

অপশন D-তেঃ ১ম শর্তানুযায়ী, $\frac{7}{8} = \frac{7+2}{8+1} = \frac{9}{9} = 1$

২য় শর্তানুযায়ী, $\frac{7}{8} = \frac{7-4}{8-2} = \frac{3}{6} = \frac{1}{2}$

এবার, ১ম এবং ২য় উভয় শর্তই পূর্ণ হয়েছে। তাই সঠিক উত্তর হবে অপশন D।

12. In a group of buffaloes and ducks, the number of legs is 24 more than twice the number of heads. What is the number of buffaloes? [BB AD 2022]

A. 12 B. 10 C. 8 D. 6

Solution: ধরি, মহিষ আছে xটি এবং হাঁস আছে yটি

∴ মাথার সংখ্যা $(x + y)$টি

এবং পায়ের সংখ্যা $(4x + 2y)$টি

প্রশ্নমতে, $4x + 2y = 2(x + y) + 24$

$\Rightarrow 4x + 2y = 2x + 2y + 24$

$\Rightarrow 2x = 24$

∴ $x = 12$ অর্থাৎ মহিষের সংখ্যা 12টি।

13. The difference between a positive proper fraction and its reciprocal is $\frac{9}{20}$. The fraction is- [Agrani Bank (SO) 2017]

A. $\frac{2}{5}$ B. $\frac{3}{10}$ C. $\frac{4}{5}$ D. $\frac{5}{4}$

সমাধানঃ ধরি, x positive proper fraction [where, x = $\frac{p}{q}$, $q > p$ & $q \neq 0$]

প্রশ্নমতে, $\frac{1}{x} - x = \frac{9}{20}$

$\Rightarrow \frac{1-x^2}{x} = \frac{9}{20}$

$\Rightarrow 20x^2 + 9x - 20 = 0$

$\Rightarrow 20x^2 + 25x - 16x - 20 = 0$

$\Rightarrow 5x(4x + 5) - 4(4x + 5) = 0$

$\Rightarrow (4x + 5)(5x - 4) = 0$

$\Rightarrow x = -\frac{5}{4}$ or, $x = \frac{4}{5}$

যেহেতু x positive proper fraction, সুতরাং, $x = \frac{4}{5}$

14. A boy was asked to multiply a number by $\frac{7}{8}$, instead he divided the number by $\frac{7}{8}$ and got the result $\frac{15}{14}$ more than what he should have got if he had multiplied the number by $\frac{7}{8}$. The number is-

[One Bank (SCO) 2017]

A. 4 B. 6 C. 8 D. None of these

সমাধান: ধরি, নির্ণেয় সংখ্যা = x

$\frac{7}{8}$ দিয়ে multiply করলে আমরা পাই = $\frac{7x}{8}$

$\frac{7}{8}$ দিয়ে divide করলে আমরা পাই = $\frac{8x}{7}$

প্রশ্নমতে, $\frac{7x}{8} = \frac{8x}{7} - \frac{15}{14}$

$\Rightarrow \frac{8x}{7} - \frac{7x}{8} = \frac{15}{14}$

$\Rightarrow \frac{15x}{56} = \frac{15}{14}$

$\Rightarrow 14x = 56$

$\Rightarrow x = 4$

15. For which value of P, $4x^2 - Px + 9$ would be a perfect square ?

[দি সিকিউরিটি প্রিন্টিং কর্পোরেশন (সহকারী ব্যবস্থাপক) ২০২১; গ্যাস ট্রান্সমিশন কোম্পানি লি. (সহকারী ব্যবস্থাপক) ২০২১]

A. ± 12 B. 8 C. ± 6 D. 0

সমাধান: $4x^2 - Px + 9$

$= (2x)^2 - Px + 3^2$

রাশিটি পূর্ণ বর্গ হতে হলে, $(2x)^2 \pm 2.2.3x + 3^2$ হতে হবে।

বিকল্প সমাধান: $4x^2 - Px + 9$ এর নিশ্চায়ক

$b^2 - 4ac = 0$ [পূর্ণবর্গ হতে হলে নিশ্চায়ক $b^2 - 4ac = 0$ হতে হলে]

$\Rightarrow P^2 - 4.4.9 = 0$

$\Rightarrow P^2 - 144 = 0$

$\Rightarrow P^2 = 144$

$\Rightarrow P = \pm 12$

অর্থাৎ P এর মান ± 12 হবে।

16. $5^{-3} + 5^{-3} + 5^{-3} + 5^{-3} + 5^{-3} = ?$ [Agrani Bank (SO) 2017]

A. 25^{-15} B. 25^{-3} C. 5^{-2} D. 5^{-15}

Solution: $5^{-3} + 5^{-3} + 5^{-3} + 5^{-3} + 5^{-3}$

$= 5.5^{-3}$ [as there are 5.5^{-3} here]

$= 5^1.5^{-3}$

$= 5^{(1-3)}$

$= 5^{-2}$

17. $2^x = \sqrt[7]{1024}$, Find the value of x? [BISIC Chief Auditor-2021]

A. $\frac{10}{9}$ B. $\frac{9}{7}$ C. $\frac{10}{7}$ D. 11

সমাধান: $2^x = \sqrt[7]{1024} \Rightarrow 2^x = 1024^{\frac{1}{7}} \Rightarrow 2^x = 2^{10\times\frac{1}{7}} \Rightarrow x = \frac{10}{7}$

18. XYZ Ltd has profited tk. 1,08,000 from its ventures in FY 2017. Its investment strategy for FY 2018 is as follows. Out of the total profit it will invest $\frac{1^{th}}{6}$ in customer care, of the remaining amount it will invest $\frac{1^{rd}}{3}$ in advertising and product development, and out of the balance it will invest $\frac{2^{rd}}{3}$ in increasing production facilities. If the company plans to create an employee entertainment fund of the remaining amount, how much would that fund amount to?

A. tk. 17,000 B. tk. 19,000 C. tk. 21,000 D. tk. 20,000 E. tk. 2000

Solution: Total profit in FY 2017 = 108000 tk.

Investment in customer care = $108000 \times \frac{1}{6} = 18000$ tk.

Remaining amount = $108000 - 18000 = 90000$ tk.

Investment in advertising and product development = $90000 \times \frac{1}{3} = 30000$ tk.

Balance = $90000 - 30000 = 60000$ tk.

Investment in increasing production facilities = $60000 \times \frac{2}{3} = 40000$ tk.

So, remaining balance for employee entertainment fund = $60000 - 40000 = 20000$ tk.

19. If a and c are positive integers and $4a + 3 = b$ and $4c + 1 = d$, which of the following could be the value of (b+d)? [IBA MBA Dec' 2020]

A. 46 B. 58 C. 68 D. 74 E. 82

সমাধান: $b + d = 4a + 4c + 3 + 1 = 4(a + b + c)$

Som (b+d) is a multiple of 4.

From Options (C). 68 ই একমাত্র 4 এর Multiple.

20. a = −3, 2, 0 and b = −4, 2, −3, which can be maximum result as $2a + b^2$? [IBA MBA, Dec' 2021]

A. 20 B. 16 C. -5 D. 0 E. None of these

সমাধান: দেওয়া আছে, A = −3, 2, 0 এবং B = −4, 2, −3

এখন, $qa+b^2$ এর maximum value পাওয়ার জন্য আমাদের a এর maximum positive value নিতে হবে। b এর ক্ষেত্রে সবচেয়ে ছোট value টা নিতে হবে কারণ b^2 করলে negative value positive হয়ে যাবে।

সুতরাং, a = 2 এবং b = −4 প্রদত্ত সমীকরণে বসিয়ে পাই, $2\times2+(-4)^2 = 4+16 = 20$

21. On a particular day, a shop sold 3 fewer laptops of brand X than two times the numbers of laptops of brand Y. If a customer who bought a laptop of X brand had purchased a laptop of Y brand instead of X brand, number of brand X and brand Y sold would have been the same. What is the total number of laptops sold? [IBA MBA 15-16]

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

Solution: Let, total no. of brand X laptops sold = p

& brand Y laptops sold = q

Then, according to the 1st condition, $p = 2q - 3$ ... ... (i)

and, according to the 2nd condition, $p - 1 = q + 1$ ... ... (ii)

From (ii), we get, $p = q + 2$ ... ... (iii)

From (i) & (iii), we get, $2q - 3 = q + 2 \Rightarrow q = 5$

So, $p = 5 + 2 = 7$

So, total no. of laptops sold = $5 + 7 = 12$

22. A box contains only marbles. If $\frac{1}{4}$ of the marbles were removed, the box would be filled $\frac{1}{3}$ of its capacity. If instead 100 marbles were added, the box would be full. How many marbles are there in the box? [IBA MBA 15-16]

A. 80 B. 110 C. 140 D. 170 E. None of these

সমাধান: ধরি, total marble আছে = xটি এবং box এর capacity = y

তাহলে, ১ম শর্তমতে,

$x - \frac{x}{4} = \frac{y}{3}$

$\Rightarrow \frac{3x}{4} = \frac{y}{3}$

$\Rightarrow 9x = 4y \dots\dots\dots\dots\dots (i)$

$\Rightarrow 9(y - 100) = 4y$ [from (ii), x = y − 100]

$\Rightarrow 9y - 900 = 4y$

$\Rightarrow 5y = 900$

$\Rightarrow y = 180$

$\therefore x = 180 - 100 = 80$

23. In a charity 70 people contributes 11500 taka , 100 per men and 200 per women , find the number of women that contributed. [IBA MBA Dec 2019]

A. 36 B. 40 C. 42 D. 45 E. none of these

সমাধান: (D) ধরি, Men- এর সংখ্যা M

Women " " W

$100M + 200W = 11500$.....(i)

$M + W = 70$.....(ii)

(ii) কে 100 দ্বারা গুণ করে (i) থেকে বিয়োগ করি,

$100M + 200W = 11500$

$\underline{100M + 100W = 7000}$

$100W = 4500$

$\Rightarrow W = 45$

24. A company bought $7.3 * 10^5$ papers , research department use $8.9 * 10^3$ papers , papers left is- [IBA MBA Dec 2019]

A. $1.6 * 10^2$ B. $1.6 * 10^4$ C. $7.2 * 10^3$ D. $7.2 * 10^5$ E. None of these

সমাধান: (D) $73 \times 10^5 - 8.9 \times 10^3 = 10^3(730 - 8.9) = 721.1 \times 10^3 = 7.211 \times 10^5$

25. $7^{\sqrt{x}} + 24^{\sqrt{x}} = 25^{\sqrt{x}}$, x = ? [IBA MBA, Dec' 2021]

A. 2 B. 3 C. 4 D. A+C E. None of these

সমাধান: $7^{\sqrt{x}} + 24^{\sqrt{x}} = 25^{\sqrt{x}}$

এখন, আমরা option গুলো check করে বুঝতে পারি যে, শুধু x এর স্থানে শুধু 4 বসালেই প্রদত্ত সমীকরণটি সিদ্ধ হয়।

অর্থাৎ, $7^{\sqrt{4}} + 24^{\sqrt{4}} = 25^{\sqrt{4}}$

$\Rightarrow 7^2 + 24^2 = 25^2 \Rightarrow 49 + 576 = 625 \Rightarrow 625 = 625$

Home Task Math

26. A fuel tank is $\frac{1}{5}^{th}$ full and requires 32 gallons more to make it $\frac{3}{7}$ full. What is the capacity of the tank?

A. 120 gallons B. 140 gallons C. 135 gallons D. 141 gallons

সমাধান: Let, Capacity x

According to the question,

$\frac{x}{5} + 32 = \frac{3x}{-7} \Rightarrow \frac{x + 160}{15} = \frac{3x}{7} \Rightarrow 15x = 7x + 1120 \Rightarrow 15x - 7x = 1120$

$\Rightarrow 8x = 1120 \Rightarrow x = \frac{1120}{8} \Rightarrow x = 140$

27. Which of the following is the solution of $x^2 - (p+q)x + pq = 0$?
[জনপ্রশাসন মন্ত্রণালয়ের অধীনে পিএসসি'র (সহকারী পরিচালক) ২০১৬]

A. $\{p, q\}$ B. $\{p, -q\}$ C. $\{-p, -q\}$ D. $\{\neq p, q\}$

Solution: $x^2 - (p+q)x + pq = 0$
$\Rightarrow x^2 - px - qx + pq = 0$
$\Rightarrow x(x-p) - q(x-q) = 0$
$\Rightarrow (x-p)(x-q) = 0$
$\therefore x = p, q$

28. If one of the roots of $x^2 + mx + 24 = 0$ is 1.5, what is the value of m? [উত্তরা ব্যাংক (প্রবেশনারি অফিসার) ২০২১]

A. -22.5 B. 16 C. -17.5 D. 10.5

সমাধান: একটি মূল 1.5 অর্থাৎ x = 1.5
$\therefore (1.5)^2 + m(1.5) + 24 = 0$
$\Rightarrow 2.25 + 1.5m + 24 =$
$\Rightarrow 1.5m = -26.25$
$\Rightarrow m = \frac{-26.25}{1.5} = -17.5$

29. If $2x + 3y = 36$ and $2x + y = 16$, what is the value of (x, y)? [মাদকদ্রব্য নিয়ন্ত্রণ অধিদপ্তর (উপ-পরিদর্শক)-১৩, জাতীয় রাজস্ব বোর্ডের ইন্সপেক্টর/ এপ্রেইজার/ প্রিভেন্টিভ অফিসার/ গোয়েন্দা কর্মকর্তা-১০, গণপূর্ত অধিদপ্তর উপ-সহকারী প্রকৌশলী)-১১]

A. (2, 10) B. (3,10) C. (3, 5) D. (6,10)

Solution:
$2x + 3y = 36$
$\underline{2x + y = 16}$
$(-)\ 2y = 20$
$\Rightarrow y = 10$
$\therefore x = \frac{16-10}{2}$
$(x, y) = (3,10)$

30. For what value of 'k' will the pair of equations $3x + 4y = 12$ and $kx + 12y = 30$ does not have a unique solution? [Janata Bank (AEO) 2017]

A. 3 B. 7.5 C. 9 D. 12

Solution: $3x + 4y = 12$
$kx + 12y = 30$
$\Rightarrow \frac{k}{3}x + 4y = 10$ [3 দিয়ে ভাগ করে]
দু'টি সমীকরণের x ও y এর সহগের মান একই হলে তাদের কোনো unique solution থাকে না।
$\therefore \frac{k}{3} = 3$ হলে কোনো unique solution থাকবে না।
$\Rightarrow k = 9$

31. Asad went to the market to buy 12 oranges. But he found that he had the money to buy only 10 oranges. He calculated that if the price per piece of orange was tk. 3 less, he could have bought 12 oranges. How money did Asad have? [তিতাস গ্যাস ট্রান্সমিশন অ্যান্ড ডিস্ট্রিবিউশন কো. লি. (সহকারী ব্যবস্থাপক) ২০২১]

A. 150 B. 160 C. 175 D. 180

সমাধান: ধরি, প্রতি কমলার দাম x টাকা। আসাদ 10x টাকা নিয়ে বাজারে গেছে।
কমলার দাম $(x-3)$ টাকা হলে একই টাকা দিয়ে সে 12টি কমলা কিনতে পারবে।
$\therefore 12(x-3) = 10x$
$\Rightarrow 12x - 36 = 10x$
$\Rightarrow 12x - 10x = 36$
$\Rightarrow 2x = 36$
$\Rightarrow x = 18$
$\Rightarrow 10x = 180$

32. If $x = y^a, y = z^b, z = x^c$, then the value of abc is: [PKB (SEO) '18, BHBFC (SO) '17, 16th NTRCA '20]

A. 1 B. 2 C. 0 D. 0.5 E. -1

Solution: $x = y^a$

$\Rightarrow x = (z^b)^a$ [$y = z^b$]

$\Rightarrow x = z^{ab}$

$\Rightarrow x = (x^c)^{ab}$ [$z = x^c$]

$\Rightarrow x^1 = x^{abc}$

$\Rightarrow abc = 1$

33. If 'm' and 'n' are whole numbers such that $m^n = 121$, the value of $(m-10)^{(n+1)}$ is:

A. 21 B. 10 C. 100 D. 1000 E. None of these

Solution: $m^n = 121$

$121 = 1 \times 121$

$= 11 \times 11$

$\therefore 121 = 121^1 = 11^2$

$(m-10)^{n+1} = (121-10)^{1+1} = 111^2$ অথবা, $(11-10)^{2+1} = 1^3 = 1$

এখন, $111^2 > 100^2 \Rightarrow 111^2 > 10000$

এর কোনোটি Option এ নেই।

34. If $\left(\frac{1}{5}\right)^{3y} = 0.008$, then what would $(0.25)^y = ?$

A. 0.75 B. -0.75 C. 0.25 D. 0.0

সমাধান: দেওয়া আছে, $\left(\frac{1}{5}\right)^{3y} = 0.008$

$\Rightarrow \left(\frac{1}{5}\right)^{3y} = \frac{8}{1000}$

$\Rightarrow \left(\frac{1}{5}\right)^{3y} = \frac{2^3}{10^3}$

$\Rightarrow \left(\frac{1}{5}\right)^{3y} = \left(\frac{2}{10}\right)^3$

$\Rightarrow \left(\frac{1}{5}\right)^{3y} = \left(\frac{1}{5}\right)^3$

$\Rightarrow 3y = 3$

$\Rightarrow y = 1$

$\therefore (0.25)^y = (0.25)^1 = 0.25$

35. If $16^{2x+4} = 4^{3x+3}$, then x = ? [BKB (Officer) 2017]

A. -5 B. 1 C. $\frac{13}{5}$ D. -1

সমাধান: $16^{2x+4} = 4^{3x+3}$

$\Rightarrow (4^2)^{2x+4} = 4^{3x+3}$

$\Rightarrow 4^{4x+8} = 4^{3x+3}$

$\Rightarrow 4x + 8 = 3x + 3$

$\Rightarrow 4x - 3x = 3 - 8$

$\Rightarrow x = -5$

36. $50^7 \times 20^7$ is 10^x times larger then 1×10^7; where x is-

A. 6 B. 7 C. 13 D. 14

সমাধান: $\frac{50^7 \times 20^7}{1 \times 10^7} = 10^x$

$\Rightarrow \frac{5^7 \times 10^7 \times 2^7 \times 10^7}{10^7} = 10^x$

$\Rightarrow \frac{(5\times2)^7 \times 10^7 \times 10^7}{10^7} = 10^x$

$\Rightarrow 10^7 \times 10^7 = 10^x$

$\Rightarrow 10^{14} = 10^x$

$\Rightarrow x = 14$

37. If $\left(\frac{a}{b}\right)^{x-1} = \left(\frac{b}{a}\right)^{x-3}$ [Standard Bank (Pro. Off.) 2008]

A. 1 B. 2 C. $\frac{1}{2}$ D. $\frac{7}{2}$

সমাধান: $\left(\frac{a}{b}\right)^{x-1} = \left(\frac{b}{a}\right)^{x-3}$

$\Rightarrow \left(\frac{b}{a}\right)^{1-x} = \left(\frac{b}{a}\right)^{x-3}$ $[x^a = \left(\frac{1}{x}\right)^{-a}]$

$\Rightarrow 1 - x = x - 3$

$\Rightarrow 2x = 4$

$\Rightarrow x = 2$

38. At a certain club, the number of male members is twice than that of female members. It $\frac{1}{4}$ male members are engineers and $\frac{1}{5}$ of female members are engineer, what fraction of the members are non-engineers? [IBA MBA '17]

A. $\frac{13}{25}$ B. $\frac{23}{30}$ C. $\frac{2}{5}$ D. $\frac{8}{19}$ E. None of these

সমাধান: ধরি, female member 100 জন।

male member 200 জন।

male engineer $200 \times \frac{1}{4} = 50$ জন

female engineer $100 \times \frac{1}{5} = 20$ জন

$\therefore$ Total engineer $(50 + 20) = 70$ জন

fraction for non-engineer $= \frac{300-70}{300} = \frac{23}{30}$

39. 5 times of a number is equal 2 times of cube of the number less than 6. What is the square of the number? [IBA MBA Dec '19]

A. $\frac{1}{4}$ B. 2 C. $\frac{9}{4}$ D. 4 E. None of these

সমাধান: ধরি, সংখ্যাটি x.

$5x = 2x^3 - 6$

$\Rightarrow 2x^3 - 5x - 6 = 0$ .....(i)

Option test:

(A) Numberটির Square $x^2 = \frac{1}{4}$ হলে $x = \pm\frac{1}{2}$

$x = \frac{1}{2}$ or $x = -\frac{1}{2}$ কোনটির জন্যই (i) সিদ্ধ নয়

(B) $x^2 = 2 \Rightarrow x = \neq 2$

$x = \sqrt{2}$ or $x = -\sqrt{2}$ কোনটির জন্যই eqn (i) সিদ্ধ নয়

(C) $x^2 = 4 \Rightarrow x = \pm 2$ .....সিদ্ধ নয়

(D) $x^2 = 4 \Rightarrow x = \pm 2$

$x = 2$ এর জন্য সমীকরণ (i) সিদ্ধ

$2(2)^3 - 5(2) - 6 = 0$

40. If x & y are integers, and 7x−4y=20, which of the following could be the value of x? [IBA MBA 15-16]

A. 6 B. 8 C. 9 D. 15 E. None of these

Solution: $7x - 4y = 20$

$\Rightarrow 4y = 7x + 20$

$\Rightarrow y = \frac{7x+20}{4}$

যেহেতু, y integer, $\frac{7x+20}{4}$ integer হতে হলে $7x + 20$ কে 4 দ্বারা বিভাজ্য হতে হবে। যেহেতু, 20, 4 দ্বারা বিভাজ্য, তাই 7x কে আলাদাভাবে 4 দ্বারা বিভাজ্য হতে হবে।

$7 \times 6 = 42$; 4 দ্বারা বিভাজ্য নয়।

$7 \times 8 = 56$; 4 দ্বারা বিভাজ্য।

তাই, $x = 8$ হতে পারে।

9, 15 odd। তাই এগুলো কখনো Answer হতে পারে না।

41. If $(a+a+a)=(b+b+b+b)$ & $a+b=7$, then what is the value of (a^2-b^2)? [IBA MBA 16-17]

A. 0 B. 3 C. 4 D. 7 E. None of these

Solution: $3a=4b$

$\Rightarrow 3a-4b=0$

$\Rightarrow 3a+3b-7b=0$

$\Rightarrow 3(a+b)-7b=0$

$\Rightarrow 3\times 7-7b=0$

$\Rightarrow 21=7b$

$\therefore b=3$

$3a=4b$

$\Rightarrow 3a=4\times 3$

$\Rightarrow a=\frac{12}{3}$

$\therefore a=4$

$a^2-b^2=4^2-3^2=7$

42. A man sells seven different sized balls. Each ball costs n taka more than the next one below it in size, and the price of the biggest ball is tk. 46. If the sum of the prices of seven different balls is tk. 196, what is the value of n? [IBA MBA '16]

A. 6 B. 7 C. 8 D. 9 E. None of these

Solution: ধরি, সবচেয়ে ছোট বলের দাম a টাকা।

সবচেয়ে বড় অর্থাৎ 7^{th} বলের দাম 46 টাকা।

সসীম ধারা অনুসারে, $a+(7-1)n=46$

$\Rightarrow a+6n=46 \dots\dots\dots\dots\dots (i)$

আবার, $\frac{7}{2}\{2a+(7-1)n\}=196$

$\Rightarrow \frac{7}{2}(2a+6n)=196$

$\Rightarrow a+3n=\frac{196}{7}=28 \dots\dots\dots\dots\dots (ii)$

$(i)-(ii)$ করে পাই, $3n=18$

$\therefore n=6$

43. A tank that was 40% full of oil emptied into a 20 gallon bucket. If the oil fills 35% of the bucket's volume, then what is the total capacity of the tank, in gallons? [IBA MBA Dec' 20]

A. 8.75 B. 15 C. 16 D. 17.5 E. 19

সমাধানঃ (D). Tank Capacity T.

$\therefore 0.4T=20\ Gallon\times 0.35 \Rightarrow T=17.5\ Gallons$ Ans. 17.5 Gallons

44. One-fourth of a number is equal to two fifth of another number. If 50 is added to the larger number, it becomes two times the second number. What is the smaller number? [IBA BBA 14-15]

A. 75 B. 80 C. 100 D. 125 E. None of these

সমাধানঃ ধরি, larger number x

smaller number y

$\frac{1}{4}x=\frac{2}{5}y$

$\Rightarrow 5x=8y \dots\dots\dots\dots\dots (i)$

$(x+50)=2y$

$\Rightarrow x=2y-50 \dots\dots\dots\dots\dots (ii)$

$\therefore 5(2y-50)=8y$

$\Rightarrow 10y-250=8y$

$\Rightarrow y=125$

45. The cost of 12 pencils and 10 pens is tk. 320. The cost of 20 pencils and 15 pens is tk. 500. What is the difference between the cost of a pen and a pencil? [IBA MBA '17]

A. 5 B. 10 C. 15 D. 20 E. None of these

Solution: ধরি, pencil ও pen এর দাম x ও y টাকা।

$12x + 10y = 320$

$\Rightarrow 6x + 5y = 160 \dots\dots\dots\dots\dots (i)$

$20x + 15y = 500$

$\Rightarrow 4x + 3y = 100$

$\Rightarrow 4x = 100 - 3y$

$\Rightarrow x = \frac{100-3y}{4} \dots\dots\dots\dots\dots (ii)$

(i) এর মান বসিয়ে, $6 \times \frac{100-3y}{4} + 5y = 160$

$\Rightarrow \frac{600-18y-120y}{4} = 160$

$\Rightarrow 2y = 640 - 600$

$\Rightarrow y = 20$

$\therefore x = \frac{100-3\times20}{4} = 10$

$y - x = 20 - 10 = 10$ tk.

46. 6 students did not participate and 10 students failed in exam. Among the students who passed in the exam, Abir stood 15^{th} from the top and 30^{th} from the bottom in the merit list. How many students were there in the class? [IBA MBA '18]

A. 44 B. 50 C. 60 D. 57 E. None of these

Solution:

14 → 15^{th} Abir 30^{th} ← 29

Pass করেছে $14 + 1 + 29 = 44$ জন

Total student $44 + 6 + 10 = 60$ জন

47. Asif, Rakib and Saad have x, y and z number of marbles respectively. If $x = 6y = 3z$, what fraction of his marbles should Asif give to Rakib and Saad so that all of them have equal number of marbles? [IBA MBA 16-17]

A. $\frac{1}{5}$ B. $\frac{1}{4}$ C. $\frac{1}{3}$ D. $\frac{1}{2}$ E. None of these

সমাধান: ধরি, Asif এর মার্বেল আছে 18টি।

$x = 18$

$y = 3$

$z = 6$

Rakib ও Saad এর মোট মার্বেল $(6 + 3) = 9$টি

Asif কে মার্বেল দিতে হবে $(18 - 9) = 9$টি

$\therefore$ Fraction of Asif's marble $\frac{9}{18} = \frac{1}{2}$

48. If $(125)^{14} \times (48)^8$ were expressed as an integer, how many consecutive zeros would that integer have immediately to the left of its decimal point? [If $(125)^{14} \times (48)^8 = x$, then how many trailing zeros does x have? [IBA MBA Dec' 2020]

A. 22 B. 32 C. 42 D. 50 E. 112

সমাধানঃ (B). $(125)^{14} \times (48)^8$

$= (5^3)^{14} \times (2^4 \times 3)^8$

$= 5^{42} \times 2^{32} \times 3^8$

$= (5 \times 2)^{32} \times 3^8 \times 5^{10}$

$= \underline{10^{32}} \times \underline{3^8 \times 5^{10}}$

32টি 0 থাকবে — এই অংশের product-এ কোন 0 থাকবে না।

49. If x and y are positive integers and $x^4y^5 = 512$, which of the following is the value of xy?

[IBA MBA 15-16]

A. 2 B. 4 C. 8 D. 10 E. None of these

সমাধানঃ $x^4y^5 = 512$

$\Rightarrow 2^4 2^5 = 512$

$\Rightarrow 2^9 = 512$

$\therefore x = 2, y = 2; xy = 4$

50. If $4^a + 4^{a+1} = 4^{a+2} - 176$, what is the value of a?

A. 2 B. 4 C. 6 D. 8 E. 10

সমাধানঃ $4^a + 4^{(a+1)} = 4^{a+2} - 176$

$\Rightarrow 4^a + 4^{a+1} - 4^{a+2} = -176$

$\Rightarrow 4^a(1 + 4^1 - 4^2) = -176$

$\Rightarrow 4^a(-11) = -176$

$\Rightarrow 4^a = 16$

$\Rightarrow 4^a = 4^2$

$\Rightarrow a = 2$

Written Math

1. Rahim gave half of his stamps to Karim, Karim gave half of his stamps to Fatima, Fatima gave $\frac{1}{4}$ of stamps given to the Tonmoy and kept the remaining 12. How many stamps did Rahim start with?

[PGCL – AM- 2021]

Solution: Let Rahim start with x stamps.

Rahim gave Karim = $\frac{x}{2}$

Karim gave Fatime = $\frac{x}{4}$

Fatima gave Tonoy = $\frac{x}{16}$

According to the questions,

$x - \frac{x}{2} - \frac{x}{4} - \frac{x}{16} = 12$

$\Rightarrow \frac{16x - 8x - 4x - x}{16} = 12$

$\Rightarrow \frac{16x - 13x}{16} = 12$

$\Rightarrow \frac{3x}{16} = 12$

$\Rightarrow x = \frac{12 \times 16}{3}$

$\therefore x = 64$

$\therefore$ Rahim start with 64 stamps. (Answer)

2. Abir contributed $\frac{2}{3}$ of his salary to a charity, which is half the salary of Sadib. Sadib contributed $\frac{3}{4}$ of his salary to the same charity which is twice the salary of Tazul. Tazul contributed $\frac{1}{4}$ of his salary to the charity. If Sadib's salary is tk. 20,000, what was the total contribution to the charity? [IBA BBA 14-15]

সমাধান: Sadib এর salary 20,000 টাকা

Abir এর contribution → $\frac{2}{3}$ of Abir's salary = $\frac{1}{2}$ of Sadib's salary

→ $\frac{2}{3}$ of Abir's salary = $\frac{1}{2} \times 20000$

→ Abir's salary = $\frac{10000 \times 3}{2} = 15000$

Sadib's contribution → $\frac{3}{4}$ of his salary = 2×Tazul's salary

→ $\frac{3}{4} \times 20000 = 2 \times$ Tazul's salary

→ Tazul's salary = $\frac{3 \times 20000}{4 \times 2} = 7500$

Total contribution = $\frac{2}{3} \times$ Abir এর salary + $\frac{3}{4} \times$ Sadib এর salary + $\frac{1}{4} \times$ Tazul এর salary

$= \frac{2}{3} \times 15000 + \frac{3}{4} \times 20000 + \frac{1}{4} \times 7500$

$= 10000 + 15000 + 1875$

$= 26875$ (Answer)

3. Eight people are planning to share the cost of rental car. If one person withdrawn from the arrangement and the others share equally the entire cost of the car, then the share of each of the remaining persons will be increased by-

সমাধান: ধরি, গাড়ির মোট Rent 56 টাকা।

মোট, 8 জন হলে প্রতিজনের ভাড়া $\frac{56}{8} = 7$ টাকা

মোট 7 জন হলে প্রতিজনের ভাড়া $\frac{56}{7} = 8$ টাকা

Increase = $\frac{(8-7)}{7} = \frac{1}{7}$ (Answer)

4. 3 people are splitting a tk. 150 bill. If Ayon pays tk. 5 less than Abir, while Tazul pays more than tk. 60, what is the most Ayon can pay, given all of them pay integer amounts? [IBA MBA '18]

সমাধান: Let, Ayon এর বিল x টাকা

Abir এর বিল $x + 5$ টাকা

Ayon কে maximum করতে হলে বাকিদের minimum করতে হবে। তাই, Tazul এর বিল 61 টাকা।

$x + x + 5 + 61 = 150$

$\Rightarrow 2x = 150 - 66$

$\Rightarrow x = 42$ (উত্তর)

5. A son got $\frac{3^{th}}{5}$ of his father's property. He sells $\frac{2^{rd}}{3}$ of his share for tk. 1,00,000. What is the value of the original property owned by his father?

Solution: $\frac{2^{rd}}{3}$ of son's share is 1,00,000 tk.

∴ Son's full share = $\frac{100000 \times 3}{2} = 150000$ tk.

Son's share = father's property's $\frac{3^{th}}{5}$

$\Rightarrow \frac{3^{th}}{5} = 150000$ tk.

$\Rightarrow$ full property = $\frac{150000 \times 5}{3} = 250000$ tk. (Answer)

6. Tasty cookies sells two kinds of cakes: lemon for tk. 40 and cheese for tk. 25. On a certain day, the shop sold 100 cakes and got tk. 2980 in revenue from the sales. How many lemon cakes did they sell? [IBA MBA 15-16]

সমাধান: ধরি, Lemon cookies বিক্রি হয়েছে xটি।

∴ Cheese cookies বিক্রি হয়েছে $(100 - x)$টি

$x + 40 + (100 - x) \times 25 = 2980$

$\Rightarrow 40x + 2500 - 25x = 2980$

$\Rightarrow 15x = 480$

$\Rightarrow x = 32$ (Answer)

7. Tazul has X number of books, which is 3 times as many as Sadib and $\frac{1}{2}$ as many as Mimi. How many books do the three of them have altogether , in terms of x? [IBA MBA '17]

Solution: Tazul এর বই আছে xটি।

Sadib এর বই আছে $\frac{x}{3}$টি।

Mimi এর বই আছে $2x$টি।

মোট বই $= x + \frac{x}{3} + 2x = \frac{10x}{3}$টি (উত্তর)

8. Abir took $\frac{3}{5}$ of the marbles kept in a box. His younger took another $\frac{3}{5}$ of the remaining marbles. Then his sister took another $\frac{3}{5}$ of the remaining marbles. What fraction of the marbles left in the box? [IBA MBA-16]

সমাধান: ধরি, মোট মার্বেল ছিলো 1000।

আবির নিলো $1000 \times \frac{3}{5} = 600$টি

অবশিষ্ট 400টি।

আবির এর ছোট ভাই নিলো $= 400 \times \frac{3}{5}$টি $= 240$টি

অবশিষ্ট 160টি।

ছোটবোন নিলো $160 \times \frac{3}{5}$টি $= 96$টি

অবশিষ্ট 64টি।

∴ Remaining fraction $\frac{64}{1000} = \frac{8}{125}$ (Answer)

9. A man spent $\frac{1}{2}$ of his money and then lost $\frac{1}{4}$ of the remainder. He was left with tk. 3600. How much did he start with? [IBA MBA 2015-16]

সমাধান: ধরি, মোট টাকা x

$\frac{1}{2}$ খরচ করার পর অবশিষ্ট $\left(1 - \frac{1}{2}\right)x = \frac{x}{2}$

$\frac{x}{2}$ এর $\frac{1}{4}$ হারানোর পর অবশিষ্ট $\left(1 - \frac{1}{4}\right) \times \frac{x}{2} = \frac{3}{4} \times \frac{x}{2} = \frac{3x}{8}$

এখন, $\frac{3x}{8} = 3600$

$\Rightarrow x = \frac{3600 \times 8}{3} = 9600$

10. Abir and Chaity buy chocolates and pens at a grocery store that sales each of its chocolates for a certain price and each of its pen for a certain price. Abir spends twice as much as Chaity spends buying three times as much chocolate and the same number of pens. If Chaity spends Tk. 500 on four chocolates and five pens. How much does one pen cost? [DBBL (Asst. Officer) 2023]

সমাধান: ধরি, 1টি চকোলেটের দাম C টাকা এবং 1টি কলমের দাম P টাকা।

প্রশ্নমতে, চৈতীর ক্ষেত্রে পাই, $4C + 5P = 500 \ldots\ldots\ldots\ldots\ldots (i)$

এবং আবিরের ক্ষেত্রে পাই, $12C + 5P = 1000 \ldots\ldots\ldots\ldots\ldots (ii)$

(i) নং সমীকরণকে 3 দ্বারা গুণ করে গুণফল থেকে (ii) নং সমীকরণ বিয়োগ করলে পাই,

$$\begin{array}{rrr} 12C + 15P & = & 1500 \\ 12C + 5P & = & 1000 \\ (-) \quad (-) & & (-) \\ \hline 10P & = & 500 \end{array}$$

$\therefore P = 50$ টাকা (Answer)