

Revision X

February 16, 2026

- How many even integers between 1000 and 5000 have four different digits?

- Let $f(x)$ be a function such that $f(x) + f(x - 1) = x^2$, for each real number x . If $f(9) = 24$, then what is the value of $f(24)$?

- Two trains A and B begin to enter a tunnel simultaneously at opposite ends on parallel tracks. While train A takes 14 seconds to completely enter the tunnel, train B takes only 7 seconds. Train B is $\frac{4}{3}$ as fast as A. How much time (in seconds) do the two trains take to cross each other completely?

- Prakash finds the average of five two digits numbers. If one number is reversed and the average is taken again, then the average increase by 7.2. If all five numbers are consecutive multiples of four, then find the number which is reversed.

- Let $ABCD$ be a parallelogram. Extend AB through B to a point P , and let PD intersect BC at E and AC at F . If PE is 16 cm and EF is 9 cm, what is the length (in cm) of FD ?

- A cake is prepared by mixing flour, butter, and sugar in the ratio 5 : 4 : 7 by volume. The weights of equal volumes of flour, butter, and sugar are in the ratio 5 : 3 : 9. What will be the weight of sugar in 1.5 kg of cake?

- The increasing sequence 3, 15, 24, 48, 63, ... consists of those positive multiples of 3 that are 1 less than a perfect square. What is the 28th term of the sequence?

- Two men, P and Q, undertake a project for Rs.48,000, they can do the work individually in 24 days and 40 days respectively. If they complete the project in 10 days with the help of a friend, R, then what is the daily wages (in Rs.) of R?

- A football match between Club A and Club B was played in a small stadium which had a rectangular seating arrangement. Every row had 4 supporters of Club A and every column has 3 supporters of Club B. If 6 seats were vacant, what is the minimum number of spectators who were watching the match?

- Four circles with radii of 8 cm, 8 cm, 9 cm, and ' m/n ' cm mutually touch each other externally. Find the value of $m + n$, where m, n are co-prime numbers.

- A rabbit and a hound start from A and B simultaneously moving towards B and A respectively. The hound after reaching A turns around and moves towards B. The rabbit still has 20% distance to cover to reach B, when the hound overtakes it. The speed of the rabbit is 120 strides/minute and that of the hound is X strides/minute. If the ratio of the lengths of the strides of the rabbit and the hound is 1 : 3, find X.

- In an election survey, 80% of total voters took part, of which 50% claimed to vote for candidate A, 10% are uncertain and rest claimed to vote for B. If all of them voted according to their commitments on the day of election and those who were not part of survey, voted to A and B in ratio of 3 : 2. All the people who were uncertain in survey, voted to A and B in the ratio of 1 : 4 in election. If A won by 648 votes, then find total number of votes in election.

- A boat covers a total distance of 360 km downstream in three equal parts with the speed of boat be $4x$ km/h, $5x$ km/h and $7x$ km/h respectively. If the speed of stream is x km/h and boat take total of 29.5 hours, then find the time (in hours) boat will take to cover the given distance upstream in three equal parts with three given speeds.

- Five times A's money added to B's money is more than Rs. 51. Three times A's money minus B's money is Rs. 21. If a represents A's money and b represents B's money, where a and b are both positive integers, then what is the minimum possible value of $a + b$?

- There are five similar jars kept on a table such that there is water in each of them in the ratio $4 : 6 : 3 : 5 : 7$ respectively. If the volume of water in all these jars is 60% of the total volume of all the jars, then the water in how many jars is more than 55% of the volume of the jar?

- During the office party on New Year's Eve, a bank manager made the 1000 employees working under him perform an odd ritual. There were 1000 lockers in the bank. Employee 0001 went to every locker and opened it. Then, Employee 0002 went to every second locker and closed it. Employee 0003 went to every third locker. If the locker was closed, he opened it, and if it was open, he closed it. Employee 0004 repeated the process with every fourth locker, and so on. After Employee 1000 completed the ritual, how many lockers were left open?

- Here are 5 equations using 5 variables P, Q, R, S & T. Each letter represents one number:

$$P - Q = Q$$

$$Q \times R = P$$

$$S : Q = T$$

$$R \times R = T$$

$$R + T = P$$

Find $P \times Q \times R \times S \times T$.

- A mathematician, while going home, had to walk up a flight of stairs. The stairs consisted of twenty steps. One day, the mathematician, to get over monotony, decided to paint the stairs maroon and orange in accordance with the following rules he came up with:
 1. Every step was to be either painted maroon or orange.
 2. Orange steps would never succeed each other.In how many ways can the mathematician paint these stairs?

- Neha, a shopaholic, was caught overspending by her friends who decided to teach her a lesson on how to economise. They gave Neha Rs. 100 and asked her to buy no more or no less than 100 items for that amount. Also, the price of those 100 things should be exactly Rs. 100 - not a rupee less, not a rupee more. She was only allowed to buy ball-point pens, pencils and sketch pens. The sketch pens cost Rs. 6 each, the ball-point pens Rs. 3 each and the pencils cost 10 paise each. Their plan was to distribute the 100 things amongst the under-privileged. How many of each thing must she buy in order to satisfy the given conditions?

- Rachel and her spouse, Ross, held a party last night to celebrate their 1st Wedding Anniversary. They invited 4 other couples to the party. As the party progressed, Rachel discovered that, prior to the party, each person except her knew a different number of the people who were present at the party. Assuming that if Person A knew Person B, Person B also knew Person A, how many people did Ross know prior to the party? Also, how many people did Rachel know?



