

# Revision II

December 1, 2025

- The cruise liner “Queen Alice” is 380 m long and travels at a speed of 32 kmph in still water. The frigate “Lord Harry” is 180 m long and travels at 40 kmph in still water. The two ships pass each other in the Atlantic ocean, traveling in opposite directions, in a region where there is current of 8 m/s. How long will it take them to pass each other?

- In a box there are 90 slips, numbered from 1 to 90. Ritu picks up four slips at random, one after the other, without replacement. If  $P$  is the probability that the numbers on the slips, in the order she picks them up, are in ascending order, then find the value of  $120P$ .

- If  $a:b = 3:2$ ,  $b:c = 4:5$ ,  $c:d = 5:6$  and  $d:e = 6:5$ , find the value of  $\frac{ad + ce}{bc + ae}$ .

- A cube is taken and all its six faces are painted. Then, the cube is cut by six planes so as to yield the maximum number of smaller cubes. If 3.5 litres of paint was consumed to paint the original cube, find the additional quantity of paint needed to paint all the unpainted faces of all the smaller cubes.

- Sally had three dice with a unique alphabet printed on each face instead of numbers. All 18 alphabets on the dice were distinct. She threw the dice together a few times and on rearranging the letters that appeared on the upper surfaces, she formed the following words:

**RID, BOY, ZIP, HEP, DIN, TRY, YES, COT, MIC, LET,  
DOT, BUN, PAN**

Using this information, deduce the letters on each Die.

- There are two pipes  $P_1$  and  $P_2$ , through which water flows into a tank at speeds of 2 m/s and 6 m/s respectively. If the cross-sectional areas of the pipes are  $15 \text{ cm}^2$  and  $25 \text{ cm}^2$  respectively, and it takes 40 minutes to fill the tank, then find the capacity of the tank (in kilolitres).

- Manishankar borrowed Rs.5460 from a money lender and repaid it in three equal annual instalments, at a compound interest of 20% per annum, with each instalment being paid at the end of every year. What is the value of each instalment?



- $5A_{n+1} + 1 = 5A_n + n$ . Given  $A_5 = 55$ , find  $A_{55}$ .

- A rectangular tank, 8 m deep, is filled with water upto a certain level. If 50% of the water is removed from the tank, the water level falls by 30% of the total depth. Up to what level from the base was the tank filled initially?

- A triangle  $ABC$  is isosceles with the two equal sides measuring 5 cm and the third side being 8 cm in length. Find its circumradius.

- On which day of the week does 4<sup>th</sup> June 2001 fall?

- How many cubes of dimensions  $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$  are required to cover a cube of dimensions  $7\text{ cm} \times 7\text{ cm} \times 7\text{ cm}$  completely?

- 125 smaller cubes of dimensions  $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$  are stacked together to form a larger cube and then the cube is cut along two diagonals. How many of the smaller cubes are cut into smaller pieces?

- What will be the maximum possible number of pieces we get when a cube is cut by 11 cuts?

- What day of the week was 29th February 2016?



- What was the day of the week on 26th January 1950?