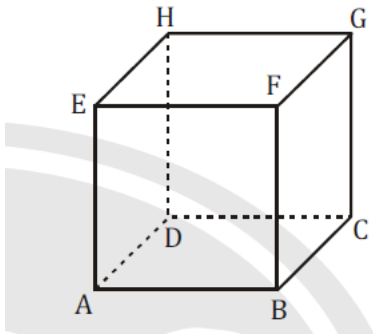


# Revision III

November 29, 2025

- An ant travels along the edges of a cube shown below. It travels along the longest path from A to F at 2 cm/s and travels back to A at 1 cm/s taking the shortest route. It does not cross any vertex more than once and completes the journey in 120 seconds. What is the length of each side of the cube?



- A mutual fund gives 21% per annum compound interest. Another investment gives the same earning in 5 years under simple interest as the mutual fund gives in two years. What is the rate of interest of simple interest?

- 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?

- Distance between two points P and Q is 1200 meters. Car A starts from P and travels on a straight line at a speed of 15 m/s to reach Q. Then, it reverses its direction immediately to travel back to P. If car B starts from P towards Q, four seconds later than car A at a speed of 10 m/s, what distance from Q will these two cars meet?

- The time for a pendulum's swing is directly proportional to the square root of its length. A pendulum 21 cm long is found to swing 30 times per minute. How many swings per minute will be made by a pendulum  $28\frac{2}{3}$  cm long?

- In how many ways can an amount of Rs.100 be paid using exactly 27 coins of denominations Rs.1, Rs.2 and Rs.5 such that at least one coin of each denomination is used?

- Find the number of distinct terms in the expansion  $(x + y + z + w)^{10}$ .



- If three runners A, B and C, start simultaneously from the same point and run around a circular track of length 500 m, in the same direction, at speeds 5 kmph, 8 kmph and 15 kmph respectively, what is the time taken by them to meet for the first time at the starting point?

- Tap A and Tap B when opened simultaneously, completely fill an empty tank in 20 minutes. If Tap A alone can fill three-quarters of the tank in 33 minutes, how long will it take Tap B alone to completely fill the tank?

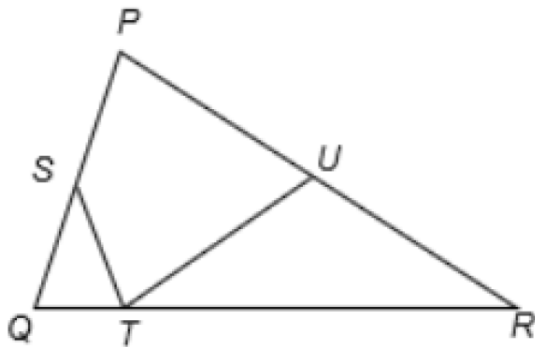
- Sally had three dice with a unique alphabet printed on each face instead of numbers. All 18 alphabets on the dice were distinct. She threw the dice together a few times and on rearranging the letters that appeared on the upper surfaces, she formed the following words:

**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?



- In the figure above,  $\angle PQR = \angle PRQ + 30^\circ$  and  $\angle QPR + \angle STU = 220^\circ$ ,  $SQ = ST$  and  $TU = UR$ . Find  $\angle PRQ$ .

- Find the time between 7 and 8 p.m. at which the minute hand and the hour hand make an angle of  $120^\circ$  with each other.

- If March 1st, 2024, is a Friday, what day of the week will be September 1st, 2024?



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

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