Brain International School

Vikas Puri, New Delhi

ASSIGNMENT

SUBJECT: MATHEMATICS CLASS-IX NOVEMBER 2026

Chapter- Propositions And Their Converses

Q1. Assertion (A): 36 has an odd number of factors.

Reason (R): 36 is a perfect square, and a perfect square has exactly one factor partner pair in which the same number repeats.

A)Both A and R are true and R is the correct explanation of A

B)Both A and R are true but R is not the correct explanation of A

C)A is true but R is false

D)A is false but R is true

Instruction for Q2 to 5- Give one counterexample for each claim:

Q2. Every odd number is a prime number.

Q3. If two angles are complementary, then they must be equal.

Q4. Every quadrilateral with equal diagonals is a rectangle.

Instruction for Q5 to 9->Frame the converse for each of the propositions in Questions 5–9. Then, determine if each of the two statements is true or not. Justify the true statements and give a counterexample for each false statement:

Q5. If the product of two integers is negative, then one integer is negative and the other is positive.

Q6. If a quadrilateral is a square, then its diagonals bisect each other at right angles.

Q7. If the square of an integer is divisible by 9, then the integer is divisible by 3.

Q8. If the sum of two integers is even, then both integers are even.

Q9. If a triangle is equilateral, then it is isosceles

Q10. A triangle has side lengths 7 cm, 24 cm and 25 cm.

(a) Check whether these lengths satisfy the Pythagoras relation.

(b) Using the converse of Pythagoras theorem, determine the type of triangle.

(c) Write the converse used in part (b) in "if–then" form.

Q11. A school rule says: "If a student scores at least 90% in the mathematics test, then the student is shortlisted for the mathematics team."

(a) Identify the condition and conclusion.

(b) Write the converse.

(c) Is the converse necessarily true?

Chapter- Math Of Space: Surface Area and Volume

Q1. A cube and cuboids have the same volume. The dimensions of cuboids are in ratio 1 : 2 : 4. If the difference between the cost of painting the cuboids and cube whole surface area at rate of Rs 5 per m^2 is Rs. 80. Find their volumes.

Q2. If a square paper of side 25cm is rolled to form a cylinder, then find the total and curved surface area of the cylinder.

Q3. The diameter of a sphere is decreased by 30%. By what percent its surface area decreases?

Q4. If h, s and v are height, curved surface and volume of cone respectively, prove that $3vh^3 + 9v^2 - s^2h^2 = 0$

Q5. A residential house society is built in 4000 sq m in area. It has an underground tank to collect the rain water the length, breadth and height of which are 50m, 40m and 4m respectively. If it rains at the rate of 2mm per minute for 5 hours, then calculate the depth of water in the tank. What value is depicted in problem?

Q6.

. On a hot summer day, Kamala set-up a stall near her house in the village under the shade of a tree. She took cold water in a completely full spherical matka (an earthen pot) of radius 39 cm and serve this to thirsty people passing by in a cylindrical glasses each of radius 4 cm and height 13 cm
(i) if she fills up to three-fourths of its height with water, find the number of people she can give water to
(ii) what values are exhibited by Kamala

Q7. A conical tent was set-up to accommodate 10 students and one teacher for a summer camp in which the students participated in activities like planting saplings, yoga, cleaning lakes, testing the water for contaminants and pollutant levels and desilt the lake bed and also using the silt to strengthen bunds
Find the radius and height of the tent if each person must have 4 m^2 of the space on the ground and 20 m^3 of air to breathe.

Q8 The radius and height of a cone are each increased by 20% then the volume of the cone is increased by _____

Q9. The radii of two cylinders are in the ratio of 2:3 and their heights are in the ratio of 5:3. Find the ratio of their volumes.

Q10. 30 circular plates, each of radius 14 cm and thickness 3cm are placed one above the another to form a cylindrical solid. Find :

(i) the total surface area

(ii) volume of the cylinder so formed.

Q11. A cylindrical tube opened at both the ends is made of iron sheet which is 2 cm thick. If the outer diameter is 16 cm and its length is 100 cm, find how many cubic centimeters of iron has been used in making the tube ?