



Brain International School

Vikas Puri, New Delhi

ASSIGNMENT NO. 1

SUBJECT: MATHEMATICS

CLASS-XI

APRIL &

may, 2026

Chapter sets

Ques 1 In a survey of 400 students in a school, 100 were listed as taking apple juice, 150 as taking orange juice and 75 were listed as taking both apple as well as orange juice. Find how many students were taking neither apple juice nor orange juice.

Ques 2 There are 200 individuals with a skin disorder, 120 had been exposed to the chemical C1, 50 to chemical C2, and 30 to both the chemicals C1 and C2. Find the number of individuals exposed to

(i) Chemical C1 but not chemical C2 (ii) Chemical C2 but not chemical C1 (iii) Chemical C1 or chemical C2

Ques 3 In a group of 65 people, 40 like cricket, 10 like both cricket and tennis. How many like tennis only and not cricket? How many like tennis?

Ques 4 A market research group conducted a survey of 1000 consumers and reported that 720 consumers like product A and 450 consumers like product B, what is the least number that must have liked both products?

Ques 5 Out of 500 car owners investigated, 400 owned car A and 200 owned car B, 50 owned both A and B cars. Is this data correct?

Ques 6 A college awarded 38 medals in football, 15 in basketball and 20 in cricket. If these medals went to a total of 58 men and only three men got medals in all the three sports, how many received medals in exactly two of the three sports ?

Ques 7 In class XI of a certain school, there are 20 students in a chemistry class and 30 students in a physics class. Find the number of students which are either in chemistry class or in physics class in following cases

(i) the two classes meet at the same time (ii) the two classes meet at different time and 10 students study both the subjects

Ques 8 In a survey of 100 students, the number of students studying the various languages were found

To be : English only 18, English but not Hindi 23, Eng and Sanskrit 8, Eng 26, Sanskrit 48, Skt and Hindi

8, no languages 24. Find (i) how many students were studying Hindi (ii) how many students were studying English and Hindi

Ques 9 If A and B are two sets such that $n(A) = 17$, $n(B) = 23$ and $n(A \cup B) = 38$

Find S(i) $n(A \cap B)$ Ans 2 (ii) $n(A-B)$ ans 15 (iii) $n(B-A)$ ans 21

Ques 10 if total elements 50 , $n(A)=30$, $n(A \cap B)=12$ and $n(A \cup B)' = 15$ then find (i) $n(B)$

(II) $n(B-A)$ ans 17 , 5

Ch relations

Ques 11. A relation R is defined from a set $A = \{2,3,4,5\}$ to a set $B = \{3,6,7,10\}$ as follows

$(x, y) \in R \Rightarrow x$ is relatively prime to y .

Ques 12. Let $F : \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = x^2 + 3$. Find

(i) $\{x : f(x) = 28\}$ (ii) the pre images of 39 and 2 under f .

Ques 13. Let $F : \mathbb{R} \rightarrow \mathbb{R}$ be a function given by $f(x) = x^2 + 1$. Find

(i) $f^{-1}(5)$ (ii) $f^{-1}(26)$ (iii) $f^{-1}(10, 37)$.

Ques 14. Find domain of each of the following

(i) $f(x) = \frac{1}{\sqrt{1-x}}$ (v) $f(x) = \sqrt{4-x^2}$

Ques 15. Find range of each of the following

(i) $f(x) = \frac{1}{\sqrt{x-5}}$ (ii) $f(x) = \sqrt{16-x^2}$ (iii) $f(x) = \frac{x}{1+x^2}$ (iv) $f(x) = \frac{3}{2-x^2}$

Ch trigo

Ques 16. the angles of a triangle are in A.P. the number of degrees in the least is to the number of radians in the greatest is $60:\pi$. Find the angles in degrees

Ques 17. A horse is tied to a post by a rope . if the horse moves along a circular path always keeping the rope

Tight and describe 88 mtrs when it has traced out 72° at the centre . find the length of the rope.

Ques 18. A circular wire of radius 7.5 cm is cut and bent so as to lie along the circumference of a hoop whose

Radius is 120 cm . find in degrees the angle which is subtended at the centre of the hoop.

Ques 19. If $\tan \alpha = \frac{m}{m+1}$ and $\tan \beta = \frac{1}{2m+1}$ prove that $\alpha + \beta = \frac{\pi}{4}$

Ques 20 If $A+B = \frac{\pi}{4}$ prove that $(1+\tan A)(1+\tan B) = 2$ (ii) $(\cot A - 1)(\cot B - 1) = 2$

prove that (i) $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ = 1/16$ (ii) $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = 1/16$

Ques 21. prove that (i) $\frac{1+\sin 2\theta + \cos 2\theta}{1+\sin 2\theta - \cos 2\theta} = \cot \theta$ (ii) $\frac{\cos \theta}{1+\sin \theta} = \tan \left(\frac{\pi}{4} - \frac{\theta}{2} \right)$

Ques 22. show $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2\cos 8\theta}}} = 2\cos \theta$ (ii) $\frac{\sec 8\theta - 1}{\sec 4\theta - 1} = \frac{\tan 8\theta}{\tan 2\theta}$

Ques 23. if $\tan(\alpha + \theta) = n \tan(\alpha - \theta)$ show that $(n+1)\sin 2\theta = (n-1)\sin 2\alpha$ (apply C&D)

Ques 24. IF $\sin \alpha + \sin \beta = a$ and $\cos \alpha + \cos \beta = b$ show that

$$(i) \cos(\alpha + \beta) = \frac{b^2 - a^2}{b^2 + a^2} \quad (ii) \sin(\alpha + \beta) = \frac{2ab}{a^2 + b^2}$$

Ques 25 if A,B,C and D are angles of a cyclic quad. Prove that $\cos A + \cos B + \cos C + \cos D = 0$