

INTERNATIONAL INDIAN SCHOOL DAMMAM
QUESTIONS COMPILED FROM PREVIOUS YEARS QUESTION PAPERS
SUBJECT: MATHEMATICS

GRADE: X

1.	The equation $x(x + 1) + 8 = (x + 2)(x - 2)$ is (a) linear equation (b) quadratic equation (c) cubic equation (d) bi-quadratic equation
2.	The value of k for which the system of equations $x + y - 4 = 0$ and $2x + ky = 3$, has no solution, is (a) -2 (b) $\neq 2$ (c) 3 (d) 2
3.	D and E are the midpoints of side AB and AC of a triangle ABC, respectively and $BC = 6$ cm. If $DE \parallel BC$, then the length (in cm) of DE is: (a) 2.5 (b) 3 (c) 5 (d) 6
4.	The probability of a leap year selected at random contain 53 Sunday is: a) $53/366$ (b) $1/7$ (c) $2/7$ (d) $53/365$
5.	If Mean of a, a+3, a+6, a+9 and a+12 is 10, then a is equal to: (a) 1 (b) 2 (c) 3 (d) 4
6.	$(\sin 30^\circ + \cos 60^\circ) - (\sin 60^\circ + \cos 30^\circ)$ is equal to: (a) 0 (b) $1 + 2\sqrt{3}$ (c) $1 - \sqrt{3}$ (d) $1 + \sqrt{3}$
7.	The angle of elevation of the top of a building from a point on the ground, which is 30 m away from the foot of the building, is 30° . The height of the building is: (a) 10 m (b) $30/\sqrt{3}$ m (c) $\sqrt{3}/10$ m (d) 30 m
8.	If $\frac{1}{2}$ is a root of the quadratic equation $x^2 - mx - 5/4 = 0$, then value of m is: (a) 2 (b) -2 (c) -3 (d) 3
9.	Graphically, the pair of equations $7x - y = 5$; $21x - 3y = 10$ represents two lines which are (a) intersecting at one point (b) parallel (c) intersecting at two points (d) coincident
10.	If triangles ABC and DEF are similar and $AB = 4$ cm, $DE = 6$ cm, $EF = 9$ cm

	and $FD=12$ cm, the perimeter of triangle ABC is: (a) 22 cm (b) 20 cm (c) 21 cm (d) 18 cm
11.	If three coins are tossed simultaneously, then the probability of getting at least two heads, is a) $\frac{1}{4}$ (b) $\frac{3}{8}$ (c) $\frac{1}{2}$ (d) $\frac{1}{8}$
12.	If the mean of first n natural numbers is $\frac{3n}{5}$, then the value of n is: (a) 3 (b) 4 (c) 5 (d) 6
13.	$2 \tan 30^\circ / (1 + \tan^2 30^\circ) =$ (a) $\sin 60^\circ$ (b) $\cos 60^\circ$ (c) $\tan 60^\circ$ (d) $\sin 30^\circ$
14.	A 10-meter ladder is placed against a wall, with its foot 5 meters away from the wall. What is the angle of inclination of the ladder with the ground? (a) 30° (b) 45° (c) 60° (d) 90°
15.	If $\operatorname{Cosec}(A+B) = \frac{2}{\sqrt{3}}$, $\sec(A-B) = \frac{2}{\sqrt{3}}$, $0^\circ < A+B \leq 90^\circ$, find A and B. (a) $25^\circ, 35^\circ$ (b) $30^\circ, 30^\circ$ (c) $45^\circ, 15^\circ$ (d) $10^\circ, 50^\circ$
16.	If one equation of a pair of dependent linear equations is $-3x+5y-2=0$. The second equation will be: (a) $-6x+10y-4=0$ (b) $6x-10y-4=0$ (c) $6x+10y-4=0$ (d) $-6x+10y+4=0$
17.	It is given that $\triangle ABC \sim \triangle DFE$, $\angle A = 30^\circ$, $\angle C = 50^\circ$, $AB = 5$ cm, $AC = 8$ cm and $DF = 7.5$ cm. Then, the following is true: (a) $DE = 12$ cm, $\angle F = 50^\circ$ (b) $DE = 12$ cm, $\angle F = 100^\circ$ (c) $EF = 12$ cm, $\angle D = 100^\circ$ (d) $EF = 12$ cm, $\angle D = 30^\circ$
18.	From the top of a 25 m high cliff, the angle of elevation of the top of a tower is found to be equal to the angle of depression of the foot of the tower. The height of the tower is: (a) 30m (b) 25m (c) 50m (d) 45m
19.	DIRECTION: In the question number 19 and 20, a statement of Assertion(A) is followed by a statement of Reason(R) Statement A (Assertion): The mode and mean are given by 7 and 8 respectively. Then the median is $\frac{23}{3}$

	<p>Statement R (Reason): $3\text{Median} = \text{Mode} + 2\text{Mean}$</p> <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)</p> <p>(c) Assertion (A) is true but reason (R) is false.</p> <p>(d) Assertion (A) is false but reason (R) is true.</p>												
20.	<p>Statement A (Assertion): A card is selected at random from a well shuffled pack of 52 playing cards. The probability of its being a face card is $\frac{3}{13}$</p> <p>Statement R (Reason): $P(\bar{E}) = 1 - P(E)$, where E is any event</p> <p>(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)</p> <p>(c) Assertion (A) is true but reason (R) is false.</p> <p>(d) Assertion (A) is false but reason (R) is true</p>												
21.	<p>Find the mode of the following frequency distribution:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Class</td> <td>10 - 20</td> <td>20 - 30</td> <td>30 - 40</td> <td>40 - 50</td> <td>50 - 60</td> </tr> <tr> <td>Frequency</td> <td>15</td> <td>10</td> <td>12</td> <td>17</td> <td>4</td> </tr> </table>	Class	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	Frequency	15	10	12	17	4
Class	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60								
Frequency	15	10	12	17	4								
22.	<p>Find the value of m for which the quadratic equation $(m - 1)x^2 + 2(m - 1)x + 1 = 0$ has two real and equal roots.</p>												
23.	<p>A 20 m long vertical pole casts a shadow 10 m long on the ground. At the same time a tower casts a shadow 50 m long on the ground. Find the height of the tower.</p>												
24.	<p>A die is thrown twice. What is the probability that</p> <p>(i) 5 will not come up either time? (ii) 5 will come up at least once?</p>												

25.	In a right triangle ABC, right-angled at B, if $\tan A = 1$, then verify that $2\sin A \cos A = 1$.																
26.	Prove that $(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = 7 + \tan^2 \theta + \cot^2 \theta$.																
27.	The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high, then find the height of the building.																
28.	For what value of X, is the median of the following frequency distribution 34.5? <table border="1" data-bbox="305 856 906 1157"> <thead> <tr> <th>Class</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>10-20</td> <td>3</td> </tr> <tr> <td>20-30</td> <td>5</td> </tr> <tr> <td>30-40</td> <td>11</td> </tr> <tr> <td>40-50</td> <td>10</td> </tr> <tr> <td>50-60</td> <td>X</td> </tr> <tr> <td>60-70</td> <td>3</td> </tr> <tr> <td>70-80</td> <td>2</td> </tr> </tbody> </table>	Class	Frequency	10-20	3	20-30	5	30-40	11	40-50	10	50-60	X	60-70	3	70-80	2
Class	Frequency																
10-20	3																
20-30	5																
30-40	11																
40-50	10																
50-60	X																
60-70	3																
70-80	2																
29.	Find the zeroes of the quadratic polynomial $x^2 + 6x + 8$ and verify the relationship between the zeroes and the coefficients.																
30.	A lending library has a fixed charge for first three days and an additional charge for each day thereafter. Rittik paid 27 for a book kept for 7 days and Manmohan paid 21 for a book kept for 5 days. Find the fixed charges and the charge for each extra day.																
31.	Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the same ratio.																
32.	The shadow of a tower standing on a level ground is found to be 40 m longer when the Sun's altitude is 30° than when it was 60° . Find the height of the tower.																
33.	If AD and PM are medians of triangles ABC and PQR respectively where $\Delta ABC \sim \Delta PQR$, prove that $AB/PQ = AD/PM$																

34.	<p>The distribution given below shows the number of wickets taken by bowlers in one-day cricket matches. Find the mean and the median of the number of wickets taken.</p> <table border="1" data-bbox="305 338 1260 489"> <tr> <td>Number of wickets</td> <td>20-60</td> <td>60-100</td> <td>100-140</td> <td>140-180</td> <td>180-220</td> <td>220-260</td> </tr> <tr> <td>Number of bowlers:</td> <td>7</td> <td>5</td> <td>16</td> <td>12</td> <td>2</td> <td>3</td> </tr> </table>	Number of wickets	20-60	60-100	100-140	140-180	180-220	220-260	Number of bowlers:	7	5	16	12	2	3		
Number of wickets	20-60	60-100	100-140	140-180	180-220	220-260											
Number of bowlers:	7	5	16	12	2	3											
35.	Draw the graphs of the equations $4x - y - 8 = 0$, $2x - 3y + 6 = 0$. Also determine the vertices of the triangle formed by the lines and the X-axis.																
36.	Solve the following quadratic equation for x : $\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0$																
37.	Prove that $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$.																
38.	<p>Prove that $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$</p>																
39.	Find the values of 'a' and 'b' for which the system of linear equations $3x + 4y = 12$, $(a + b)x + 2(a - b)y = 24$ has infinite number of solutions.																
40.	The angle of elevation of an airplane from point A is 60° . After a flight of 10 seconds, at the same height, the angle of elevation from point A is 30° .																
41.	If the airplane is flying at the speed of 720 km/hour, then find the constant height at which the airplane is flying.																
42.	<p>The Mode of the following data is 36. Find the missing value of X.</p> <table border="1" data-bbox="305 1129 1260 1203"> <tr> <td>Class</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> <td>50-60</td> <td>60-70</td> </tr> <tr> <td>Frequen</td> <td>8</td> <td>10</td> <td>X</td> <td>16</td> <td>12</td> <td>6</td> <td>7</td> </tr> </table>	Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Frequen	8	10	X	16	12	6	7
Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70										
Frequen	8	10	X	16	12	6	7										
CASE STUDY QUESTIONS																	
43.	<p>Lakshaman Jhula is located 5 kilometers north-east of the city of Rishikesh in the Indian state of Uttarakhand. The bridge connects the villages of Tapovan to Jonk. Tapovan is in Tehri Garhwal district, on the west bank of the river, while Jonk is in Pauri Garhwal district, on the east bank. Lakshman Jhula is a pedestrian bridge also used by motorbikes. It is a landmark of Rishikesh.</p> <p>A group of Class X students visited Rishikesh in Uttarakhand on a trip. They observed from a point (P) on a river bridge that the angles of depression of opposite banks of the river are 60° and 30° respectively. The height of the bridge is about 18 meters from the river.</p>																



Use

the information and figure given above to answer the following questions.

1. Find the distance PA.
2. Find the distance PB
3. Find the width AB of the river

OR

3. Find the height BQ if the angle of the elevation from P to Q be 30° .

44.

Municipality is installing playground equipment at various parks. They have to study the age group of children playing in a park of a specific colony. The classification of children according to their ages, playing in a park is shown in the following table.

Age group of children (in years)	6 - 8	8 - 10	10 - 12	12 - 14	14 - 16
Number of children	43	58	70	42	27

Use the information given above to answer the following questions.

1. In which age group, will the maximum number of children belong?
2. In which age group will the minimum number of children belong?
3. Find the Mean age of the children.

OR

3. What is the Median age of the children?

45.

Raj and Ajay are very close friends. Both the families decide to go to Ranikhet by their own cars. Raj's car travels at a speed of x km/h while Ajay's car travels 5 km/h faster than Raj's car. Raj took 4 hours more than Ajay to complete the journey of 400 km.



1. What will be the distance covered by Ajay's car in two hours?
2. Form a quadratic equation to describe the speed of Raj's car.
3. What is the speed of Raj's car?

OR

3. How much time Ajay took to cover 400 km?