

CLASS –X
MATHEMATICS

- Q. 1. The probability that a vowel selected at random in English language is an “I” is.
- Q. 2. The probability for a leap year to have 52 Mondays and 53 Sundays is.
- Q. 3. Two dice are thrown at a time. The probability that the difference of the numbers shown on the dice is 1 is.
- Q. 4. If a coin is tossed thrice, the probability of getting at least one head is.
- Q. 5. The probability that in a family of 3 children, there will be at least one boy is.
- Q. 6. Two friends were born in the year 2001. What is the probability that they have the same birthday?
- Q. 7. Three dice are thrown simultaneously. What is the probability of obtaining 17 or 18?
- Q. 8. In a game, the entry fee is Rs 5. The game consists of tossing a coin 3 times. If one or two heads show, Shweta gets her entry fee back. If she throws 3 heads, she receives double the entry fees. Otherwise she will lose. For tossing a coin three times, find the probability that she
(i) loses the entry (ii) gets double entry fee (iii) just gets her entry fee
- Q. 9. A bag contains 24 balls of which x are red, $2x$ are white and $3x$ are blue. A ball is selected at random. What is the probability that it is (a) not red (b) white
- Q. 10. A natural number is chosen at random from amongst the first 30. What is the probability that the number chosen is divisible by 4 or 5?
- Q. 11. Solve the system of linear equations
 $px + qy - p + q = 0$, $qx - py - p - q = 0$
- Q. 12. A lab assistant has a solution of 50% acid and other which has 25% acid. How much of each should be mixed to make 10 liters of a 40% acid solution?
- Q. 13. A boat goes 24Km upstream and 28Km downstream in 6hrs.it goes 30Km upstream and 21Km downstream in $6\frac{1}{2}hr$.Find the speed of the boat in still water and also speed of stream.
- Q. 14. Two candles of equal height but different thickness are lighted. The first burns off in 6hrs and the second in 8 hours. How long, after lighting both, will the first candle be half the height of the second?
- Q. 15. The sum total of the ages of father and son is 55 years. If the father was to live till his sons age equals his present age, the total of their ages would be 93 years. find their present ages.
- Q. 16. Solve for x and y : $3x + 2y = 2x + y + 3 = 4x + 3y - 3$

- Q. 17. For what value of k will the following pair of linear equations have infinitely many solutions?

$$2x - 3y = 7, (k + 1)x + (1 - 2k)y = 5k - 4$$

- Q. 18. A person is walking with uniform speed and when he has completed half his journey he increases his speed 20% and arrives at his destination. Last half part of his journey he completed 30 minutes earlier than first half part of journey. How long was he walking the first half?
- Q. 19. It can take 12 hours to fill a swimming pool using two pipes. If the pipe of larger diameter is used for 4 hours and pipe of small diameter for 9 hours, only half the pool can be filled. How long would it take for each pipe to fill the pool separately?
- Q. 20. A takes 1 hour more than B to walk 40Km. But if A doubles his speed, he is ahead of B by $1\frac{1}{2}$ hours. Find their speeds of walking.
- Q. 21. The HCF and LCM of two numbers are 33 and 264 respectively. When the first number is completely divided by 2, the quotient is 33. Find the other number.
- Q. 22. Using Euclid's division algorithm, find whether the pair of numbers 847, 2160 are co-primes or not.
- Q. 23. If the HCF of 152 and 272 is expressible in the form $272 \times 8 + 152x$, then find x
- Q. 24. Show that p^2 will leave remainder 1 when divided by 8, if p is an odd positive integer.
- Q. 25. Two alarm clock ring their alarms at regular intervals of 50 seconds and 48 seconds if they first beep together at 12noon, at what time will they beep again for the first time?
- Q. 26. Two equilateral triangles have the sides of length 34cm and 85cm respectively. Find the greatest length of tape that can measure the sides of both of them exactly.
- Q. 27. Find the LCM of 2.5, 0.5 and 0.175.
- Q. 28. If a and b are two positive integers such that $a = 4b$. Find the HCF of a and b
- Q. 29. Write whether the square of any positive integer can be of the form $3m + 2$, where m is a natural number. Justify your answer.
- Q. 30. For any positive integer n , prove that $n^3 - n$ is divisible by 6.