

# JEXPO SOLVED PAPER 2014 MATHEMATICS

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## Jexpo 2014

- The age of a father is 25 years more than his son age . The product of their ages is 84 in years . What will be son's age in years , after 10 years ? **Ans:13**
- Find the sum  $0.23+0.234+0.2345$  corrected to three significant figures.**Ans:0.699**
- The average age of 27 boys of a class is 16 years and if their teacher is included the avg is increased by  $\frac{1}{2}$  years . Find the age of the teacher.**Ans:30years**
- Solve for t,  $3t-8 \leq t$  in the set of whole numbers.**Ans:0,1,2**
- If the sum of roots of an equation ,  $x^2+px+1=0$  ( $p>0$ ) is twice the difference between them then  $p=?$  **Ans:  $\frac{4}{\sqrt{3}}$**
- If a regular hexagon is inscribed in a circle of radius 4 cm, then find the area of the polygon in  $\text{cm}^2$ . **Ans:  $24\sqrt{3}$**
- If  $\tan A=1/2$  and  $\tan B= 1/3$  then  $A+B=?$  **Ans:  $\frac{\pi^c}{4}$**
- The difference between SI and CI on a sum of Rs 20,000 for 2 years is Rs 112.50. What is the annual rate of interest.**Ans:7.5%**
- A sum of money doubles itself in 3 years . how many times itself will the sum become in a period of 9 years at SI? **Ans:4**
- If  $X^\circ$  is the measure of an angle which is equal to its complement and  $y^\circ$  is the measure of an angle which is equal to its supplement then  $X^\circ/y^\circ$  is..... **Ans:0.5**
- There are three amounts a, b and c such that b is the SI on c and c is the SI on a . Which of the following must always be true? **Ans:C<sup>2</sup>=ab**
- A sold an article to B at 10% profit . B sold it to C at 20% profit. Find the price at which A bought if B's profit is Rs 44 (in Rs). **Ans:200**
- A Sum of money invested at CI doubles itself in 6 years. In how many years will it become 64 times itself at the same rate of CI? **Ans:36**
- Anand completed  $1/5^{\text{th}}$  of a piece of work in 4 days. He was then assisted by Bhargav and they completed the remaining work in 8 days. Bhargav can complete the work in .....days. **Ans:20**
- The numerator of a fraction is 1 less than the denominator , the fraction becomes  $2/3$ . Find the fraction. **Ans:6/7**
- Gold and copper are heavier than water by 19 and 9 times respectively . In what proportion should gold and Copper be mixed to form an alloy so that it will be heavier than water by 12 times. **Ans:3:7**
- In a triangle which is not equilateral, the sides (in cm) are integers . The longest side is 3 cm. The perimeter of the triangle is..... **Ans:7cm**

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18. A sum of money at SI amounts to Rs 800 in 2 years and to RS 1,200 in 6 years . The sum is..... **Ans:Rs600**
19. In a 100m race, Alope gives Bala a start of 10m and beats him by 10m or 2 seconds. Find Alope's speed in m/sec. **Ans:  $6\frac{2}{3}$**
20. Two complementary angles are in the ratio 2:3. Find the larger angle among them. **Ans:54°**
21. A boy is late to his school by 20minutes, if he travels at a speed of 4 Kmph . If he increases his speed to 6 Kamph, he is still late by 10 minutes. At what speed should he travels to reach the school on time?  
**Ans:12kmph**
22. In a two digit no. the unit digits is 3 more than the tens digit. The sum of the digits is 18 less than the original no. Find the product of the digits. **Ans:10**
23. If  $\alpha$  and  $\beta$  are the roots of the equation  $2x^2-5x+2=0$  then  $(\alpha-1)^{\beta-1} = \underline{\hspace{2cm}}$ , where  $\alpha > \beta$ . **Ans:1**
24. Two taps A and B can fill tank in 10 minutes and 15 minutes respectively . In how many minutes will the tank be full if B was opened three minutes after A was opened? **Ans:7.2**
25. If one of the roots of the equation,  $x^2-2x+C=0$  is thrice the other, then  $C = \underline{\hspace{2cm}}$  **Ans:3/4**
26. When a person travelled at 25% faster than his usual speed , he reached his destination 48 minutes early. By how many times would he be late if he travelled at 20% less than his usual speed? **Ans:60**
27. X and Y can do a piece of work in 4 and 6 days . If Y works on the first day and they work on alternate days , in how many days will twice the amount of work be completed? **Ans:**
28. A boat can travel at a speed of 8 KMPH upstream and 10 KMPH downstream. If it travels a distance of 40 KM upstream and 50 Km downstream, then the avg speed of the entire journey is\_\_ Kmph . **Ans:9**
29. The mean proportion of  $a$  and  $b$  is 10 and the value of  $a$  is four times the value of  $b$ . Find the value of  $a+b$  ( $a > 0$  and  $b > 0$ ).  
**Ans:25**
30. A teacher wanted to distribute 2025 chocolates equally among  $X$  no. of students . If each student gets  $X$  chocolates, find the value of  $X$ . **Ans:45**
31.  $A$  is an obtuse angle . The measure of angle  $A$  and twice its supplementary differ by  $30^\circ$ . Then angle  $A$  can be \_ . **Ans:110°**
32. If seven times a number is added to  $1/5^{\text{th}}$  of itself , then  $5/6^{\text{th}}$  of the sum is equal to 30. Find the number. **Ans:5**
33.  $P$  varies inversely with  $\sqrt{y}$ . If  $y=2$  then  $P= 40$ , if  $P=20$  then find the value of  $y$ . **Ans:8**
34.  $55\%$  of 1000  $\div$   $60\%$  of 2000=?  
**Ans:11/24**
35. Find the are of a right isosceles triangle whose hypotenuse is  $16\sqrt{2}$  cm. **Ans:128cm<sup>2</sup>**

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36. A sum was borrowed at SI at R% p.a. for 2 years. If it had been borrowed at (R+5)% p.a., total interest would have become Rs. 200 more. Find the sum (in Rs).  
**Ans:2000**
37. A varies directly with B when C is constant and inversely with C when B is constant. A=6 when B=2 and C=3. What is the value of A when B=3 and C=18?  
**Ans:3/2**
38. A number is increased by 8% and also decreased by 3%. If the difference of the two numbers thus obtained be 407, find the original number. (**Ans:wrong question**)
39. If the diameter of a circle is equal to the diagonal of a square. Then the ratio of their areas is \_\_\_? **Ans:11:7**
40. The number of real roots of the quadratic equation  $3x^2+4=0$  is \_\_\_\_\_. **Ans:0**
41. Two trains are travelling in the same direction at 70 Kmph and 50 Kmph. The faster train passes a man sitting in the slower train in 36 seconds. What is the length of the faster train?  
**Ans:200m**
42. The population of a city increases by 20% at the end of every year. During which of the following years will the population get doubled? **Ans:3rd**
43. The cost of television is Rs15,625. Its value depreciates at the rate of 8 % p.a. Calculate the total depreciation at the end of 3 years. **Ans:3458**
44. The number of diagonals of a regular polygon is 27. Then each of interior angle of the polygon is \_\_\_\_\_. **Ans:140°**
45. P and Q are two cylinders having equal total surface areas. The radius of each cylinders is equal to the height of the other. The sum of the volumes of both the cylinders is  $250\pi \text{ cm}^3$ . Find the sum of their curved surface areas. **Ans:100π**
46. In an office 60% of the employees are women. 30% of the women employees have children and 20% of the men employees have children. What % of the employees have children.  
**Ans:26%**
47.  $\frac{18-2m}{5} + \frac{4m+3}{7} \geq \frac{m}{5} + \frac{8}{7}$  then,  
**Ans:m≤101**
48. The simplifies value of  $\text{cosec}^2\alpha(1+1/\sec\alpha)(1-1/\sec\alpha)$  is.  
**Ans:1**
49. Find the number of soaps of size 2.1 cmX3.7cmX2.5cm that can be put in a cuboidal box of size 6.3cmX7.4cmX5cm. **Ans:12**
50. Four times the sum of the areas of the two circular faces of a cylinder is equal to the twice its curved surface area. Find the diameter of the cylinder of its height is 8 cm. **Ans:4**
51. If  $\sqrt{2^n} = 1024$  then  $3^{2(\frac{n}{4}-4)} = \_$   
**Ans:9**
52. A parallelogram has two of its adjacent sides measuring 13cm each. Find the sum of the squares of its diagonals.  
**Ans:676**

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53. 9 years ago A's age and B's age were in the ratio 5:7. Which of the following can not be the ratio of their ages 5 years from now?

**Ans:**

54.  $(0.01024)^{1/5} = \_.$  **Ans:0.4**

55. If  $A = (x-a)(x-b)(x-c)\dots(x-z)$ , then the no. of terms in the expansion of  $(a+A)(b+A)(c+A)\dots(z+A)$  is  $\_.$

**Ans:1**

56. If  $xyz = 0$  then find the value of  $(a^x)^{zy} + (a^y)^{zx} + (a^z)^{xy} \dots$  **Ans:3**

57. Ajay invests Rs m for 7 months and Rs n for the remaining part of year. Sohail invested Rs. N for the remaining part of year. Sohail invested Rs n for the 9 months and Rs. m for the remaining part of the year. If at the end of the year, they share profits equally, then what is the relation between m and n?

**Ans:m=n**

58. Which of the following is the greatest? **Ans:(49)<sup>3/2</sup>**

59. If  $qr : pr : pq = 1 : 4 : 7$ , then find  $\frac{p}{qr} : \frac{q}{pr}$ . **Ans:16:1**

60. An escalator has 50 steps. Ajoy starts walking up on it at 3 steps/sec. If the escalator moves up at 2 steps/sec, find the time (in seconds) he would take to reach its top. **Ans:10sec**

61. If  $2^{2x-2} = (8)^{y-1} = 16^{x-25}$  then find the sum of x and y. **Ans@wrong question)**

62. The value of  $[(23+2^2)^{2/3} + (140-29)^{1/2}]^2$  is. **Ans@wrong question)**

63. If  $\sin A = 1/2$  and  $90^\circ < A < 180^\circ$ , then the value of A in circular measure is. **Ans: $\frac{5\pi}{6}$**

64. The adjacent angles of a rhombus are  $2x-35^\circ$  and  $x+5^\circ$ , find x. **Ans:70°**

65. The length and breadth of a rectangular field are 4 m and 3 m respectively. The field is divided into two parts by fencing it diagonally, Find the cost of fencing at Rs. 10 per meter.

**Ans:Rs40**

66. What must be added to each of the numbers 3, 7, 8 and 16 so that the resulting numbers are in proportion? **Ans:2**

67. ABCD is rhombus in which angle B =  $120^\circ$  and BD = 5 cm. Find the perimeter of the rhombus ABCD.

**Ans:20**

68. The square root of  $X^{m^2-n^2} \cdot X^{n^2+2mn} \cdot X^{n^2}$  is  $\_.$  **Ans: $X^{m+n}$**

69. A sum of Rs. 1,500 amounts to Rs. 1,680 in 3 years at SI. If the interest rate is increased by 2%, it would amount to  $\_.$  **Ans:1770**

70. If  $A = \sin\theta + \cos\theta$  and  $B = \sin\theta - \cos\theta$  then which of the following is true? **Ans: $A^2+B^2=2$**

71. The length of an arc, which subtends an angle of  $30^\circ$  at the centre of the circle of radius 42cm is  $\_.$  **Ans:22cm**

72. A dishonest shopkeeper sells the items at cost price but for every kg he gives 200gm less, His profit % is  $\_.$  **Ans:25%**

73. If x, y and z are in continuous proportion, then  $(x+y+z)(x-y+z) = \_.$  **Ans: $x^2+y^2+z^2$**

74. Two boys sat for an examination. One of them got 9 marks more than the other and his marks were 56% of the sum of their

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- marks. Find the marks scored by each..... **Ans:42,33**
75. A shopkeeper marks the price of an article 50% above the cost price and declares a discount of 20%. If profit obtained is Rs 30, then find the marked price.  
**Ans:Rs150**
76. If 100cm is divided into two parts such that the sum of 2 times the smaller part and the  $\frac{1}{3}$  of the larger part, is less than 100 cm, then which of the following is correct? **Ans:larger portion is always greater than 60.**
77. If A and B are complementary angles, then the value of  $\frac{\sin^2 A + \sin^2 B}{\cos^2 A - \tan^2 B}$  is \_\_\_\_\_. **Ans:1**
78. The ratio of the present ages of Anand and Bala is 8:3. When Anand was 30 years old, Bala was 5 years old. Find the present age of Bala (in years).  
**Ans:15**
79. If  $2^a = 4^b = 8^c = 64$ , then which of the following relation is correct?  
**Ans:a+b+c=11**
80. The volume of classroom are 15ft x 10ft x 11ft. The area of 4 walls is \_\_\_\_\_. **Ans:550ft<sup>2</sup>**
81. Rattan spends 70% of his income. His income increases by 25% and also his expenditure increases by 25%. Find the % increases in his savings. **Ans:no change**
82. The angle subtended by a minor arc of a circle in its alternate segment is \_\_\_\_\_. **Ans:acute**
83. If  $X^Y = Y^x$  where X and Y are distinct natural no. then find X+Y. **Ans:6**
84. If  $3x - 1$  is a factor of the polynomial  $81x^3 - 45x^2 + 3a - 6$ , then a =? **Ans:8/3**
85. A car covers a distance of 420 km at a constant speed. If its speed is 10km/h less, it would have taken 1 hour more to travel the same distance. Find the speed of the car. **Ans:70kmph**
86. The profit made in selling 5 m of a cloth equals the cost price of 2m of that cloth. Find the % profit. **Ans:**
87. The ratio between exterior angle and interior angle of a regular polygon is 1:3 then find the no. of side of polygon. **Ans:8**
88. If each of algebraic expression  $lx^2 + mx + n$ ,  $mx^2 + nx + l$  and  $nx^2 + lx + m$  are perfect squares, the  $l+m/n = ?$  **Ans:-4**
89. If  $\sin^2 \alpha + \sin \alpha = 1$  then the value of  $\cos^4 \alpha + \cos^2 \alpha$  is \_\_\_\_\_. **Ans:1**
90. If  $\{3^{5x} + (81)^2 \cdot x \cdot 6561\} / 3^{2x} = 3^7$  then x=? **Ans@wornq question**
91. The ratio of 10<sup>th</sup> digit and units digit of a two digit no. is 2:3. How many possible no. are there? **Ans:4**
92. The mean proportion of two no is 24 and their 3<sup>rd</sup> proportion is 72. Find the sum of 2 numbers.  
**Ans:80**
93. If a no x is increased by 20% and then reduced by 20, it results in 160. Instead if the no x is reduced by 20% and increased by 20, then what will be the result. **Ans:140**

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94.  $2[(16-15)^{-1} + (13-8)^{-2}]^{-1} + (1024)^0 =$   
? **Ans:38/13**

95. If  $p, q, r$  the length of sides of right triangle PQR and the hypotenuse  $r = \sqrt{2pq}$ , then angle QPR =? **Ans:45°**

96.  $\sin^4 \theta - \cos^4 \theta = ?$  **Ans:  $2\sin^2 \theta - 1$**

97.  $X^4 + 1 = 1297$  and  $Y^4 - 1 = 2400$ , then  $X^2 - Y^2 = ?$  **Ans:13**

98. If  $X^2 - ax - 6 = 0$  and  $X^2 + ax - 2 = 0$  have one common root, then  $a$  can be? **Ans:-1**

99. The no. of edges in a pyramid whose base has 20 edges is \_\_\_\_\_. **Ans:40**

100. The total cost of 10 erasers and 5 sharpeners is at least Rs. 65. The cost of eraser can not exceed Rs. 4. Find minimum possible cost of each sharpeners. **Ans:5**

*The above Question is solved from myself. If any answers is wrong please make comment at the boxes..... and send your valuable suggestion. Thank you .....*  
*((For your kind information The Answers are verified by experienced Teacher))*

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