

J.E.E. Main/ Advanced Foundation - XI Maths Worksheet**Time: 60 min****Chapter#6. Linear Inequalities****Full Marks:**

- Q.1 Solve the inequality and show the graph of the solution on number line: $3(1 - x) < 2(x + 4)$. (3 marks)
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- Q.2 IQ of a person is given by the formula $IQ = \frac{MA}{CA} \times 100$.
Where MA is mental age and CA is chronological age. If $80 \leq IQ \leq 140$ for a group of 12 years old children, find the range of their mental age. (3 marks)
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- Q.3 In a game, a person wins if he gets the sum greater than 20 in four throws of a die. In three throws he got numbers 6, 5, 4. What should be his forth throw, so that he wins the game. (3 marks)
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- Q.4 Solve the inequality $-3 \leq 4 - \frac{7x}{2} \leq 18$. (2 marks)
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- Q.5 A solution is to be kept between 68°F and 77°F . What is the range in temperature in degree Celsius (C) if the Celsius/Fahrenheit (F) conversion formula is given by $F = \frac{9}{5}C + 32$? (3 marks)
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- Q.6 Solve $7x + 9 \leq 30$. (1 mark)
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- Q.7 Solve the inequality $7 \leq \frac{(3x + 11)}{2} \leq 11$. (2 marks)
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- Q.8 How many litres of water will have to be added to 1125 litres of the 45% solution of acid so that the resulting mixture will contain more than 25% but less than 30% acid content? (5 marks)
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- Q.9 Solve $4x + 3 < 6x + 7$. (1 mark)
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- Q.10 Solve $7x + 3 < 5x + 9$. Show the graph of the solutions on number line. (2 marks)
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- Q.11 Solve the system of inequalities :
 $3x - 7 < 5 + x$
 $11 - 5x \leq 1$
 and represent the solution on the number line.
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- Q.12 Solve the following system of inequalities graphically: $x + y \geq 4$, $2x - y > 0$. (3 marks)
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- Q.13 Solve the following system of inequalities graphically: $x + 2y \leq 10$, $x + y \geq 1$, $x - y \leq 0$, $x \geq 0$, $y \geq 0$. (5 marks)
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- Q.14 Solve the following system of inequalities graphically: $2x - y > 1$, $x - 2y < -1$. (3 marks)
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- Q.15 To receive Grade 'A' in a course, one must obtain an average of 90 marks or more in five examinations (each of 100 marks). If Sunita's marks in first four examinations are 87, 92, 94 and 95, find minimum marks that Sunita must obtain in fifth examination to get grade 'A' in the course. (3 marks)
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- Q.16 A shopkeeper sells a product at a price four times more than its actual price. Find the actual price such that the shopkeeper gets a benefit of at least Rs 40. (2 marks)
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- Q.17 The longest side of the rectangle is five times the shortest side. If the perimeter of the rectangle is atleast 120 cm. Find the minimum value of shortest side. (3 marks)
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- Q.18 A solution of 8% boric acid is to be diluted by adding a 2% boric acid solution to it. The resulting mixture is to be more than 4% but less than 6% boric acid. If we have 640 litres of the 8% solution, how many litres of the 2% solution will have to be added? (5 marks)
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- Q.19 Solve the following system of inequalities graphically: $4x + 3y \leq 60$, $y \geq 2x$, $x \geq 3$, $x, y \geq 0$. (5 marks)
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- Q.20 Solve the inequalities and represent the solution graphically on number line: $5x + 1 > -24$, $5x - 1 < 24$. (2 marks)
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