Must Know Questions To Ace
Linear Inequalities

1.	a) List all the integers that satisfy $-2\frac{1}{2} \leq x < 3$. b) Solve the inequalities $-3 \leq 2x + 7 < 19$. Show your solution on a number line.
2.	Solve the following simultaneous inequalities: $$\frac{x}{2} \leq \frac{3x+2}{5} \leq \frac{x+6}{4}$$
3.	Given that $-2 \leq x \leq 4$ and $-4 \leq y \leq 2$, find a) The greatest possible value of $y - x$. b) The least possible value of $x^2 - y$. c) The greatest possible value of $x^2 + y^3$.
4.	Jim has 30 pieces of \$2 and \$5 notes. If the total value of all the notes is more than \$110, find the minimum number of \$5 notes he has.
5.	A pot of white rice takes 20 minutes slower to cook than a pot of brown rice. The total time taken to cook 5 pots of white rice and 7 pots of brown rice is more than 404 minutes but not more than 560 minutes. Find the possible time taken to cook a pot of brown rice.
6.	Solve the following inequality and represent the solution on a number line. $$\frac{11-x}{2} < \frac{x+4}{3} \leq \frac{3x-6}{5}$$

Answer Key:

1. a) $-2, -1, 0, 1 \; and \; 2$

   b) $-5 \leq x < 6$

2. $x \geq -4$ and $x \leq 3\frac{1}{7}$
   Ans: $-4 \leq x \leq 3\frac{1}{7}$

3. a) $2 - (-2) = 4$

   b) $0 - 2 = -2$

   c) $4^2 + 2^2 = 24$

4. Let x be the number of \$5 notes.
Number of \$2 notes = $30 - x$

$$5x + (30 - x)(2) > 110$$
$$x > 16\frac{2}{3}$$

The minimum number of \$5 notes he has is 17.

5. Let x minutes represent the time taken to cook a pot of brown rice.

$$404 < 5\,(x - 20) + 7x \leq 560$$
$$42 < x \leq 55$$

Hence, a pot of brown rice would take more than 42 minutes but no more than 55 minutes to cook.

6. $x > 5$ and $x \geq 9.5$
   Thus, $x \geq 9.5$