

### 1) Answer: B

**Explanation:** To determine the smallest possible whole number that will satisfy  $2x - 9 > 11$ , we need to determine first the solution set of this inequality.

Let us solve the inequality:

$$2x - 9 > 11$$

$$2x > 9 + 11$$

*Transposition Method*

$$2x > 20$$

$$\frac{2x}{2} > \frac{20}{2}$$

$$x > 10$$

Solving the inequality provides us with  $x > 10$  as the solution set. This means that any number greater than 10 will satisfy the inequality. The smallest whole number greater than 10 is 11. Therefore, the answer to the problem is 11.

### 2) Answer: A

**Explanation:** Shown below is the solution for the given inequality  $10 - 3x < 2$

$$10 - 3x < 2$$

$$-3x < -10 + 2$$

*Transposition Method*

$$-3x < -8$$

$$\frac{-3x}{-3} < \frac{-8}{-3}$$

*Divide both sides of the inequality by -3*

$$x > 8/3$$

*The inequality sign is reversed because we divided both sides by a negative number*

Thus, the solution set of the inequality is  $x > 8/3$

**3) Answer: B**

**Explanation:** Let  $x$  be the number. Twice this number can be represented as  $2x$ .

The problem states that the sum of twice the number and 14 is at most (less than or equal) 40. Thus, we can write our inequality as follows:

$$2x + 14 \leq 40$$

Solving the inequality we have derived:

$$2x + 14 \leq 40$$

$$2x \leq -14 + 40$$

$$2x \leq 26$$

$$\frac{2x}{2} \leq \frac{26}{2}$$

$$x \leq 13$$

The problem is asking us to determine the largest possible value of the number. Based on our computation above, the solution set to the problem is all numbers less than or equal to 13. Hence, the largest possible value of the number is 13 (since 13 is included in the set).

**4) Answer: B**

**Explanation:**

Let us eliminate the denominator of the inequality by multiplying both sides by the [Least Common Denominator or LCD](#) (which is 4):

$$\frac{x}{4} - 2 < 0$$

$$4\left(\frac{x}{4} - 2\right) < 4(0)$$

*Multiplying both sides by 4 to eliminate the denominator*

$$x - 8 < 0$$

$$x < 8$$

*Transposition method*

Hence, the solution set is  $x < 8$ .

### 5) Answer: C

**Explanation:** Let  $b$  be the number of books that Adam owns. Since Carl has 5 more books than Adam, we can express the number of books that Carl has as  $b + 5$ . The total number of books that Adam and Carl own is less than 85. Thus, we have this inequality:

$$\text{Adam's books} + \text{Carl's books} < 85$$

$$b + (b + 5) < 85$$

Let us solve the resulting inequality above:

$$b + (b + 5) < 85$$

$$2b + 5 < 85$$

$$2b < -5 + 85$$

*Transposition Method*

$$2b < 80$$

$$\frac{2b}{2} < \frac{80}{2}$$

*Divide both sides of the inequality by 2*

$$b < 40$$

Since  $b$  represents the number of books that Adam has, then the possible number of books that Adam has could be any whole number less than 40 (whole number because the number of books must be a whole number and not a fraction or decimal).



## Inequalities

*Answer Key*

We have obtained  $b < 40$  as the solution set and the largest whole number in this set is 39 (not 40 since it is not included in  $b < 40$ ).



To get more Mathematics review materials, visit  
<https://filipiknow.net/basic-math/>

*To God be the glory!*



## Inequalities

*Answer Key*



To get more Mathematics review materials, visit  
<https://filipiknow.net/basic-math/>

*To God be the glory!*