A new cruise ship line has just launched 3 new ships: the Pacific Paradise, the Caribbean Paradise, and the Mediterranean Paradise. The Caribbean Paradise has 31 more deluxe staterooms than the Pacific Paradise. The Mediterranean Paradise has 38 fewer deluxe staterooms than four times the number of deluxe staterooms on the Pacific Paradise. Find the number of deluxe staterooms for each of the ships if the total number of deluxe staterooms for the three ships is 1085.

Solution:

To solve this problem it is necessary to construct the equation in accordance with specified conditions of the task.

Let the Pacific Paradise $- x\ deluxe\ staterooms$, then the Caribbean Paradise - $(x + 31)\ deluxe\ staterooms$ (more deluxe staterooms than the Pacific Paradise) and the Mediterranean Paradise - $(4x - 38)\ deluxe\ staterooms$. So, we can write the equation:

$$x + (x + 31) + (4x - 38) = 1085$$

Solve equation, find x:

$$6x - 7 = 1085$$

$$6x = 1092$$

$$x = 182$$

So, we have the Pacific Paradise $- 182\ deluxe\ staterooms$.

The Caribbean Paradise - $(182 + 31) = 213\ deluxe\ staterooms$.

The Mediterranean Paradise - $\big((4 \cdot 182) - 38\big) = 728 - 38 = 690\ deluxe\ staterooms$.

The total number of deluxe staterooms for the three ships is $182 + 213 + 690 = 1085$.

Answer:

The Pacific Paradise has 182 deluxe staterooms, the Caribbean Paradise has 213 deluxe staterooms and the Mediterranean Paradise has 690 deluxe staterooms.