Three numbers are such that the second is 6 less than three times the first, and the third is 2 more than two thirds the first. The sum of the three numbers is 150. Find the largest of the 3 numbers.

Let the first number be x.

Then second number is $3x - 6$ { 6 less than 3 times the first }

Third number is $\frac{2}{3}x + 2$ { 2 more than $\frac{2}{3}$rd of first }

Sum of all three is 150.

$\Rightarrow x + 3x - 6 + \frac{2}{3}x + 2 = 150$

$\Rightarrow 4x + \frac{2}{3}x - 6 + 2 = 150$

$\Rightarrow \frac{12 + 2}{3}x - 4 = 150 \Rightarrow \frac{14x}{3} = 154$

$\Rightarrow x = \frac{3 \times \cancel{154}}{\cancel{14}} = 33 \rightarrow$ first number

$\Rightarrow$ 2nd number $= 3x - 6 = 3 \times 33 - 6 = 93$

$\Rightarrow$ 3rd number $= \frac{2}{3}x + 2 = \frac{2}{3} \times 33 + 2 = 22 + 2 = 24$

So, the largest of the three numbers is 93.

A headset was sold at 212 dollars. If the price included a 6% sales tax, what was the price of headset itself.

Let the original price be x.

Sales Tax $= \dfrac{6}{100} \times x$

$\Rightarrow x + \dfrac{6}{100}x = 212$

$\Rightarrow \dfrac{106}{100}x = 212 \Rightarrow x = \dfrac{\overset{2}{212} \times 100}{\underset{}{106}} = 200$

Thus, price of headset itself was 200 dollars.

Sum of two numbers is 20. If one number is 2 more than half of the other, find the two numbers.

Let the two numbers be x and y.

Then $x + y = 20$.

$y = 2 + \dfrac{1}{2}x$ (2 more than half of the other)

$\Rightarrow x + 2 + \dfrac{1}{2}x = 20 \Rightarrow x + \dfrac{1}{2}x = 18$

$\Rightarrow \dfrac{3}{2}x = 18 \Rightarrow x = \dfrac{\overset{6}{18} \times 2}{\underset{}{3}}$

$\Rightarrow x = 12$

$\Rightarrow y = 2 + \dfrac{1}{2} \times 12 = 8$

Thus, the two numbers are 12 and 8.