Question

A 12oz cup of regular coffee at Starbucks has 13 times the amount of caffeine found in the same-sized serving of decaffeinated coffee. Together they contain 280mg of caffeine. How much caffeine is in each type of coffee?

Solution

Let x mg be the amount of caffeine found in the cup of decaffeinated coffee.
Then $(13x)$ mg is the amount of caffeine found in the cup of regular coffee.
Together they contain (x + 13x) mg of caffeine, that is,
$$x + 13x = 280;$$
$$14x = 280;$$
$$x = \frac{280}{14};$$
$$x = 20.$$
A 12oz cup of decaffeinated coffee has 20 mg of caffeine.
A 12oz cup of regular coffee has 20*13=260 mg of caffeine.

Answer: 260 mg; 20 mg.