

Task:

In a test of 100 questions, 5 marks are given to each correct answer and 3 marks are deducted from a wrong answer. Mike scored 220 marks. How many questions did he answer correctly?

Solution:

Let Mike answered correctly on x questions and y wrong answers. So Mike's score is $5x - 3y = 220$ and there are $x + y = 100$ questions in the test.

We get the equation:
$$\begin{cases} 5x - 3y = 220 \\ x + y = 100 \end{cases}$$

Solve it:
$$\begin{cases} 5x - 3y = 220 \\ x + y = 100 \end{cases} \quad \begin{cases} 5x - 3y = 220 \\ x = 100 - y \end{cases} \quad \begin{cases} 5(100 - y) - 3y = 220 \\ x = 100 - y \end{cases} \quad \begin{cases} 500 - 5y - 3y = 220 \\ x = 100 - y \end{cases}$$

$$\begin{cases} 500 - 220 = 8y \\ x = 100 - y \end{cases} \quad \begin{cases} 280 = 8y \\ x = 100 - y \end{cases} \quad \begin{cases} y = 35 \\ x = 100 - 35 \end{cases} \quad \begin{cases} y = 35 \\ x = 65 \end{cases}$$

Answer: He answered correctly on 65 questions.