Question #61257, Physics / Mechanics

A force of 50g and a force of 60g act an angle of 37° between them. Determine the resultant using cosine law

Solution

According to the law of the cosine:

$$F^2 = F_1{}^2 + F_2{}^2 - 2 \cdot F_1 \cdot F_2 \cdot cos\alpha;$$

$$F = \sqrt{F_1{}^2 + F_2{}^2 - 2 \cdot F_1 \cdot F_2 \cdot cos\alpha}$$

$$= \sqrt{0.25 \, N^2 + 0.36 \, N^2 - 2 \cdot 0.5N \cdot 0.6 \, N \cdot 0.799} = 0.361 \, N;$$

Answer the question: F=0.361 N or the resultant force 36.1 g.