

Question#18420

A crate with a mass of 40 kg is being dragged along a horizontal floor at a constant velocity by an applied force of 180 N. What is the coefficient of kinetic friction? ( $g = 10 \text{ m/s}^2$ )

Solution:

Let:

$$m = 40 \text{ kg}$$

$$F = 180 \text{ N}$$

$$g = 10 \text{ m/s}^2$$

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$$k = ?$$

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$$F_{friction} = kmg, \quad k = \frac{F_{friction}}{mg}$$

According to the first Newton's Law, the friction force is equal to the applied force.

$$F_{friction} = F$$

$$k = \frac{F}{mg} = \frac{180}{40 \times 10} = 0.45$$

**Answer: 0.45**