Question#18927

A force of 44.0 N accelerates a 5.0-kg block at 6.3 m/s2 along a horizontal surface.

How large is the frictional force?

and What is the coefficient of friction?

Solution:

Let:

$F = 44\ N$

$m = 5\ kg$

$a = 6.3\ m/s^2$

$F_{friction}-?, k-?$

$F - F_{friction} = ma$

$F_{fricton} = F - ma$

$F_{fricton} = 44 - 5 * 6.3 = 12.5\ N$

Such as: $F_{fricton} = kmg, k = \dfrac{F_{fricton}}{mg}$

$k = \dfrac{12.5}{5*9.8} = 0.2551$

Answer: the frictional force is 12.5 N, the coefficient of friction is 0.2551.