

Answer on Question #44749 – Physics – Other

Question.

A feather of 20 g is dropped from a height. It is found to fall down with a constant velocity. What is the net force acting on it?

Solution.

Let look at Newton's second law:

$$F = ma,$$

where F is the net force applied;

m is the mass of the body;

a is the acceleration of the body.

We know the mass of the feather, but we don't know the acceleration. Also we know, that velocity is constant $v = \text{const}$. Therefore,

$$\frac{dv}{dt} = 0$$

From other hand, by definition acceleration is:

$$a = \frac{dv}{dt}$$

So,

$$a = \frac{dv}{dt} = 0 \rightarrow F = ma = 0$$

Answer.

$$F = 0$$