

## Answer on Question #40811, Physics, Mechanics

Which of the following is not true?

- A crate sliding across the floor does work against frictional forces
- Work is done if a component a force acting on an object exists in the direction of its displacement
- A man with a bag of cement on his head does work to move the bag of cement as he walks from place to place on a flat horizontal floor
- Work is a scalar quantity

**Answer.**

**NOT True:**

- *A crate sliding across the floor does work against frictional forces*

(The work done against friction is the work done on an object that overcomes this frictional force allowing the object to move - it doesn't include any extra work used to accelerate an object for example - only the work used to beat the frictional force. For there to be work done against friction, you need another force to act against the friction.)

- *Work is done if a component a force acting on an object exists in the direction of its displacement*

(The work that is done can be positive work or negative work depending on whether the force doing the work is directed opposite the object's motion or in the same direction as the object's motion. If the force and the displacement are in the same direction, then positive work is done on the object. If positive work is done on an object by an external force, then the object gains mechanical energy. If the force and the displacement are in the opposite direction, then negative work is done on the object; the object subsequently loses mechanical energy.)