

Inclined Planes

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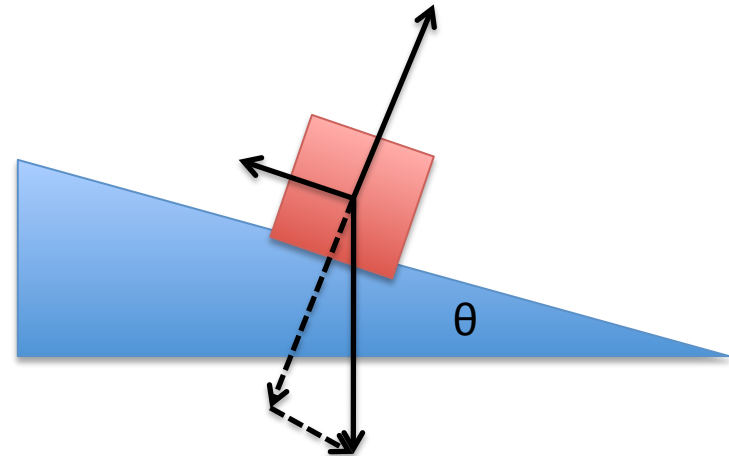
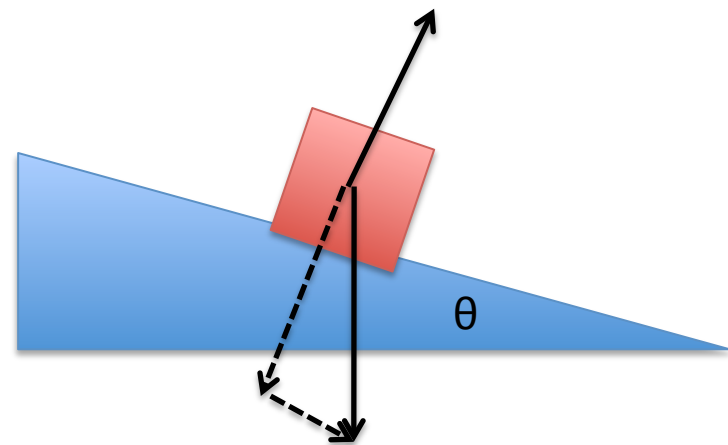
- These are two dimensional problems. The coordinate axis is tilted down the incline, therefore all motion is on the x-axis. $a_y = 0$.
- X-axis: used to find acceleration
- Y-axis: used to find normal force

A block slides down an incline.

What are the forces acting on it?

- **Ex:** No friction

- **Ex:** With friction



A 5.0-kg block is pushed up an inclined plane with a force of 40.0 N parallel to the plane. The force of friction acting on the block is equal to 30% of the normal force. What is the acceleration of the block if the plane is inclined at 20.0° ?

The block is now released from rest at the top of the inclined plane. How fast is it traveling after sliding 3.0 m?

A student pushes a 10.0-kg lawnmower at constant speed up a hill inclined at 35° . The force applied is 90.0 N at an angle of 41° below a line that is parallel to the incline.

What is the normal force acting on the lawnmower?

What is the force of friction acting on the lawnmower?