Warm Up

1. What is the mass of an object that moved with a force of 775 N and was accelerated from 15.0 m/s to 23.0 m/s in 2.00 sec?
2. What is the distance an object fell if it had a final velocity of 245 m/s?
3. What is the initial velocity of a car that accelerated at 6.00 m/s^2 for a span of 8.00 sec and had a final velocity of 72.0 m/s?

Targets

- I can identify the coefficient of friction and how to solve for it.

Friction

- Friction is the force that acts in the opposite direction to movement.
- Two majors frictions are static friction and kinetic (sliding) friction.
- Static friction acts on nonmoving objects, kinetic friction acts on moving objects.

- The frictional force between two objects depends on the materials that the surfaces are made from.
- Surfaces that an object could slide over or past have a coefficient of friction.

- The coefficient of friction is a way of expressing friction force on an object and its normal force (weight or apparent weight).
- F_f, kinetic = $\mu_k F_N$
- F_f, static = $\mu_s F_N$

Practice

- A 1.4 kg block slides across a rough surface such that it slows down with an acceleration of 1.25 m/s^2. What is the coefficient of kinetic friction between the block and the surface?
- Answer = 0.128

Typical Coefficients of Friction

Surface	μ_s	μ_k
Rubber on dry concrete	0.80	0.65
Rubber on wet concrete	0.60	0.40
Wood on wood	0.50	0.20
Steel on steel (dry)	0.78	0.58
Steel on steel (with oil)	0.15	0.06

Summary

- Friction is a force of opposition to motion.
- The friction force is determined by the coefficient of friction and the normal force.

Assignment

- Friction Worksheet