F = ma, No Appeals

Practice rearranging F = ma, spotting inverse patterns, scaling stopping distance, and connecting the arithmetic to safety.

[equations] [inverse patterns] [nonlinear change] [QUESTIONS ONLY] [PRINT-FRIENDLY]

NAME	PERIOD	DATE

QUESTIONS ONLY - Practice independently or with a group. Use the class sheet as a model, but solve these numbers yourself.

PART A The triangle, again

A 12 N force gives a cart an acceleration of 3 m/s^2.

1 Find the cart's mass. Show the rearranged equation.

2 A 4 kg cart accelerates at 5 m/s^2. Find the force.

PART B Same push, different mass

The same 20 N push acts on carts of mass 2 kg, 4 kg, and 10 kg.

1 Find the acceleration of each cart.

2 Describe the relationship between mass and acceleration when force stays constant.

PART C The square rule

A bicycle stops in 4 m when traveling at 10 km/h. Treat stopping distance as proportional to speed squared.

1. Predict the stopping distance at 20 km/h.

2. How many times farther is the stop at 20 km/h? Why is it not just twice as far?

PART D Crumple-zone math

A 900 kg car changes speed by 12 m/s. In a short stop it takes 0.20 s; in a longer stop it takes 0.80 s.

1. Find the average acceleration magnitude in each stop.

2. Which stop has the smaller acceleration? What does that suggest about the force on passengers?