

Name _____

School Pet Peeve _____

Show your work, and circle your answers and use sig figs to receive full credit.

1. A 600. kg stage set on frictionless air bearings goes from rest to 0.850 m/s in 12.5 seconds. What force acted on the set?

2. A 0.142 Kg baseball going 41.0 m/s, strikes a bat, and heads straight **back** to the outfield at 53.0 m/s. If the bat exerted a force of 2350 N, for what **time** was it in contact with the bat?

3. A rocket engine burns 12.0 grams of fuel (0.0120 kg) in 1.10 seconds with an exhaust velocity of 782 m/s. What is the thrust of this engine?

4. A rocket engine burns fuel at a rate of 53.5 grams per second, and develops a force of 65.2 N. What must be the exhaust **velocity**? (1000 grams = 1 kg)

5. A 60.0 kg rocket, 48.0 kg of which is fuel, burns 2.15 kg of fuel per second with an exhaust velocity of 982 m/s. What are its initial and final acceleration as it takes off from earth? For what time do the engines burn?

optional: (What is its acceleration at $t = 10.0$ s? Make a graph of the acceleration.)