

Name:

Period:

## Forces in One Dimension 2

*Show all work including the equations and substitution with units.*

$$g = 9.81\text{m/s}^2$$

1. A large motorcycle weight 2450N. Find its mass in kilograms.

2. A car with a mass of 1500kg changes its speed from 10 to 20m/s during a 10-second interval. Find the net force on the car during this interval

3. A 60kg boy and a 40kg girl engage in a tug of war on an icy frictionless surface. If the acceleration of the boy is  $3.0\text{m/s}^2$ , find the magnitude of the acceleration of the girl towards the boy.

4 A 70kg astronaut is standing on a scale in a spaceship. When the ship moves in a straight line from the surface of the planet with a constant velocity of 100m/s, the scale reads 300N. If the ship accelerates from the surface of the planet at  $7.0\text{m/s}^2$ , what would the scale read now?