

Forces • Math Skills

Math Skills

For the problems below, show your calculations. If you need more space, use another sheet of paper. Write the answers for the problems on the lines below.

Newton's Second Law of Motion

1. Force = $65 \text{ kg} \times 3 \text{ m/s}^2 = \underline{195 \text{ N}}$

2. A 250-kg trailer is being pulled by a truck. The force causes the trailer to accelerate at 4 m/s^2 . What is the net force that causes this acceleration?

$$F = ma \rightarrow (250 \text{ kg})(4 \text{ m/s}^2)$$

Answer: 1,000 N

Weight and Mass

3. Weight = $45 \text{ kg} \times 9.8 \text{ m/s}^2 = \underline{441 \text{ N}}$

4. What is the weight of a rock that has a mass of 7 kg?

$$W = mg \rightarrow (7 \text{ kg})(9.8 \text{ m/s}^2)$$

Answer: 68.6 N

Momentum

5. Momentum = $5 \text{ kg} \times 6.5 \text{ m/s} = \underline{32.5 \text{ kg} \cdot \text{m/s}}$

6. A baseball travels at 7 m/s , while a basketball moves at 3 m/s . The mass of the baseball is 0.14 kg and the mass of the basketball is 0.5 kg . Which has the greater momentum?

$$P = MV \rightarrow (0.14 \text{ kg})(7 \text{ m/s}) = 0.98 \text{ kg} \cdot \text{m/s}$$

$$P = MV \rightarrow (0.5 \text{ kg})(3 \text{ m/s}) = 1.5 \text{ kg} \cdot \text{m/s}$$

Basketball has greater momentum