

SECTION 2 - 4 REVIEW AND REINFORCE

Action and Reaction

◆ Understanding Main Ideas

Answer the following questions in the space provided.

1. What does it mean to say that momentum is conserved?

It stays the same before and after an event

2. How does the diagram illustrate Newton's third law of motion? In your answer, compare the force of the foot kicking the soccer ball with the force of the soccer ball on the foot.

Foot exerts force on the soccer ball. Soccer ball exerts equal force on the foot.



3. Could an elephant have the same momentum as a golf ball? Explain.

Yes - a very slow moving elephant could have the same momentum as a very fast moving golf ball

4. What is the momentum of a 20-kg dog running at a speed of 8 m/s?

$$p = mv \rightarrow (20 \text{ kg})(8 \text{ m/s}) = 160 \text{ kg}\cdot\text{m/s}$$

5. Suppose you have two toy cars. Each has a mass of 0.04 kg. The cars have tape on their bumpers that will cause them to couple together. One car is stopped on the track. The other car, traveling at a velocity of 4 m/s, hits the first car. What is the momentum of the coupled cars?

$$p = mv \rightarrow (0.04 \text{ kg})(4 \text{ m/s}) = 0.16 \text{ kg}\cdot\text{m/s}$$

◆ Building Vocabulary Skills

Answer the following questions in the spaces provided.

6. What is momentum?

Mass x velocity

7. Explain the law of conservation of momentum.

Total momentum of a group of objects remains the same unless outside forces act on the objects.