

Physics 12 Unit 4 – Momentum Worksheet #2.5

Additional 2-D Problems for review

Name: _____

Date: _____

Momentum is a vector quantity

1. A 1200 kg car traveling north at 160 km/h collides with and sticks to a 1600 kg truck travelling 20 degrees North of West at 100 km/hr. Find the velocity (magnitude and direction) of the wreck.

2. A 12 kg rock initially at rest explodes into three pieces.

Piece A is 4 kg and is travelling at 15 m/s directly North

Piece B is 5 kg and is travelling 11 m/s 35 degrees South of East

Find the velocity (magnitude and direction) of piece C

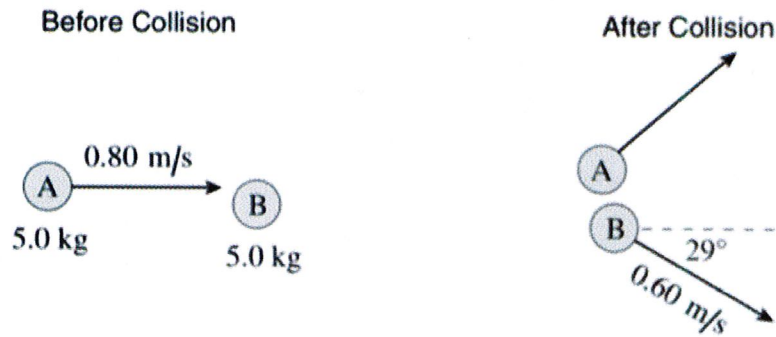
3. A two piece rocket with a mass of 3000 kg is travelling at 1000 km/hr. The engine separates from the main capsule with a small thruster.

The 1800 kg engine is now travelling at 900 km/hr.

What is the final velocity of the main capsule after separation?

4. Find the magnitude of the momentum of Puck A after rate collision.

A 5.0 kg puck (A) moving at 0.80 m/s to the right collides obliquely with an identical stationary puck (B). Puck B then moves at 0.60 m/s as shown.



What is the magnitude of the momentum of puck A after the collision?

- A. 1.0 kg · m/s
- B. 2.0 kg · m/s
- C. 3.0 kg · m/s
- D. 5.0 kg · m/s

5. A 0.45 kg ball rolls at a soccer player at 9.2 m/s. The player kicks the ball straight back in the direction it came from at 15 m/s.

If the collision lasted 0.1 second what was the average force during the collision?

6. A 0.4 kg ball travelling at 15 m.s is redirected by a soccer player as shown below.
What was the average force on the ball during the 0.08 second impact?

