

Physics 12 Review #27

1.

A 10 kg rock is at rest when a boulder of unknown mass collides with it. After the collision the 10 kg rock travels at 3.0 m/s south. What is the boulder's change in momentum due to the collision?

- A. 15 kg m/s south
- B. 15 kg m/s north
- C. 30 kg m/s south
- D. 30 kg m/s north



$$\Delta P = P' - P$$

$$= mV' - mV$$

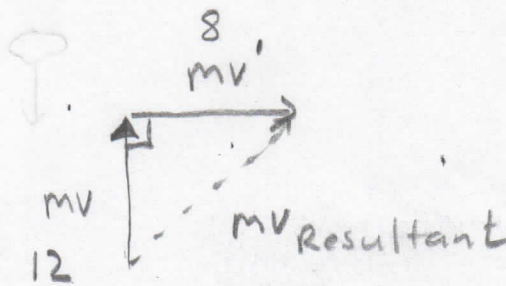
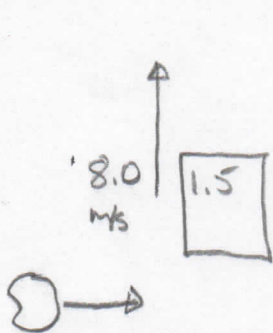
$$= 10 \text{ kg} \times 3.0 = 30 \text{ kg m/s. South for Rock}$$

\therefore 30 kg m/s North for Boulder.

2.

A 1.5 kg physics block is sliding at 8.0 m/s north when it is hit by a 0.40 kg ball of putty going 20 m/s west. The putty sticks to the block. What is the magnitude of their combined momentum after the collision?

- A. 4.0 kg m/s
- B. 8.9 kg m/s
- C. 14 kg m/s
- D. 20 kg m/s



$$\sqrt{8^2 + 12^2}$$

$$\sqrt{64 + 144}$$

$$\sqrt{208} = 14 \text{ kg m/s}$$