key Level II Physics Pd 2

MOMENTUM

FT MOMENTUM (21)

Directions: Solve the following problems. Your work will be graded, not just the answer.

A 5 kg object (A) is moving to the right at 4 m/s. It collides in an inelastic collision with a 10kg object moving at 3m/s to the left. The collision takes place in 0.48 seconds. Answer the questions below showing work for partial credit. Be sure responses are correct, as an incorrect response to #1 could result in other answers being incorrect. This is called "double-jeopardy".

1) Determine the velocity of "A" after the collision.

-.67 m/s

2) Determine the velocity of "B" after the collision.

-.67 m/s

3) Determine the force that acts on "A" during the collision.

-48.6N

4) Determine the force that acts on "B" during the collision

48.6N

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5) Determine the velocity of "A" after the collision.

$-5.33\ m/s$

6) Determine the velocity of "B" after the collision.

$1.67\ m/s$

7) Determine the force that acts on "A" during the collision.

$-97.2\ N$

8) Determine the force that acts on "B" during the collision

$97.2\ N$

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9) A 200kg car traveling north at 15 m/s collides inelastically with a 150kg car traveling east at 25 m/s. After the collision, how much momentum with the 2 cars have in the northern direction?

(200kg)(15m/s) = 3000 kg m/s

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10) A 200kg car traveling north at 15 m/s collides inelastically with a 150kg car traveling east at 25 m/s. After the collision, how much momentum with the 2 cars have in the eastern direction?

$(150kg)(25\ m/s) = 3750kg\ m/s$