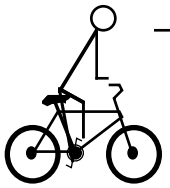
IMPULSE & MOMENTUM CLASS ART SHEETS

Students should be able to:
- Solve problems involving the definition of momentum
- Solve problems involving the definition of impulse
- Solve problems involving the relationship between momentum and impulse
- Solve problems involving elastic collision in 1 dimension
- Solve problems involving **in**elastic collision in 1 dimension
- Solve problems involving elastic collision in 2 dimensions
- Solve problems involving **in**elastic collision in 2 dimensions
- Solve problems involving the conservation of momentum and the conservation of kinetic energy
- Solve problems involving recoil

A



V= 5 m/s

M_R= 60 kg

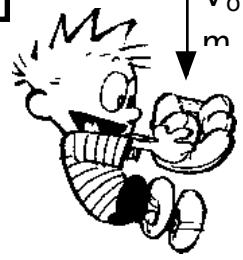
M_B= 20 kg

Impulse: _____

Momentum of the bike: _____

Momentum of the rider: _____

B



V_o = 30 m/s

m = 0.150 kg

Calvin catches the

C

BEFORE

AFTER

V_o = 20 m/s

m = 0.150

V = 35 m/s

Line drive - straight

D

V_o = 10 m/s

m = 0.1

The snow ball hits Susie on the head and

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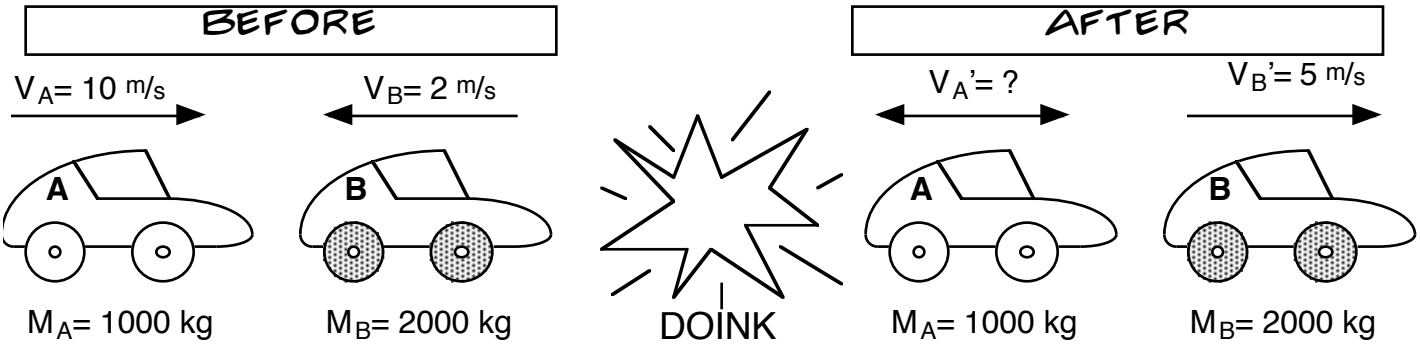
1



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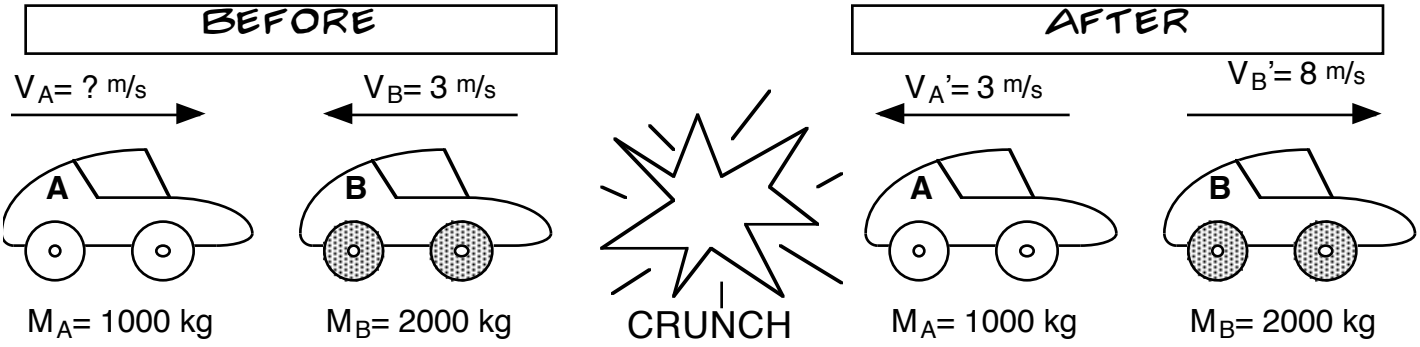

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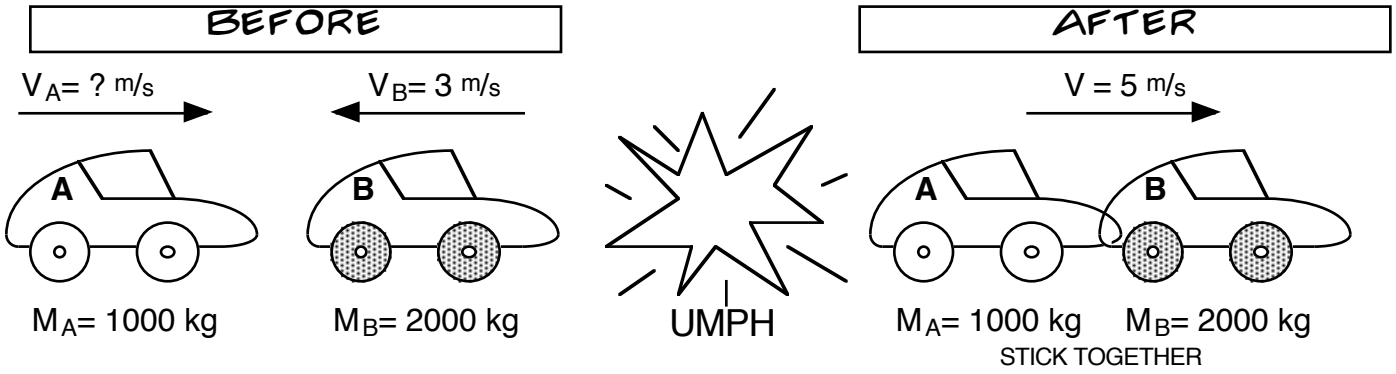
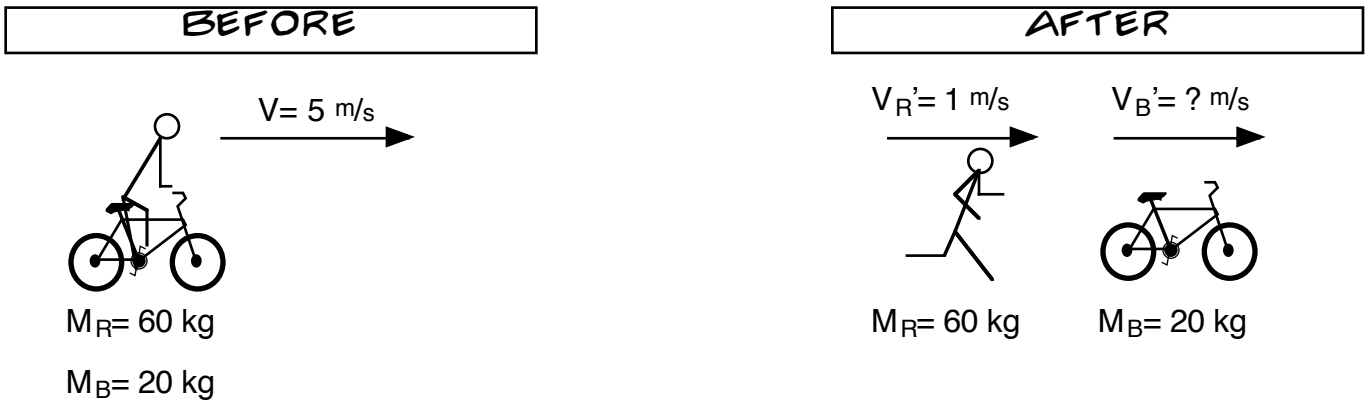

BEFORE
AFTER
V_A= ? m/s
V_B= 3 m/s
V = 5 m/s
A
B
A
B
M_A= 1000 kg
M_B= 2000 kg
UMPH
M_A= 1000 kg
M_B= 2000 kg
STICK TOGETHER

4


BEFORE
AFTER
V= 5 m/s
V_R'= 1 m/s
V_B'= ? m/s
M_R= 60 kg
M_B= 20 kg
M_R= 60 kg
M_B= 20 kg

Hobbes, the stuffed tiger, has a mass of 31.8 kg. Calvin, the little boy, has a mass of 25.1 kg. In a game of football, Hobbes runs at Calvin at 11 $^{m}/_{s}$. Calvin is running in the same direction as Hobbes, away from Hobbes, at 8.33 $^{m}/_{s}$.

(a) If the two collide and stick together, what is their final velocity?
(b) What impulse is exerted on Hobbes by Calvin?
(c) What impulse is exerted on Calvin by Hobbes?
(d) If the collision occurred in 0.109 seconds, Then what force was exerted on Hobbes?

Hobbes, the stuffed tiger, has a mass of 31.8 kg. Calvin, the little boy, has a mass of 25.1 kg. In a game of football, Hobbes runs at Calvin at 7.22 $^{m}/_{s}$. Calvin is running at Hobbes.

(a) If the two collide, stick together, and are then at rest, what was Calvin's initial velocity?
(b) What impulse is exerted on Hobbes by Calvin?
(c) What impulse is exerted on Calvin by Hobbes?
(d) If the collision occurred in 0.0600 seconds, Then what force was exerted on Hobbes?

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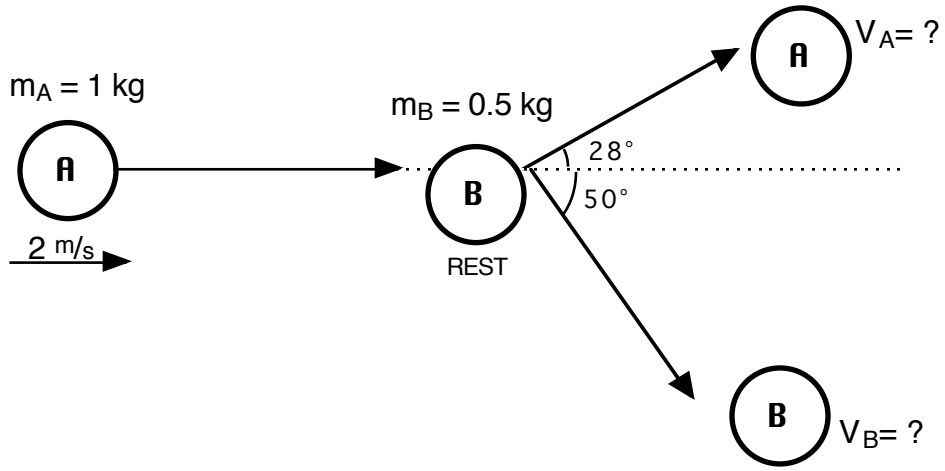

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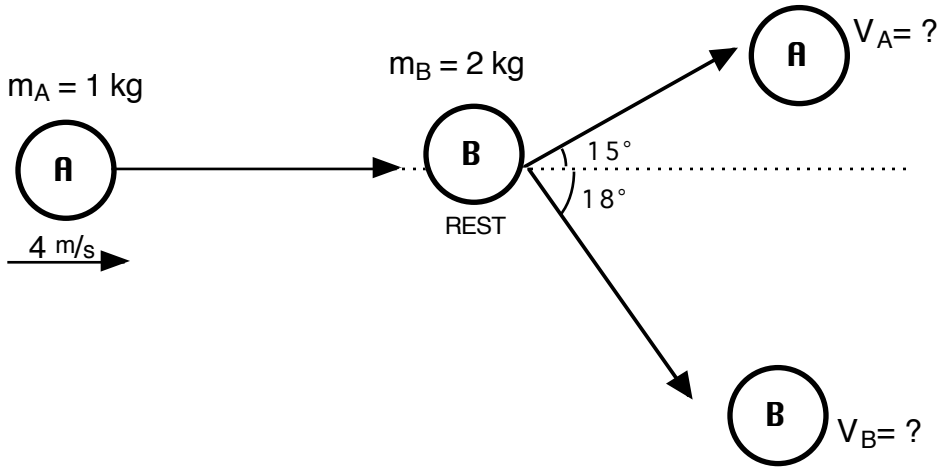
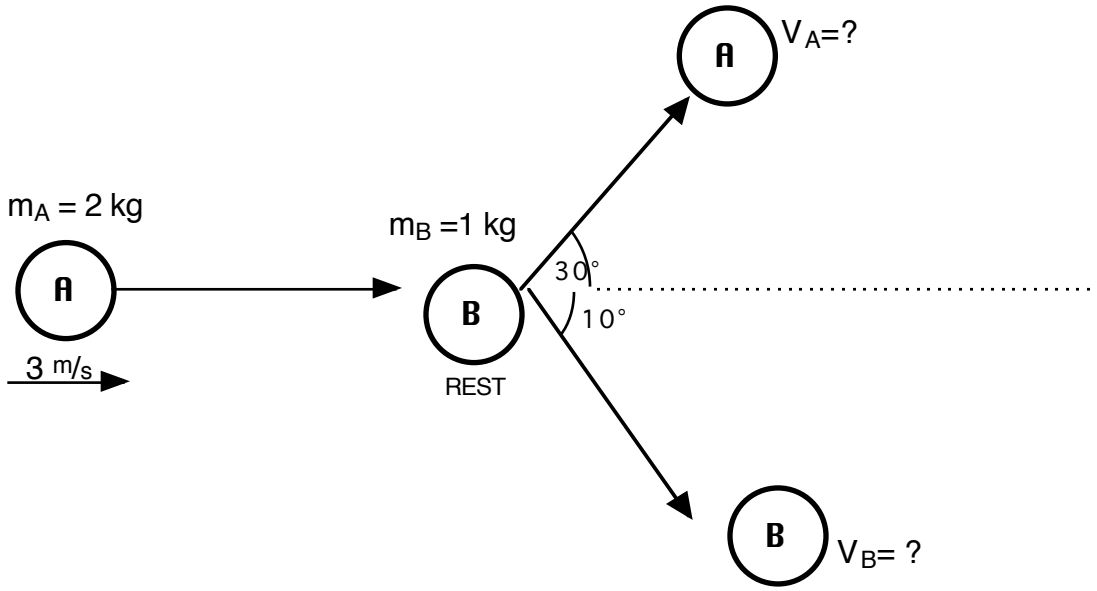


10



1]