

# PhyzJob: Conservation of Momentum Number Puzzles

## PART 3: MORE PUZZLES



**INSTRUCTIONS:** In each of the scenarios below, some information regarding the system (or elements within the system) is given. Determine the missing quantity based on what you know about conservation of momentum.

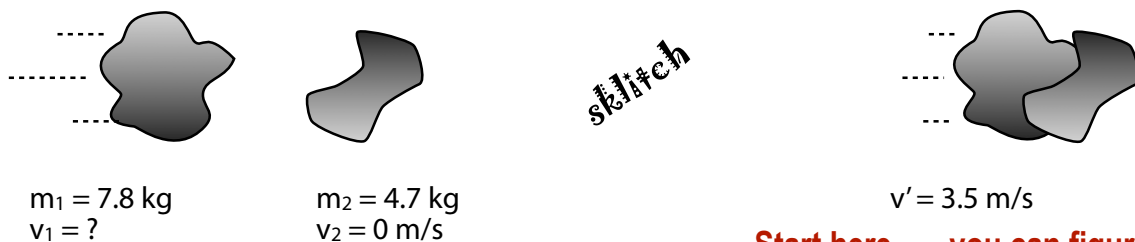
### 1. A Stationary Bomb Explodes.



**This one is pretty easy.**  
You know the momentum before:  
 $p = \underline{\hspace{2cm}}$

**Set the momentum BEFORE equal to the momentum of 1 plus the momentum of 2. You will only have one unknown variable, the mass of shard 2.**

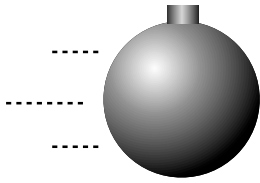
### 2. Moving Blobs of Clay Collide.



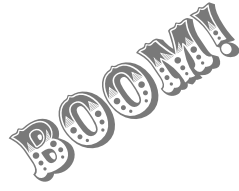
**Start here . . . you can figure out the mass by looking at the info at the left.**  
**Find the momentum AFTER:**  
 $p' = \underline{\hspace{2cm}}$

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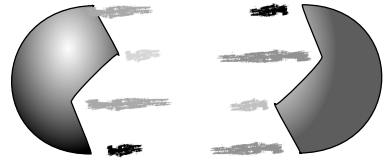
3. A Moving Bomb Explodes.



$m_1 = 8.1 \text{ kg}$       $m_2 = ?$



$v = +5.2 \text{ m/s}$



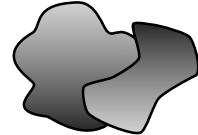
$v_1' = -3.7 \text{ m/s}$

$v_2' = +17.4 \text{ m/s}$

4. Moving Blobs of Clay Collide. (YOU draw the “speed lines.”)

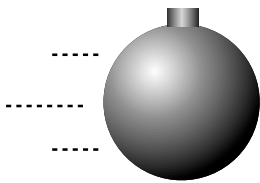


$m_1 = 6.0 \text{ kg}$       $m_2 = 4.0 \text{ kg}$   
 $v_1 = +7.0 \text{ m/s}$       $v_2 = ?$

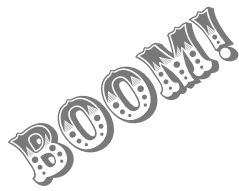


$v' = -2.2 \text{ m/s}$

5. A Moving Bomb Explodes.



$m_1 = 8.0 \text{ kg}$       $m_2 = 5.0 \text{ kg}$   
 $v = 3.9 \text{ m/s}$



$v_1' = -3.0 \text{ m/s}$

$v_2' = ?$

3' 2'0 k0 4' -1e m2 2' 12 m2