<u>Collisions – Make a drawing, show equations and all work.</u> *Be careful w/ direction: If two*
<u>Elastic – $mv_1 + mv_2 = mv_1' + mv_2'$</u> *objects are moving toward each other,* WS 2

1. A 0.25-kg cue ball hits the 0.25-kg 8-ball in a perfectly elastic collision. If the cue ball was going 22 m/s, how fast does the 8-ball go after the collision?

their velocities are opposite sign!

22 m/s

2. A 4-kg medicine ball is thrown at 15 m/s and hits a 55-kg boy who is on his skateboard. If the medicine ball continues with a speed of 4 m/s, how fast will the boy and skateboard be going after the collision?

0.8 m/s

3. A bullet that has mass of 0.1-kg has a velocity of 420-m/s just before it hits the 1.5-kg target. If the bullet continues with a speed of 300 m/s, how fast will the target be going after the collision?

8 m/s

4. A toy truck, with mass 20.0 g, travels along a level tabletop at 0.50 m/s. A miniature car, with mass 5.00 g, speeds headlong toward the toy truck at 0.75 m/s. After the collision, the toy truck continues in its original direction at 0.10 m/s. What is the velocity of the miniature car?

0.85 m/s

5. A 8.5 kg cart traveling at 9.54 m/s (this movement defines the positive direction) has a head on elastic collision with a 36.8 kg cart. If the final velocity of the first cart is 3.57 m/s, what was the initial velocity of the second cart?   @rest

final

1.38 m/s