Winter Carnivals

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1. A block is sliding at a speed of v m/s on a frictionless table that is 0.2 m above a carnival bin. If the bin is 2 m away from the edge of the table, what should v be so the block will land in the bin?

2. Let $T = TNYWR$.
   Block A (4 kg) is originally traveling at v m/s, while Block J (4 kg) is at rest. After colliding elastically, Block J is going T m/s. What is the value of v? In case you forgot, elastic collisions conserve momentum and energy.

3. Let $T = TNYWR$.
   The first part of the game has a ramp 45° angle with respect to the horizontal. If the coefficient of friction between the ramp and a block is 0.50, and Arnold wants the block to traveling at T m/s at the bottom of the ramp, at what initial height should he place the ball?

1 Problem 2

1. Strongman Arnold punches a 10 kg block up a frictionless ramp. It was done on purpose. If the ramp has a 10° angle with respect to the horizontal and Arnold wants to get the block to a vertical height of 1.8 m, how fast must the block be moving after he punches it?

2. Let $T = TNYWR$.
   There is a circular loop with radius 10 m. If a 10 kg ball's kinetic energy at the bottom of the loop is $30 \times T$, will it make it through the loop? Pass the number 1 if it will, and 2 if it won't.

3. Let $T = TNYWR$.
   A hollow spherical ball ($I = \frac{2}{3}mr^2$) with mass T kg is rolling down a ramp. If it originally is $\frac{25}{3}$ m vertically above the ground, what will the speed of the ball be at the bottom of the ramp?