Answer on Question #51947, Physics, Other

Question:

Two trolleys X and Y with momenta 20 Ns and 12 Ns respectively travel along a straight line in opposite directions before collision. After collision the directions of motion of both trolleys are reversed and the magnitude of the momentum of X is 2 Ns. What is the magnitude of the corresponding momentum of Y

Answer:

The law of conservation of momentum:

$$p_X + p_Y = p_X{}' + p_Y{}'$$

p_X, p_Y are momentums of trolleys before impact, $p_X{}', p_Y{}'$ are momentums of trolleys after impact.

$$20 - 12 = -2 + p_Y'$$

$$p_Y = 10\ Ns$$

Answer: $10\ Ns$