

26. We note that the “(a)” and “(b)” in Fig. 10-32 do not correspond to parts (a) and (b) (in fact, it’s somewhat the reverse). Our $+x$ direction is to the right (so all velocities are positive-valued).

- (a) We apply momentum conservation to relate the situation just before the bullet strikes the second block to the situation where the bullet is embedded within the block.

$$(0.0035 \text{ kg})v = (1.8035 \text{ kg})(1.4 \text{ m/s}) \implies v = 721 \text{ m/s} .$$

- (b) We apply momentum conservation to relate the situation just before the bullet strikes the first block to the instant it has passed through it (having speed v found in part (a)).

$$(0.0035 \text{ kg})v_0 = (1.2 \text{ kg})(0.63 \text{ m/s}) + (0.0035 \text{ kg})(721 \text{ m/s})$$

which yields $v_0 = 937 \text{ m/s}$.