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On October 9, 1992, a 27 pound meteorite struck a car in Peekskill, NY, leaving a dent 22 cm deep in the trunk. If the meteorite struck the car with a speed of 130 m/s , what is the magnitude of the acceleration?

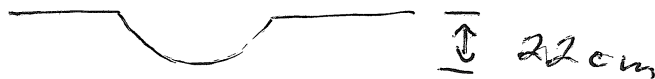
$$x_i = 0.22 \text{ m}$$

$$x_f = 0 \text{ m}$$

$$a = ?$$

$$v_i = -130 \text{ m/s}$$

$$v_f = 0 \text{ m/s}$$



$$v_f^2 = v_i^2 + 2a \Delta x$$

$$a = \frac{v_f^2 - v_i^2}{2 \Delta x}$$

$$a = \frac{(0 \text{ m/s})^2 - (-130 \text{ m/s})^2}{2(-.22 \text{ m})}$$

$$= 3.84 \times 10^4 \text{ m/s}^2$$