

An asteroid approaches the Earth at a distance of 12 times the Earth's radius as measured from the center of the Earth, with a velocity of  $1.2 \times 10^4$  m/s.

What is its velocity when it hits the Earth?

$$m_{\text{earth}} = 5.98 \times 10^{24} \text{ kg}$$

$$r_{\text{earth}} = 6.37 \times 10^6 \text{ m}$$

