

Question #71210, Physics / Other

A student drops a rock from a bridge to the water 12.2 m below. With what speed does the rock strike the water? The acceleration of gravity is 9.8 m/s².

Solution

The displacement of the rock

$$h = \frac{gt^2}{2}$$

The speed of the rock when it strikes the water

$$v = gt = g \sqrt{\frac{2h}{g}} = \sqrt{2gh} = \sqrt{2 \cdot 9.8 \cdot 12.2} = 15.5 \text{ m/s}$$

Answer: 15.5 m/s

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