## Answer on Question \#70212-Physics-Other

A kangaroo can jump over an object 2.50 m high.
(a) Calculate its vertical speed when it leaves the ground.
(b) How long is it in the air?

## Solution

(a) From the conservation of energy:

$$
\begin{gathered}
\frac{m v^{2}}{2}=m g h \\
v=\sqrt{2 g h}=\sqrt{2(9.81)(2.50)}=7.00 \frac{\mathrm{~m}}{\mathrm{~s}}
\end{gathered}
$$

(b)

$$
\begin{gathered}
h=\frac{g t^{2}}{2} \\
t=\sqrt{\frac{2 h}{g}}=\sqrt{\frac{2(2.50)}{(9.81)}}=0.714 \mathrm{~s} .
\end{gathered}
$$

Answer: (a) $7.00 \frac{\mathrm{~m}}{\mathrm{~s}}$; (b) 0.714 s .

Answer provided by https://www.AssignmentExpert.com

