



TeachEngineering

STEM Curriculum for K-12

Moon Crater Quizzes



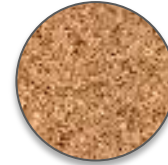
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1. Which system has more energy? Explain.

Asteroid 1
1.5 tonnes
 $V=100$ km/s



Asteroid 2
1 tonne
 $V=100$ km/s

moon surface

2. Which system has more energy? Explain.

Asteroid 1
 $V=100$ km/s

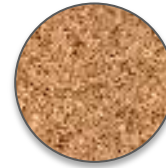


Asteroid 2
 $V=100$ km/s

moon surface

3. Which system has more energy? Explain.

Asteroid 1
 $V=300$ km/s



Asteroid 2
 $V=100$ km/s

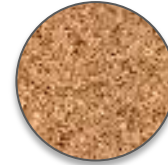
moon surface

Answer Key

(correct answers in red)

1. Which system has more energy? Explain.

Asteroid 1
1.5 tonnes
 $V=100$ km/s



Asteroid 2
1 tonne
 $V=100$ km/s

Asteroid 1 is 50% more massive than asteroid 2. This means that asteroid 1 will contain 50% more energy given that they are both moving at the same velocity and are starting from the same height above the surface.

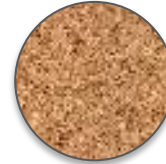
moon surface

2. Which system has more energy? Explain.

Asteroid 1
 $V=100$ km/s



Asteroid 2
 $V=100$ km/s



Asteroid 1 is higher above the surface than asteroid 2. This means that asteroid 1 will experience acceleration due to gravity for a longer period of time than asteroid 2, and so will have a greater velocity at impact. Asteroid 1 has more potential energy than asteroid 2, given that they are both moving at the same velocity at time=0, and are the same mass.

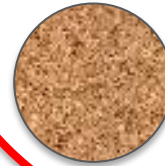
moon surface

3. Which system has more energy? Explain.

Asteroid 1
V=300 km/s



Asteroid 2
V=100 km/s



Asteroid 2 is moving faster than asteroid 1. This means that asteroid 2 will strike the surface of the moon at a greater velocity than asteroid 1. Asteroid 2 has more kinetic energy than asteroid 1, although both asteroids have the same potential energy given that they are starting at the same height above the surface, and are the same mass.

moon surface