

**A 6 kg rock is dropped from a height 3 m onto a 450 N/m spring. What is the maximum compression of the spring?**

78 cm

39 cm

89 cm

63 cm

**Solar energy utilizes the photoelectric effect. Which of the following most accurately describes this effect?**

- bonding and transferring of electrons between silicon atoms
- the liberation of an electron due to a high energy photon
- electrons emit light as they jump from energy levels
- all of the above

**15 N of force are needed to push a 10 kg box 5 m up a hill. The box loses 2 J of energy due to friction on the way up. How high up is the box above where it started?**

- 0.76 m
- 0.68 m
- 0.74 m
- not enough information

**What is the name of the process in which a uranium atom is split into smaller atoms in order to release energy?**

- fusion
- the manhattan effect
- fission
- decay
- the photoelectric effect

Which combination of fundamental units can be used to express energy?

- $\text{kg}\cdot\text{m}/\text{s}$
- $\text{kg}\cdot\text{m}^2/\text{s}$
- $\text{kg}\cdot\text{m}/\text{s}^2$
- $\text{kg}\cdot\text{m}^2/\text{s}^2$

## What is Natural Gas mainly comprised of?

- methane (CH<sub>4</sub>)
- hydrogen (H<sub>2</sub>)
- propane (C<sub>3</sub>H<sub>8</sub>)
- ethylene (C<sub>2</sub>H<sub>4</sub>)

**A force of 1000-N must be applied to the corner of a car by a lever (jack) to lift it so the tire can be changed. The fulcrum is 5.0-cm from the end of the 1.0-m long of the jack. How much force must be applied to the other end for the jack?**

## Where does wind energy originate from?

- the push and pull from the Moon
- the uneven heating of the Earth
- the Earth's inner core
- it has no origin



**A 70-kg cyclist develops 210 Watts of power while pedaling at a constant velocity of 7.0 m/s east. What average force is exerted eastward on the bicycle to maintain this constant speed?**

490 N

30 N

3.0 N

0 N

## Which of the following is not a drawback of hydropower?

- high installation costs
- destruction of habitats and aquatic life
- lack of rain and snowfall
- relocation of residents
- causes contamination in the water

**A 15.0-kilogram mass is moving at 7.50 meters per second on a horizontal, frictionless surface. What is the total work that must be done on the mass to increase its speed to 11.5 meters per second?**

120 J

422 J

570 J

992 J

**Which of the following materials is NOT used as a resource for biomass energy?**

manure

algae

hair

wood chippings

**A car heads down the 210 at 20 m/s. The car experiences 100 N of force from air resistance. How much power is the car consuming?**

2000 W

250 W

1000 W

500 W

125 W

**For every 1 unit of input energy, how many units of energy is produced?**

- 1-2 units
- 3-5 units
- 6-8 units
- 9-12 units