

## Worksheet: Determining Gravitational Potential Energy

Period \_\_\_\_\_ Date \_\_\_\_\_

(name and code)

Recall that the formula for calculating gravitational potential energy is:  $PE = mgh$ . Manipulate this formula to answer the following problems. Be sure to show the four step set-up.

1. What would the gravitational potential energy associated with a 64 kg boulder sitting on top of a 523 m high cliff?
2. The Royal Gorge Bridge is situated 321 m above the Arkansas River. If the gravitational potential energy associated with a tourist on the bridge is 173,000 J with respect to the river, what is the tourist's mass?
3. A high jumper with a mass of 82.0 kg. How high was his jump if he had a gravitational potential energy of 1970 J?
4. The world record for pole vaulting is 6.15 m. If the pole vaulter's gravitational potential energy is 4942 J, what is his mass?
5. An airplane with a mass of 124,000 kg has a gravitational potential energy of 917,000,000. How far above the ground is the plane?
6. What is the gravitational potential energy associated with a 75 kg tourist at the top floor of the Sears Tower in Chicago, with respect to the street 436 m below?
7. If a 87.5 kg mountain climber reaches the top of Mt. McKinley. If the summit is 6194 m above sea level, what is the gravitational potential energy of the climber (with respect to sea level)?
8. A bird lands on top of a radio tower that is 629 m. If the bird has 2003 J of gravitational potential energy, what is its mass?