DATE: NAME: CLASS:

TOPIC 3.1	GPE Energy Equation	BLM 3.1-8

Use the information below to answer the questions that follow.

Gravitational Potential Energy (GPE)

The formula shown here is the mathematical relationship between an object's gravitational potential energy and its mass, the acceleration due to gravity (9.8 m/s^2), and the change in height. Acceleration due to gravity is the rate at which an object's velocity increases when it falls toward Earth and there is no friction to slow it down.

$$E_g = mg\Delta h$$

Quantity	Symbol	SI unit
gravitational potential energy	E_g	J (joule)
mass	m	kg (kilogram)
acceleration due to gravity	g	$\frac{m}{s^2}$ (metres per second squared)
change in height (from reference position)	Δh	m (metre)

Note: The SI unit for energy is the joule (J), which is equivalent to a $kg \cdot \frac{m^2}{s^2}$.

One joule is needed to lift one large kiwi fruit (about 100 g) a distance of 1 m. Since the energy represented by a joule is very small, it is often expressed in kilojoules (1 kJ = 1000 J).

1. What does the symbol E_g stand for?

2. What are the SI units for the quantity in question 1?

3. How do the units for E_g compare to the units for E_k?

4. What is the symbol for acceleration due to gravity?

5. What is the value of acceleration due to gravity on Earth?

6. Where is change in height measured from?

7. What would you need to do to a height of 0.1 km before you could use it in the equation for gravitational potential energy?