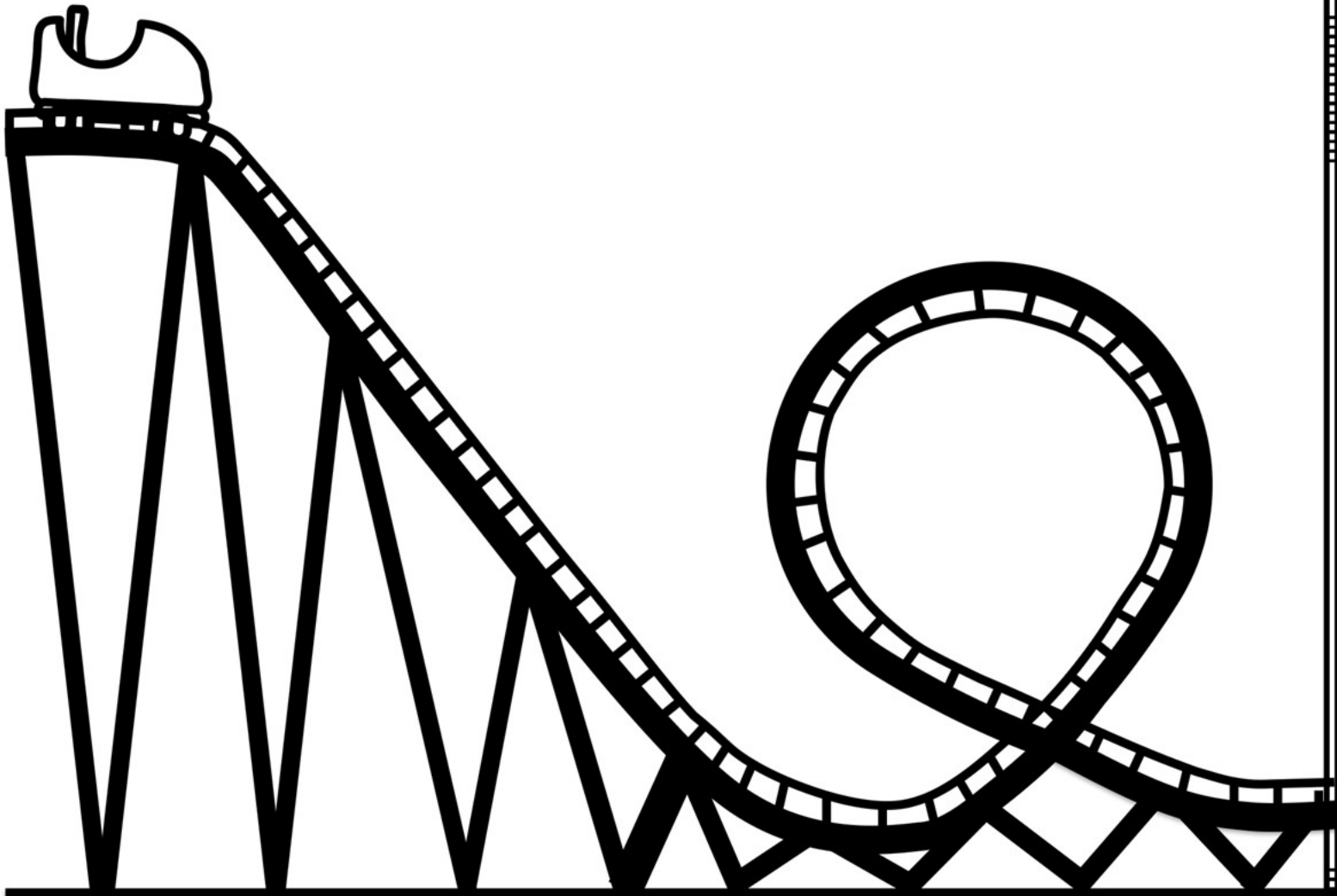


Student Worksheet



Name: _____

Date: _____

Period: _____

Potential Energy

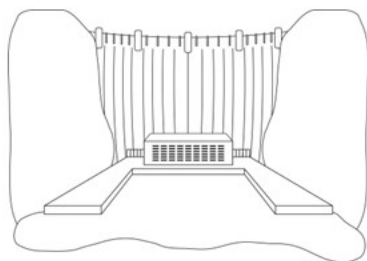
$$PE = mgh$$

Directions: Fill out everything for each problem. Write neatly!

- 1) How much potential energy does a monkey up in a tree have? The monkey has a mass of approximately 11 kg and is 14 meters high.



Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		



- 2) A city sets up a hydroelectric dam and they need about 25,000,000 Joules of energy produced every second. What is the mass of water that is necessary to create that kind of energy, if the dam is 42 meters high?

Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

- 3) You and your friend decide to flip a quarter while on top of the Empire State building. Sadly, the quarter ended up flying off the top of the building, which is 381 meters high. If the quarter has a mass of 0.006 kg, what is its potential energy?



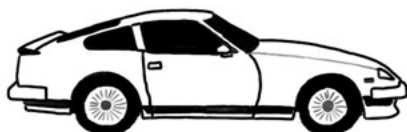
Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

$$PE = mgh$$



- 4) You decide to hang up Christmas lights from the second story of your house. If you have a mass of 75 kg and 6,700 Joules of Potential Energy, how high are you in the air?

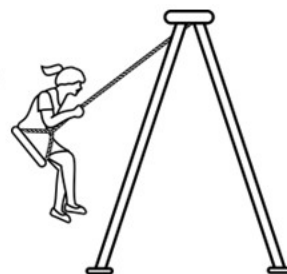
Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		



- 5) A 2,200 kg car goes flying off a highway overpass in a Hollywood movie. How much potential energy does the car have if the overpass is 25 meters high?

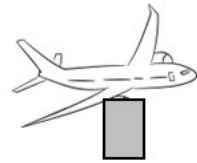
Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

- 6) A kid has 650 Joules of potential energy when they are at the top of their swing. If the height is 1.3 meters, what is the mass of the kid?



Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

$$PE = mgh$$



- 7) A 1,350 kg package is dropped from a plane from a height of 760 meters. What is its potential energy right before it starts to fall?

Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		



- 8) A Super Dog! flies by and has 1,780 Joules of Potential Energy. If Super Dog! is flying at an altitude of 15 meters, what is its mass?
PS Must say Super Dog! in a superman voice. He is the goodest of all the good dogs after all.

Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

- 9) A 56 kg meteor enters the atmosphere with a whopping 46,000,000 Joules of Potential Energy. What height does it enter our atmosphere?



Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

$$PE = mgh$$



- 10) A 0.1 kg piece of hail forms about 6,100 meters high in the air. What is that piece of hail's potential energy at that height?

Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		



- 11) Sans changes the gravitational field of Earth and it is suddenly tripled to 29.4 m/s^2 . If Chara is 110 meters in the air and has a mass of 55 kg, what is his potential energy in this new 3-g environment?

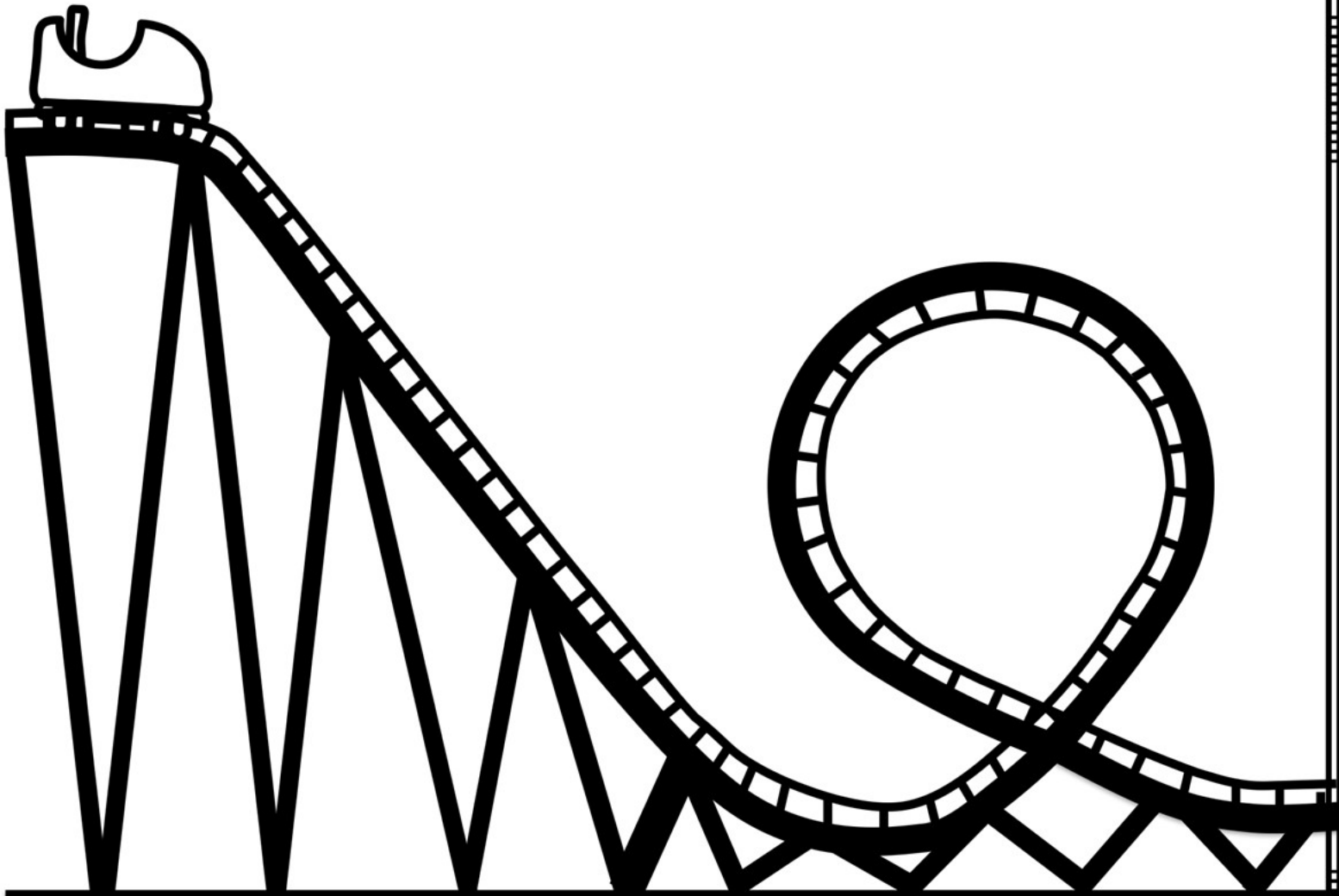
Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

- 12) SuperKid has 12,500 Joules of Potential Energy as they swing through Dallas. If SuperKid has a mass of 75 kg, what height are they swinging?



Define Variables	Write equation and show work	Answer w/ units
PE = m = g = h =		

Answer Key



Name: _____
 Period: _____

Date: _____

Potential Energy

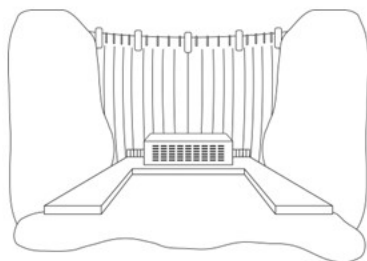
$$PE = mgh$$

Directions: Fill out everything for each problem. Write neatly!

- 1) How much potential energy does a monkey up in a tree have? The monkey has a mass of approximately 11 kg and is 14 meters high.



Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 11 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = 14 \text{ m}$	$PE = mgh$ $PE = (11) (9.8) (14)$ $PE = 1509.2$	$PE = 1500 \text{ J}$



- 2) A city sets up a hydroelectric dam and they need about 25,000,000 Joules of energy produced every second. What is the mass of water that is necessary to create that kind of energy, if the dam is 42 meters high?

Define Variables	Write equation and show work	Answer w/ units
$PE = 25,000,000 \text{ J}$ $m = ?$ $g = 9.8 \text{ m/s}^2$ $h = 42 \text{ m}$	$PE = mgh$ $25,000,000 = (m) (9.8) (42)$ $25,000,000 = 411.6 (m)$ $M = 60,738.58$	$m = 61,000 \text{ kg of water}$

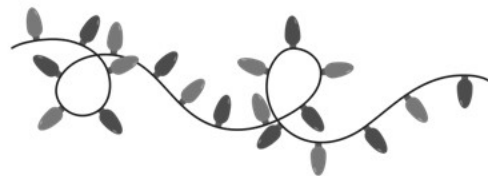
- 3) You and your friend decide to flip a quarter while on top of the Empire State building. Sadly, the quarter ended up flying off the top of the building, which is 381 meters high. If the quarter has a mass of 0.006 kg, what is its potential energy?



Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 0.006 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = 381 \text{ m}$	$PE = mgh$ $PE = (0.006) (9.8) (381)$ $PE = 22.4028$	$PE = 22 \text{ J}$

$$PE = mgh$$

- 4) You decide to hang up Christmas lights from the second story of your house. If you have a mass of 75 kg and 6,700 Joules of Potential Energy, how high are you in the air?



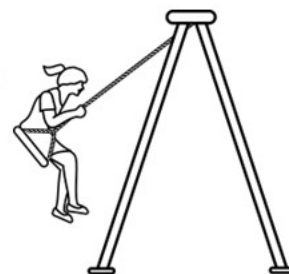
Define Variables	Write equation and show work	Answer w/ units
$PE = 6,700 \text{ J}$ $m = 75 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = ?$	$PE = mgh$ $6,700 = (75) (9.8) (h)$ $6,700 = (735) (h)$ $h = 9.115646259$	$h = 9.1 \text{ m}$



- 5) A 2,200 kg car goes flying off a highway overpass in a Hollywood movie. How much potential energy does the car have if the overpass is 25 meters high?

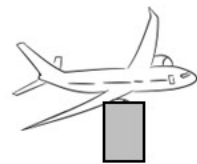
Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 2,200 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = 25 \text{ m}$	$PE = mgh$ $PE = (2,200) (9.8) (25)$ $PE = 539,000$	$PE = 540,000 \text{ J}$

- 6) A kid has 650 Joules of potential energy when they are at the top of their swing. If the height is 1.3 meters, what is the mass of the kid?



Define Variables	Write equation and show work	Answer w/ units
$PE = 650 \text{ J}$ $m = ?$ $g = 9.8 \text{ m/s}^2$ $h = 1.3 \text{ m}$	$PE = mgh$ $650 = (m) (9.8) (1.3)$ $650 = 12.74 (m)$ $m = 51.0204$	$m = 51 \text{ kg}$

$$PE = mgh$$



- 7) A 1,350 kg package is dropped from a plane from a height of 760 meters. What is its potential energy right before it starts to fall?

Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 1350 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = 760 \text{ m}$	$PE = mgh$ $PE = (1350) (9.8) (760)$ $PE = 10,054,800$	$PE = 10,050,000 \text{ J}$



- 8) A Super Dog! flies by and has 1,780 Joules of Potential Energy. If Super Dog! is flying at an altitude of 15 meters, what is its mass?
PS Must say Super Dog! in a superman voice. He is the goodest of all the good dogs after all.

Define Variables	Write equation and show work	Answer w/ units
$PE = 1780 \text{ J}$ $m = ?$ $g = 9.8 \text{ m/s}^2$ $h = 15 \text{ m}$	$PE = mgh$ $1780 = (m) (9.8) (15)$ $1780 = 147 (m)$ $m = 12.1088$	$m = 12.1 \text{ kg}$

- 9) A 56 kg meteor enters the atmosphere with a whopping 46,000,000 Joules of Potential Energy. What height does it enter our atmosphere?



Define Variables	Write equation and show work	Answer w/ units
$PE = 46,000,000 \text{ J}$ $m = 56 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = ?$	$PE = mgh$ $46,000,000 = (56) (9.8) (h)$ $46,000,000 = 548.8 (h)$ $h = 83819$	$h = 84,000 \text{ m}$

$$PE = mgh$$



- 10) A 0.1 kg piece of hail forms about 6,100 meters high in the air. What is that piece of hail's potential energy at that height?

Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 0.1 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = 6,100 \text{ m}$	$PE = mgh$ $PE = (0.1)(9.8)(6,100)$ $PE = 5978$	$PE = 6.0 \times 10^3 \text{ J}$



- 11) Sans changes the gravitational field of Earth and it is suddenly tripled to 29.4 m/s^2 . If Chara is 110 meters in the air and has a mass of 55 kg, what is his potential energy in this new 3-g environment?

Define Variables	Write equation and show work	Answer w/ units
$PE = ?$ $m = 55 \text{ kg}$ $g = 29.4 \text{ m/s}^2$ $h = 110 \text{ m}$	$PE = mgh$ $PE = (55)(29.4)(110)$ $PE = 177870$	$PE = 180,000 \text{ J}$

- 12) SuperKid has 12,500 Joules of Potential Energy as they swing through Dallas. If SuperKid has a mass of 75 kg, what height are they swinging?



Define Variables	Write equation and show work	Answer w/ units
$PE = 12,500 \text{ J}$ $m = 75 \text{ kg}$ $g = 9.8 \text{ m/s}^2$ $h = ?$	$PE = mgh$ $12,500 = (75)(9.8)(h)$ $12,500 = 735(h)$ $h = 17.0068$	$h = 17 \text{ m}$