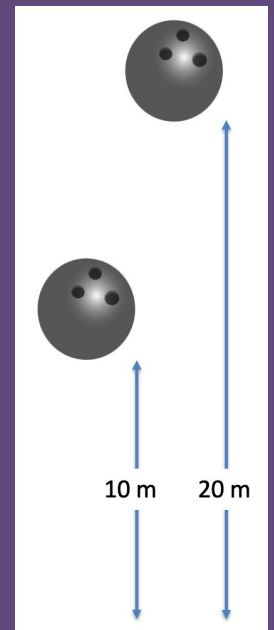


# Gravitational Potential Energy

- Energy
- Gravitational Potential Energy
- Mass and Height
- Roller Coasters
- Hydroelectric Power Plants
- Practice
- Student-Designed Experiment



# Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as \_\_\_\_\_ which the students are to fill in
- Other slides may have ..... on them, this represents writing that has been removed on this sample

**The paid full version of your resource includes  
both Google Slides and PowerPoint and is  
Google Classroom Ready**

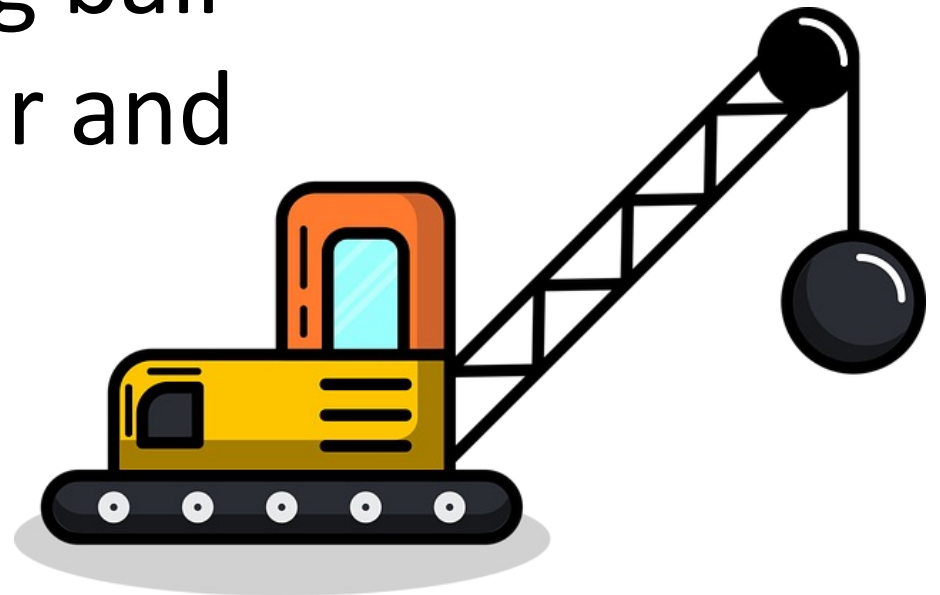


# Energy

What is energy?

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Example: If a wrecking ball is raised high in the air and allowed to fall, it can destroy a building.



# Gravitational Potential Energy

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- Lift your pencil above your desk and let it fall to see



Energy is used to raise these boxes. These boxes now potential energy.

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# Gravitational Potential Energy

Gravitational Potential Energy depends on two things

1. Mass (like weight but is how much matter or stuff is inside an object). More mass = more gravitational potential energy.
2. Height that the mass is raised above the ground. More height = more gravitational potential energy.

# Gravitational Energy and Mass

To see why energy changes with an increase in mass and height, have a look at the equation below. Note: You do not need to memorize or use the equation.

$$\textit{Gravitational Potential Energy} = mgh$$

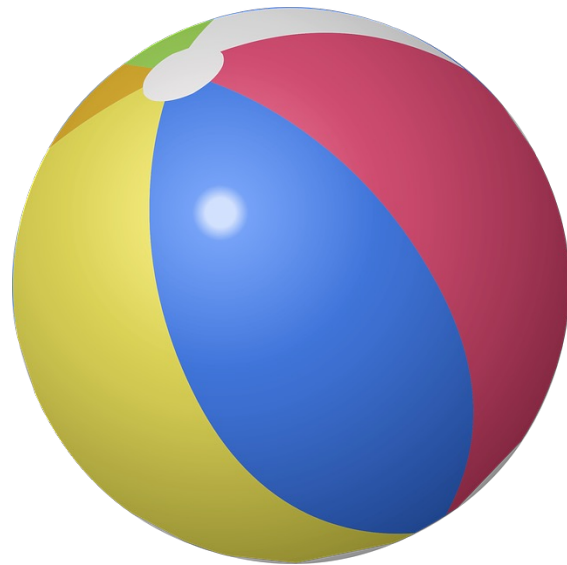
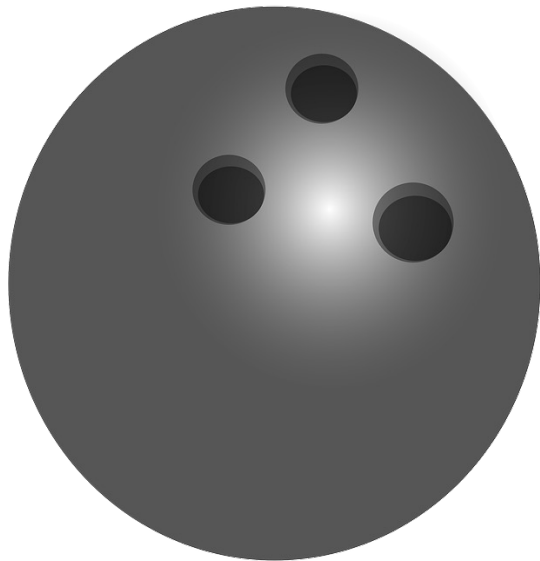
Gravitational potential energy is equal to mass (m) multiplied by gravity (g), and the height above the ground (h). If you increase the mass or height, you increase the gravitational potential energy.

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# Gravitational Energy and Mass

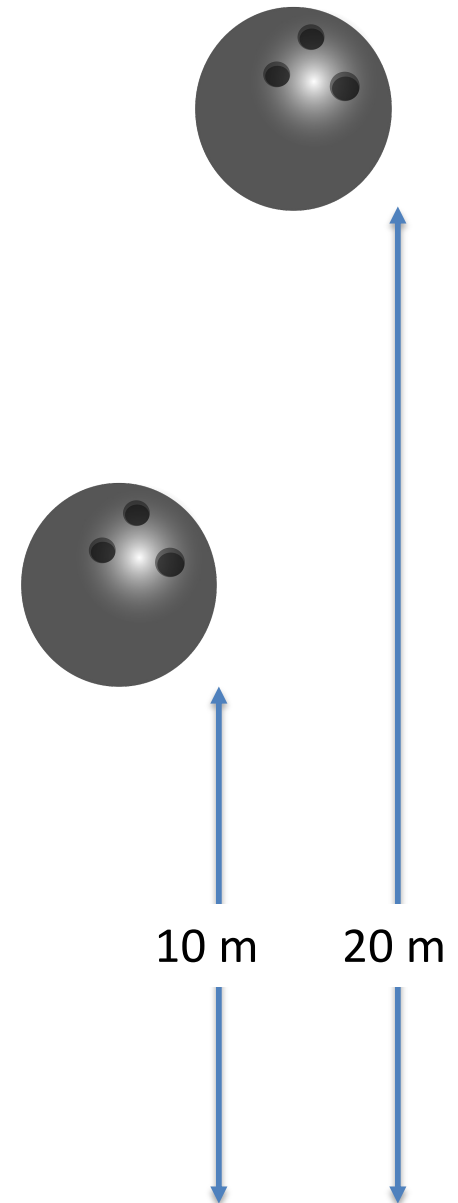
Since the bowling ball has more mass, if you raise them to the same height above the

\_\_\_\_\_



# Gravitational Energy and Height

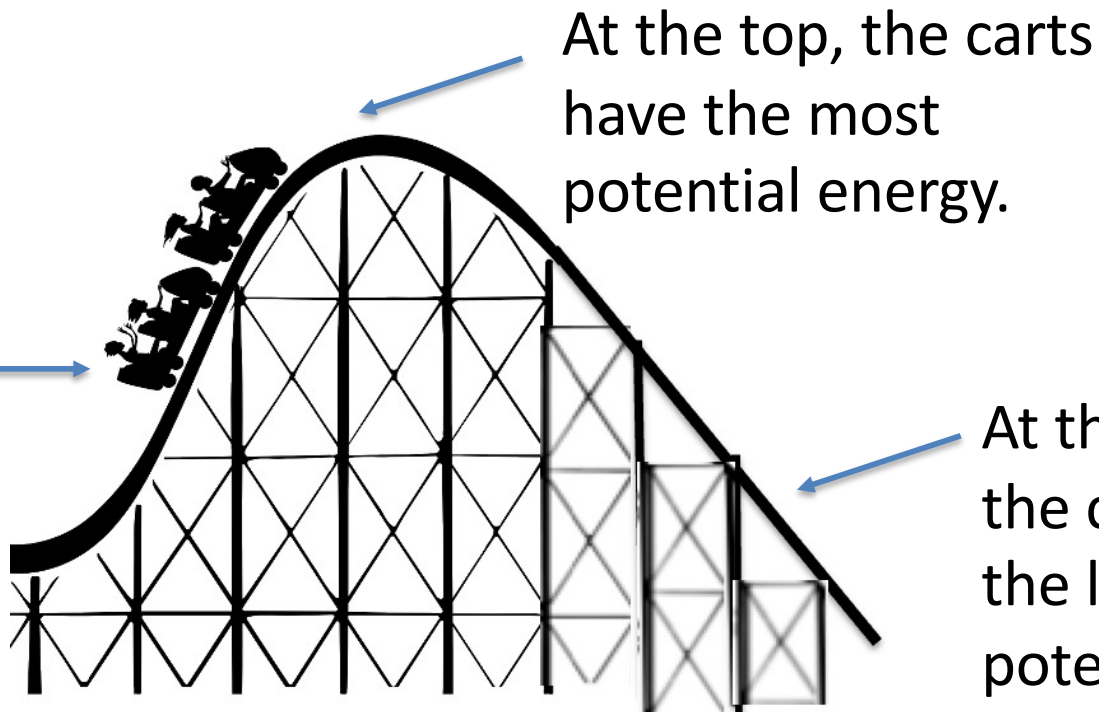
If you have raise a bowling ball 20 m above the ground, it will have twice the amount of gravitational potential energy compared to the same ball being raised 10 m above the ground.



# Roller Coasters

- Roller coasters use potential energy
- Potential energy is given to the carts when they are pulled up the hill
- \_\_\_\_\_

Potential energy is being given to the carts as they go up the hill.



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# Check Your Understanding

What would have more gravitational potential energy and why?

- 1) A 50 kg diver, 10 m above a pool or a 50 kg diver, 20 m above the pool.
- 2) A 64 kg diver, 10 m above a pool or an 82 kg diver, 10 m above the pool.

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# Experiment

Your task is to design a simple experiment to compare objects with different amounts of gravitational potential energy. You must:

1. Come up with an idea. Get ideas from examples in the lesson if you like.
2. Gather all materials.
3. Write out step-by-step directions for your experiment.
4. Collect data visually about how much energy an object has and compare it to another object or the same object in a different situation. Your data collection will only be observation. No numbers or calculations. How will you know if it has more energy? Think about how you know when energy is released.
5. Write a conclusion comparing the two situations. Which had more energy? How do you know?