

Date: September 17, 2018

School Day: 021

**Learning Objectives** – “Students can...”

1. Analyze new concept vocabulary – Vocabulary Enhancement (BW)
2. Lab 3-1: Interpreting Data & Conclusion / Intro. to Gravity Coasters (Model)

**Assessment**

In-class completion of the notebook/bell work  
Writing a Conclusion / Final Predictions Assignment

**Homework**

1. Complete lab 3-1 graph & conclusion – 9/18
2. Complete gravity coaster planning – 9/18
3. Complete Q5-1 Assessment Review – 9/18
4. Complete BW vocabulary (5 terms) – 9/19

**Reminders / DO NOT COPY**  
Turn in \$15.00 lab supplies fee

**Model notebook entries** can be found below at the Teacher’s NB below. Use this resource to keep your notebook accurate.

**Bell work**

Using the vocabulary list provided at your seat: *Complete the five starred\* terms*

For each term on the list you may do one of the following:

- Copy
- Summarize
- Provide an example

**Incomplete or incorrect vocabulary will be scored accordingly.**

**No pictures – Text only**

*\*\*Vocabulary assignments must be complete prior to notebook assessments – please plan/prepare accordingly.*

**Linked Documents and Class Resource**

[Teacher’s NB 9/17](#)

[Lab 3-1: Gravity Obs. - SAMPLE](#)

[Vocabulary 2-1<sup>2</sup>](#) ↓

[Gravity RC Handout](#) ↓

**District Content Descriptor:**

Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. (07-PS3-5)

Connections to Nature of Science  
Scientific Knowledge is Based on Empirical Evidence  
Science knowledge is based upon logical and conceptual connections between evidence and explanations (07-PS3-4)

Fayette County  
2018-19  
District Content Map

Week 6: September 17 - 21, 2018

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Date: September 18, 2018

School Day: 022

**Learning Objectives – “Students can...”**

1. Analyze and respond to our weekly Science Article: Fail, Fail Again (BW)
2. Gravity Coasters (Model) / Building Basics 101 “How to”

**Assessment**

In-class completion of the notebook/bell work  
RC Planning & Building Practices

**Homework**

1. Complete Day 1 / Plan & Build\*
2. Complete BW vocabulary (5 terms) – 9/19

**Reminders / DO NOT COPY**

Turn in \$15.00 lab supplies fee

**Model notebook entries** can be found below at the Teacher’s NB below. Use this resource to keep your notebook accurate.

**Bell work**

Using good-practice reading techniques, read this week’s science article. When you finish reading, complete the article questions below.

1. **True or False: Rollercoasters have no engine – they are powered only by gravity.**
2. **Where do you experience a roller coasters maximum potential energy?**
3. **What does potential energy change into as the coaster moves down a hill?**
4. **What natural forces work to slow down the roller coaster?**
5. **Where is the world’s fastest roller coaster, according to this article?**

**Linked Documents and Class Resource**

[Teacher’s NB 9/18](#)

[Article: Roller Coaster](#)

[Gravity RC Handout](#) ↓

[Vocabulary 2-1<sup>2</sup>](#) ↓

**District Content Descriptor:**

Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. (07-PS3-5)

Models can be used to represent systems and their interactions – such as inputs, processes, and outputs – and energy and matter flows within systems. (07-PS3-2) When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. (07-PS3-2)

*Fayette County  
2018-19  
District Content Map*

**Week 6: September 17 - 21, 2018**

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Date: September 19, 2018

School Day: 023

**Learning Objectives – “Students can...”**

1. Use critical thinking to solve a problem. (BW)
2. Gravity Coasters (Model) / Day 2 – Build IT

**Assessment**

In-class completion of the notebook/bell work  
Gravity Coasters (Model) / Day 2 – Build IT

**Homework**

1. Complete Day 2 / Plan & Build\*
2. We will be testing our RC models – 9/24
3. Quiz 5-1: Labs & Notebook Concepts – 9/21

**Reminders / DO NOT COPY**

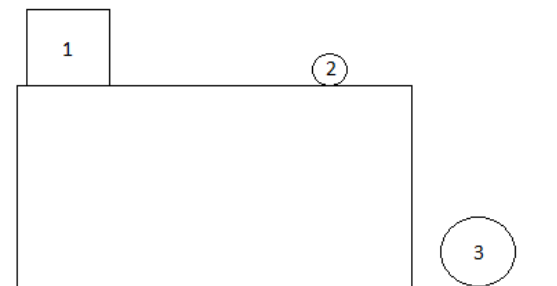
Turn in \$15.00 lab supplies fee

**Model notebook entries** can be found below at the Teacher’s NB below. Use this resource to keep your notebook accurate.

**Bell work**

Complete today’s challenge question in the notebook. When you finish, **record your answer on a small piece of paper and place it in the solutions chest at the front of the room.**

**Which of the following objects has the least potential energy?** Explain your response in the notebook.



**Linked Documents and Class Resource**

[Teacher’s NB 9/19](#)

[Gravity RC Handout](#) ↓

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Week 6: September 17 - 21, 2018

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Date: September 20, 2018

School Day: 024

**Learning Objectives – “Students can...”**

1. Analyze and respond to the YouTube - Q Review. (BW)
2. Gravity Coasters (Model) / Day 3 – Build IT

**Assessment**

In-class completion of the notebook/bell work  
Gravity Coasters (Model) / Day 3 – Build IT

**Homework**

1. Complete Day 3 / Plan & Build\*
2. RC models must be complete / Testing begins – 9/24
3. Quiz 5-1: Labs & Notebook Concepts – 9/21

**Reminders / DO NOT COPY**  
Turn in \$15.00 lab supplies fee

**Model notebook entries** can be found below at the Teacher’s NB below. Use this resource to keep your notebook accurate.

**Bell work**

YouTube Science – Watch the video and respond to the questions below.

**As you observe this monster paper coaster select three elements and explain how they use potential and kinetic energy.**

*Example: The Jump – Kinetic energy builds as the marble moves faster, potential energy builds as it climbs the ramp. The potential energy is spent when the marble makes the leap and lands in the funnel.*



YouTube Video Link – PAPER RC MODEL

**Linked Documents and Class Resource**

[Teacher’s NB 9/20](#)

[YouTube Science Video – Paper RC Model](#)

[Gravity RC Handout](#) ↓

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Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. (07-PS3-5)

Models can be used to represent systems and their interactions – such as inputs, processes, and outputs – and energy and matter flows within systems. (07-PS3-2) When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. (07-PS3-2)

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**Date:** September 21, 2018

**School Day:** 025

**Learning Objectives – “Students can...”**

1. Share ideas by writing a paragraph in their science journal. (BW)
2. Quiz 5-1: Labs & Notebook Concepts & Master Challenge

**Assessment**

In-class completion of the notebook/bell work  
Quiz 5-1: Labs & Notebook Concepts

**Homework**

1. RC models must be complete / Testing begins – 9/24
2. Teacher’s NB Assessment 3-1 – 9/26

**Reminders / DO NOT COPY**

Turn in \$15.00 lab supplies fee

**Model notebook entries** can be found below at the Teacher’s NB below. Use this resource to keep your notebook accurate.

**Bell work**

Science Journal: Day 5

Complete a paragraph containing no less than five additional sentences that continue the lead below.

**“Designing rollercoasters for a living might be...”**

**Linked Documents and Class Resource**

[Teacher’s NB 9/21](#)

Quiz 5-1\*

Gravity RC Handout ↓

**District Content Descriptor:**

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Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

- Science knowledge is based upon logical and conceptual connections between evidence and explanations (07-PS3-4)

Fayette County

2018-19

District Content Map

**Week 6: September 17 - 21, 2018**

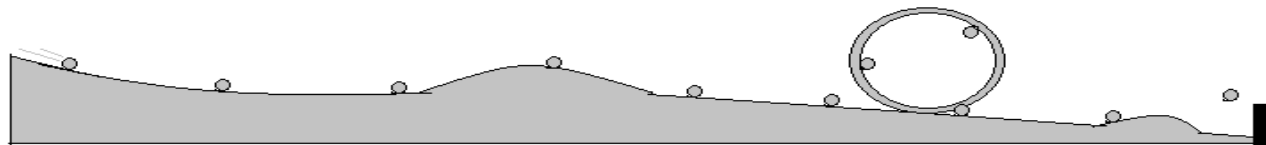
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## Vocabulary 2-1<sup>2</sup> – Scientific Methods

You are expected to familiarize yourself with these concept terms – complete the terms that are (\*) as part of the weekly bell work.

<b>Vocabulary Term</b>	<b>Definition</b>
<i>Blunder*</i>	<b><i>A mistake due to poor practice or false assumption – Careless work</i></b>
<i>Dependent Variable</i>	<b><i>This is unknown and its results are unpredictable until there is a theory or law to govern the outcome</i></b>
<i>Hypothesis</i>	<b><i>A proposed explanation made on the basis of limited evidence</i></b>
<i>Independent Variable</i>	<b><i>This variable is known as the control and can be changed at will</i></b>
<i>Work*</i>	<b><i>The transfer of energy to a body by the application of a force that causes the body to move in the direction of the force</i></b>
<i>Efficiency*</i>	<b><i>A quantity, usually expressed as a percentage that measures the ratio of useful work output to work input</i></b>
<i>Momentum*</i>	<b><i>A quantity defined as the product of the mass and the velocity of an object</i></b>
<i>Random Error</i>	<b><i>These often show up in data/result variation and are difficult to explain as their source is difficult to identify</i></b>
<i>Mass*</i>	<b><i>Measure of the amount of matter in an object</i></b>
<i>Scientific Law</i>	<b><i>An explanation that is accepted by all – A law must answer every reasonable argument. Example: Law of Gravity</i></b>
<i>Scientific Theory</i>	<b><i>An explanation that has been verified through sound experimentation, but still needs further study</i></b>
<i>Free Fall</i>	<b><i>The motion of a body when only the force of gravity is acting on the body.</i></b>
<i>Potential Energy</i>	<b><i>The stored energy found in an object based on its shape, mass and position.</i></b>
<i>Kinetic Energy</i>	<b><i>The movement of an object given its potential energy (acceleration, velocity &amp; mass)</i></b>

**Hands on Physics – Activity 3-5**  
A Model Rollercoaster



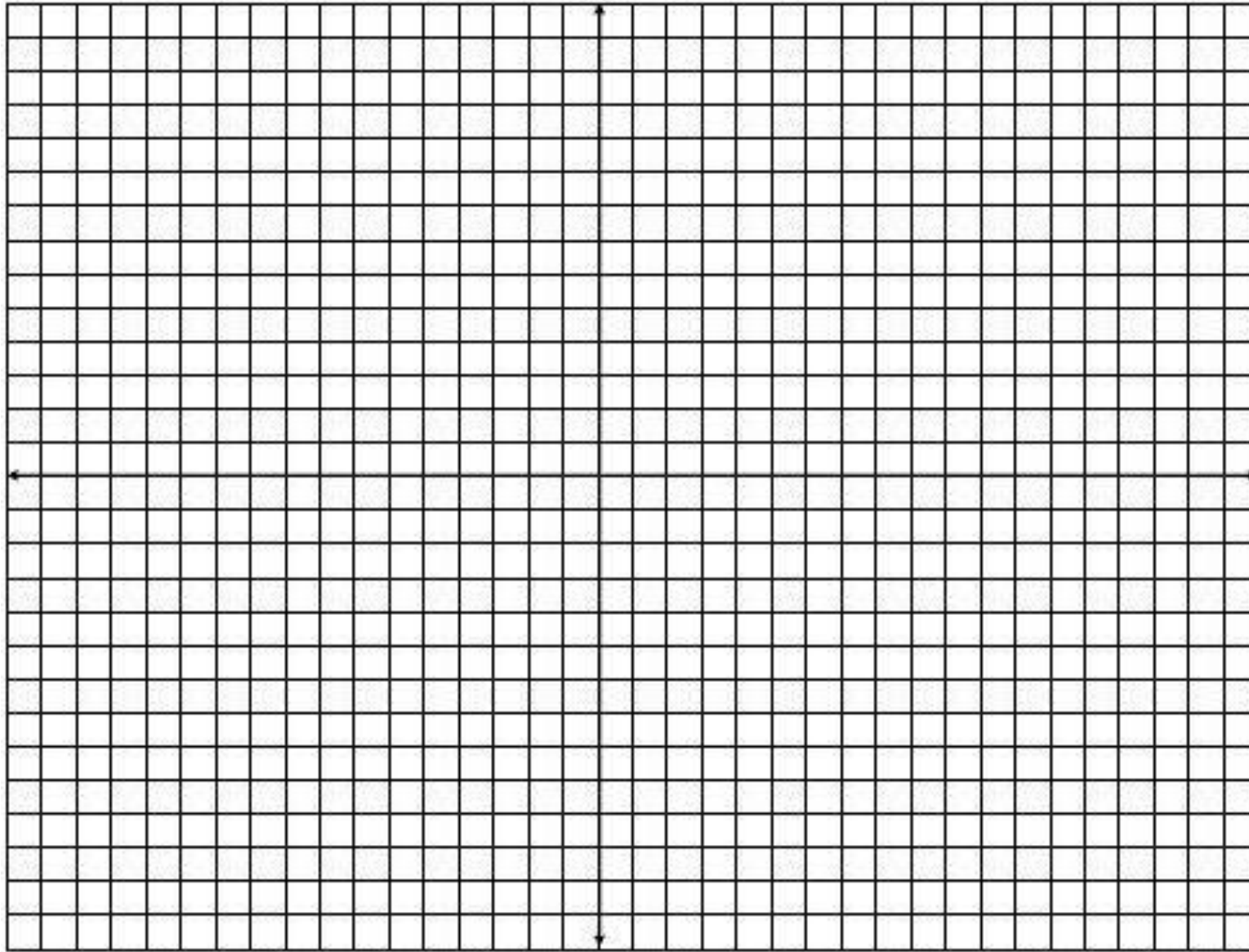
**Description:** This activity requires creative engineering and a sound understanding of potential and kinetic energy systems. The models you are building depend on gravity as a force to move an object. While there are many different ways to achieve this, one of the critical elements is that the object makes it through all essential features and to the end of the model. You can use this rubric to help plan appropriately – Some features are worth more than others, so placing them at points of greatest kinetic energy are important to passing.

Feature	Description	Points	X (Used)	Assigned	Total Points / Score
<b>The Drop</b>	This is typically found at the beginning of a model – it has maximum potential and gains maximum kinetic energy	<b>5</b>		The goal of this activity is to <b>score 75 points</b> . This can be done with any combination of the features described (left)  <i>**Elements such as the drop can only occur at the start of the model – therefore the model will have only one.</i>  <i>*All models will have a single release point – the object must make it through all features without assistance</i>  <i>*Creative themes will be rewarded with additional bonus points – SEE “Zombie Land” Sample</i>	
<b>Min – Hill</b>	A small incline, the object must successfully move over and not return	<b>10</b>			
<b>Max – Hill</b>	A larger incline, the object must successfully move over and not return	<b>15</b>			
<b>Inversion</b>	The object must use its mass to maintain contact with the track – <i>anytime the object is on a side rail or experiences a funnel</i>	<b>20</b>			
<b>Loop/Full Inversion</b>	The object must use its mass to complete a full inversion of gravity – <i>the object must travel up-side-down</i>	<b>25</b>			
<b>Motion Obstacle</b>	Any obstacle that demonstrates an act of force and results in motion aside from the object	<b>25</b>			
<b>Jump</b>	The object must leave and return to the model as a demonstration of control – <i>No points are scored when this occurs accidentally</i>	<b>25</b>			

This is a Think/Pair/Share activity – You may have a partner if you choose, but all partners will share the same grade regardless of work completion.

Name(s) \_\_\_\_\_

**Lab 3-5 Planning & Assessment:** This page needs to have a labeled illustration of your model. This will be used for building and assessment.



As you complete your planning you should always keep in mind that in order to overcome an obstacle you must have a balanced system of potential and kinetic energy.



