




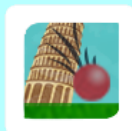


GENERAL INQUIRY		KY Standards
Summary  	Basic Tutorial <ul style="list-style-type: none"> Determine how the sugar in the water affects the petal loss. Determine how the salt in the water affects the petal loss. Determine how the red dye in the water affects the redness of the petals 	SEP 1-8
Summary  	Advanced Tutorial <ul style="list-style-type: none"> Determine how the size of the sled affects the total distance traveled from the end of the ramp. Determine how the height of the tower affects the total distance traveled from the end of the ramp. Determine how the roughness of the ramp affects the time to end of the ramp. 	SEP 1-8

PHYSICAL SCIENCE		KY Standards
Summary 	Phase Change <ul style="list-style-type: none"> Determine how the amount of heat affects the boiling point of water. Determine how the size of the container affects the time the water takes to boil. Determine how the amount of ice affects the boiling point of water. Determine how the amount of ice affects the melting point of ice. 	06-PS1-4 07-PS1-2 HS-PS1-3 HS-PS1-5

Summary

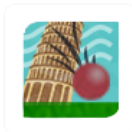


Velocity: Free Fall

- Determine how the **height** of the drop affects the **final speed** of the ball.
- Determine how the **height** of the drop affects the **time** to drop.
- Determine how the **mass** of the ball affects the **time** to drop.

4-PS3-1
06-PS2-2
HS-PS2-1

Summary



Velocity & Air Resistance

- Determine how the **height** of the drop affects the **velocity** of the ball before it hits the ground.
- Determine how the **mass** of the ball affects the **acceleration** before the ball hits the ground.
- Determine how the **volume** of the ball affects the **force** as the ball hits the ground.
- Determine how the **volume** of the ball affects the **time** before the ball hits the ground.

4-PS3-1
06-PS2-2
HS-PS2-1

Summary

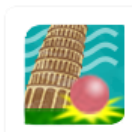


Energy: Free Fall

- Determine how the **height** of the drop affects the **kinetic energy** as the ball hits the ground.
- Middle School: Determine how the **height** of the drop affects the **potential energy** before the ball is dropped.
- High School: Determine how the **mass** of the ball affects the **mechanical energy** as the ball hits the ground.

4-PS3-1
07-PS3-2
07-PS3-4
07-PS3-5
HS-PS3-1
HS-PS3-2

Summary



Energy & Air Resistance

- Determine how the **height** of the drop affects the **potential energy** before the ball is dropped.
- Determine how the **mass** of the ball affects the **mechanical energy** as the ball hits the ground.
- Determine how the **volume** of the ball affects the **thermal energy** of the system.
- Determine how the **volume** of the ball affects the **kinetic energy** as the ball hits the ground.

4-PS3-1
07-PS3-2
07-PS3-5
HS-PS3-1
HS-PS3-2

<p>Summary</p>  <p>CER ✓</p>	<p>Density</p> <ul style="list-style-type: none"> Determine how the type of liquid affects the density of the liquid. Determine how the shape of the container affects the density of the liquid. Determine how the amount of liquid affects the density of the liquid. 	<p>07-PS1-2 HS-PS1-2 HS-PS1-5</p>
<p>Summary</p> 	<p>Gravity & Mass: Introduction</p> <ul style="list-style-type: none"> Determine how the planetary body we are orbiting affects the weight of the gold. Determine how the planetary body we are orbiting affects the mass of the gold. Determine how the amount of gold affects the weight of the gold. 	<p>07-PS2-4 HS-PS2-4 HS-ESS1-4</p>
<p>Summary</p> 	<p>Gravity & Orbit Distance</p> <ul style="list-style-type: none"> Determine how the amount of gold affects the force of gravity on gold. Middle School: Determine how the gold's distance from the planet's center affects the force of gravity on gold. High School: Determine how the planet's mass affects the force of gravity on gold. 	<p>07-PS2-4 HS-PS2-4 HS-ESS1-4</p>
<p>Summary</p> 	<p>Gravity & Forces</p> <ul style="list-style-type: none"> Determine how the orbital distance affects the gold's mass. Determine how the planet's mass affects the force of gravity. Determine how the orbital distance affects the force of gravity. 	<p>HS-PS2-4</p>
<p>Summary</p> 	<p>Collisions: Introduction</p> <ul style="list-style-type: none"> Determine how the mass of the green ball affects the final velocity of the green ball. Determine how the initial velocity of the red ball affects the total final momentum to the right. Determine how the mass of the red ball affects the total final momentum to the right. 	<p>4-PS3-4 06-PS2-1 HS-PS2-4</p>

<p>Summary</p>		<p>Collisions: Advanced</p> <ul style="list-style-type: none"> • Determine how the mass of the green ball affects the final velocity of the green ball. • Determine how the initial velocity of the red ball affects the total final momentum to the right. • Determine how the mass of the red ball affects the total final momentum to the right. 	<p>HS-PS2-3</p>
<p>Summary</p>		<p>Collisions: Inelastic (Trains)</p> <ul style="list-style-type: none"> • Determine how the initial velocity of the red train affects the total final momentum to the right. • Determine how the initial velocity of the green train affects the total final momentum to the right. • Determine how the mass of the red train affects the final velocity of the red train. 	<p>06-PS2-1 HS-PS2-3</p>
<p>Summary</p>		<p>Forces & Motion: Introduction</p> <ul style="list-style-type: none"> • Determine how the mass of the sled impacts the force of the sled on the spring. • Determine how the roughness of the ramp impacts the time to end of the ramp. • Determine how the height of the tower impacts the velocity of the sled. 	<p>06-PS2-2 07-PS2-4 HS-PS2-1</p>
<p>Summary</p>		<p>Forces & Motion: Different Planetary Bodies</p> <ul style="list-style-type: none"> • Determine how the gravity of the planetary body impacts the force of the sled on the spring. • Middle School: Determine how the gravity of the planetary body impacts the time to end of the ramp. • High School: Determine how the gravity of the planetary body impacts the velocity of the sled. 	<p>06-PS2-2 07-PS2-4 HS-PS2-1</p>
<p>Summary</p>		<p>Waves on a String: Introduction</p> <ul style="list-style-type: none"> • Determine how the tension of the string impacts the wave frequency. • Determine how the length of the string impacts the wave speed. • Determine how the strength of the strum impacts the loudness of the sound. 	<p>07-PS4-1 07-PS4-2 HS-PS4-1</p>

<p>Summary</p>		<p>Waves on a String: Advanced</p> <ul style="list-style-type: none"> • Determine how the wave frequency changes. • Determine how the loudness changes. • Determine how the wave speed changes. 	<p>HS-PS4-1</p>
<p>Summary</p>		<p>Waves in a Drum: Introduction</p> <ul style="list-style-type: none"> • Determine how the substance in the drum (medium) influences the wave speed. • Determine how the mallet position influences the loudness of the sound produced. • Determine how the mallet speed influences the pitch of the sound produced. 	<p>07-PS4-2 HS-PS4-1</p>
<p>Summary</p>		<p>Waves in a Drum: Advanced</p> <ul style="list-style-type: none"> • Investigate what affects the loudness of the sound produced. • Investigate what affects the pitch of the sound produced. • Investigate what affects the wave speed. 	<p>HS-PS4-1</p>
<p>Summary</p>		<p>Waves & Thermal Energy</p> <ul style="list-style-type: none"> • Determine how the temperature in the drum influences the wave speed. • Determine how the temperature in the drum influences the loudness of the sound produced. • Determine how the temperature in the drum influences the pitch of the sound produced. 	<p>06-PS1-4 07-PS4-2 HS-PS4-1</p>
<p>Summary</p>		<p>Chemical Reactions</p> <ul style="list-style-type: none"> • Determine how the substance added to vinegar impacts the temperature change. • Determine how the amount of baking soda impacts the temperature change. • Determine how the amount of vinegar impacts the temperature change. 	<p>07-PS1-2 07-PS1-4</p>

<p>Summary</p>		<p>Cells: Animal - Function</p> <ul style="list-style-type: none"> The Golgi body is not receiving enough protein. Investigate how you can fix this problem. The cell is producing too many ribosomes. Investigate how you can decrease the production of ribosomes. The cell has too much protein. Investigate how you can reduce the amount of protein. 	<p>07-LS1-2 HS-LS1-7 HS-LS2-5</p>
<p>Summary</p>		<p>Cells: Animal - Energy & Storage</p> <ul style="list-style-type: none"> The cell cannot break down food. Investigate how you can fix this problem. The cell is storing too many nutrients. Investigate how you can fix this problem. The cell is low on energy. Investigate how you can increase its energy. 	<p>07-LS1-2 HS-LS1-7 HS-LS2-5</p>
<p>Summary</p>		<p>Cells: Plant - Function</p> <ul style="list-style-type: none"> The Golgi body is not receiving enough protein. Investigate how you can fix this problem. The cell is producing too many ribosomes. Investigate how you can decrease the production of ribosomes. The cell has too much protein. Investigate how you can reduce the amount of protein. 	<p>07-LS1-2 HS-LS1--5 HS-LS2-5</p>
<p>Summary</p>		<p>Cells: Plant - Energy & Storage</p> <ul style="list-style-type: none"> The cell does not have enough storage space. The cell is not producing enough food. Investigate how you can fix this problem. The cell is low on energy. Investigate how you can increase its energy. 	<p>07-LS1-2 HS-LS1--5 HS-LS2-5</p>
<p>Summary</p>		<p>Natural Selection</p> <ul style="list-style-type: none"> Investigate the optimal amount of foliage for the green, long furred slinquettes' population. Investigate the optimal amount of foliage for the red, short, furred slinquettes' population. Investigate the optimal temperature for the green short furred slinquettes' population. Investigate the optimal temperature for the red, long furred slinquettes' population. 	<p>08-LS4-4 08-LS4-6 HS-LS2-3 HS-LS2-6 HS-LS3-3 HS-LS4-2 HS-LS4-3 HS-LS4-4 HS-LS4-5</p>

[Summary](#)

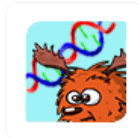


Diversity of Traits

- Investigate how **foliage** influences the presence of **red, short furred** living in the environments.
- Investigate how **fur color mutation** influences the final number of **green, short furred** living in the environments.
- Investigate how a **fur length mutation** influences the presence of red, **long furred** living in the environments.
- Investigate how **temperature** influences the final number of green, **long furred** living in the environments.

08-LS4-4
HS-LS4-2
HS-LS2-2
HS-LS3-2
HS-LS3-3

[Summary](#)



Genetics

- Determine how the Mother's F **alleles** impact the chance of producing the **offspring with red fur**.
- Determine how the Mother's L **alleles** impact the chance of producing the **offspring with short fur**.
- Determine how the Mother's H **alleles** impact the chance of producing the **offspring with horns**.

08-LS4-4
HS-LS2-2
HS-LS3-1
HS-LS3-2

[Summary](#)



Predation: Introduction

- Investigate how **seal birthrate** influences the **maximum shark population**.
- Investigate how **shark birthrate** influences the **maximum seal population**.
- Investigate how a **starting seal population** influences the **length of the predation cycle**.
- Investigate how a **starting shark population** influences the **length of the predation cycle**.

06-LS2-1
08-LS2-4
HS-LS2-2
HS-LS2-6

[Summary](#)



Predation: Advanced

- Investigate how an **initial seal population** influences the **duration of predation cycles**.
- Investigate how **seal birthrate** influences the **final seal population**.
- Investigate how **shark birthrate** influences the **duration of predation cycles**.

HS-LS2-2
HS-LS2-6

[Summary](#)

CER ✓

Lunar Phases

- Determine how the **position of the moon** impacts the **percent of the Moon facing the Sun**.
- Determine how the **location of the observer** impacts the **percent of the Moon lit up**.
- Determine how the **orbital speed of the moon** impacts the **duration of lunar orbit**.

06-ESS1-1
HS-ESS1-4

[Summary](#)

Lunar Phases: Advanced

- Determine how the **percent of the Moon lit up** changes.
- Determine how the **duration of lunar orbit** changes.
- Determine how the **percent of the Moon facing the Sun** changes.

HS-ESS1-4

[Summary](#)

Eclipses: Introduction

- Determine how the **phase of the Moon** affects the **possibility** of viewing a **lunar eclipse**
- Determine how the **phase of the Moon** affects the **possibility** of viewing a **solar eclipse**
- Determine if the **orbital tilt of the moon** impacts the average number of **lunar eclipses**.
- Determine how the **time of year** impacts the average number of **solar eclipses**.

06-ESS1-1
06-ESS1-1

[Summary](#)

Eclipses: Advanced

- Determine how the average number of **lunar eclipses** changes.
- Determine how the average number of **solar eclipses** changes.
- Determine how the possibility of viewing a **lunar eclipse** changes.
- Determine how the possibility of viewing a **solar eclipse** changes.

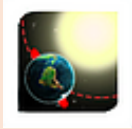
HS-ESS1-4

<p>Summary</p> 	<p>Plate Tectonics: Convergent Plates- Introduction</p> <ul style="list-style-type: none"> • Determine how the plate type affects the formation type. • Investigate how the duration of plate movement impacts the formation heights at the convergent boundary. • Investigate how plate size impacts the number of earthquakes at the convergent boundary. 	<p>06-ESS2-2 06-ESS2-3 HS-ESS1-5 HS-ESS2-1</p>
<p>Summary</p> 	<p>Plate Tectonics: Convergent Plates- Advanced</p> <ul style="list-style-type: none"> • Investigate what affects the formation type at the convergent boundary. • Determine the impact of the duration of plate movement. • Investigate what affects the number of earthquakes. 	<p>HS-ESS1-5 HS-ESS2-1</p>
<p>Summary</p> 	<p>Plate Tectonics: Divergent Plates</p> <ul style="list-style-type: none"> • Investigate what affects the formation observed at the divergent boundary. • Middle School: Investigate what affects the age of crust. • High School: Investigate what affects the spreading rate at the divergent boundary. 	<p>06-ESS2-2 06-ESS2-3 HS-ESS1-5 HS-ESS2-1 HS-ESS2-3</p>
<p>Summary</p> 	<p>Plate Tectonics: Divergent Plates- Advanced</p> <ul style="list-style-type: none"> • Investigate what affects the formation observed at the divergent boundary. • Investigate what affects the spreading rate at the divergent boundary. • Investigate what affects the age of crust at the divergent boundary. 	<p>HS-ESS1-5 HS-ESS2-1 HS-ESS2-3</p>
<p>Summary</p> 	<p>Seasons: Introduction</p> <ul style="list-style-type: none"> • Determine how the tilt of the Earth affects the average temperature. • Determine how the location of Earth in orbit affects the distance of Earth from the Sun. • Determine how the location of the observer on Earth affects the angle of sunlight. 	<p>06-ESS1-1 HS-ESS1-4</p>

HS-ESS1-4

Seasons: Advanced

[Summary](#)



- Determine how the **angle of sunlight** changes.
- Determine how the average **temperature** changes.
- Determine how the **distance** of Earth from the Sun changes.

06-ESS1-1
HS-ESS1-4

Seasons: Earth has NO Tilt! Introduction

[Summary](#)



- If the Earth has no tilt, determine how the **location of Earth in orbit** affects the **average temperature**.
- If the Earth has no tilt, determine how the **location of Earth in orbit** affects the **distance** of Earth from the Sun.
- If the Earth has no tilt, determine how the **location of the observer** affects the **angle of sunlight**.

HS-ESS1-4

Seasons: Earth has NO Tilt! Advanced

[Summary](#)



- If the Earth has no tilt, determine how the **angle of sunlight** can change.
- If the Earth has no tilt, determine how **the average temperature** can change.
- If the Earth has no tilt, determine how the **distance** of Earth from the Sun can change.