




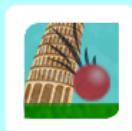


GENERAL INQUIRY		<u>ID Standards</u>
<u>Summary</u>	 	Basic Tutorial <ul style="list-style-type: none"> • Determine how the sugar in the water affects the petal loss. • Determine how the salt in the water affects the petal loss. • Determine how the red dye in the water affects the redness of the petals
<u>Summary</u>	 	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.

PHYSICAL SCIENCE		<u>ID Standards</u>
<u>Summary</u>		Phase Change <i>PS1-MS-4</i> <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.

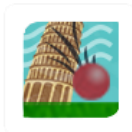
Summary



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.

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.

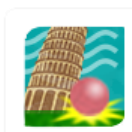
Summary



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.

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.

[Summary](#)



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Density

- 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.

PS1-MS-4
PS1-HS-3
PS1-HS-5

[Summary](#)



Gravity & Mass: Introduction

- 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.

PS2-MS-4

[Summary](#)



Gravity & Orbit Distance

- 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.

PS2-MS-4

[Summary](#)



Gravity & Forces

- 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**.

PSP1-HS-4

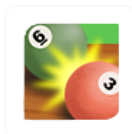
[Summary](#)



Collisions: Introduction

- 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.

PS2-MS-1

[Summary](#)

Collisions: Advanced

- 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.

[Summary](#)

Collisions: Inelastic (Trains)

- 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.

[Summary](#)

Forces & Motion: Introduction

- 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.

[Summary](#)

Forces & Motion: Different Planetary Bodies

- 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.

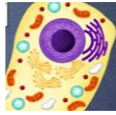
[Summary](#)

Waves on a String: Introduction

- 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>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><i>PSPS3-HS-1</i></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><i>PS4-MS-2</i> <i>PSPS3-HS-1</i></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><i>PSPS3-HS-1</i></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><i>PS1-MS-4</i> <i>PS4-MS-2</i> <i>PSPS3-HS-1</i></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><i>PS1-MS-2</i></p>

MS-LS1-2

Summary

Cells: Animal - Function

- 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.

MS-LS1-2

Summary

Cells: Animal - Energy & Storage

- 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.

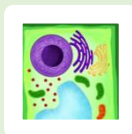
MS-LS1-2

Summary

Cells: Plant - Function

- 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.

MS-LS1-2

Summary

Cells: Plant - Energy & Storage

- 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.

LS4-MS-6
LS4-HS-4Summary

Natural Selection

- 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.

[Summary](#)

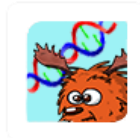


Diversity of Traits

LS4-MS-4
LS3-HS-3

- 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.

[Summary](#)



Genetics

LS3-MS-2
HS-LS3-1
HS-LS3-2

- 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**.

[Summary](#)



Predation: Introduction

LS2-MS-4
LS2-HS-1
LS2-HS-2

- 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**.

[Summary](#)



Predation: Advanced

LS2-HS-1
LS2-HS-2

- 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**.

[Summary](#)

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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**.

ESS1-MS-1

ESS1-HS-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.

ESS1-HS-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**.

ESS1-MS-1

ESS1-HS-4

[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.

ESS1-HS-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><i>ESS2-MS-2</i> <i>ESS2-MS-3</i> <i>ESS1-HS-5</i></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><i>ESS1-HS-5</i></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><i>ESS2-MS-2</i> <i>ESS2-MS-3</i> <i>ESS1-HS-5</i></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><i>ESS1-HS-5</i></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><i>ESS1-MS-1</i> <i>ESS1-HS-4</i> <i>ESS2-HS-4</i></p>

Summary



Seasons: Advanced

ESS1-HS-4
ESS2-HS-4

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

Summary

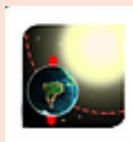


Seasons: Earth has NO Tilt! Introduction

ESS1-MS-1
ESS1-HS-4

- 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**.

Summary



Seasons: Earth has NO Tilt! Advanced

ESS1-HS-4
ESS2-HS-4

- 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.