Date: October 22. 2018 | **School Day:** 044

Learning Objectives – "Students can…"

1. Analyze new concept vocabulary – Vocabulary Enhancement (BW)

2. Science Fair Materials List & Data Collection & Lab 2-1 CO^2 Lab: Analyzing Data & Graphing – Day 4

Assessment

In-class completion of the notebook/bell work
Lab 2-1 CO^2 Lab: Analyzing Data & Graphing – Day 4

Homework

1. Completing Lab 2-1 Graphing & Conclusion – 10/23

2. Complete BW vocabulary (5 terms) – 10/24

3. Notebook Assessment 2-1 (Self-Reflection) - 10/24

4. Science Fair - Data Collection – 11/7

Reminders / DO NOT COPY

Science Fair Projects are due in class – 11/26

Model notebook entries can be found below at the Teacher's NB. 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 <u>one</u> 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 10/22* — *Lab 2-1 CO^2 Lab / The Green House Effect* — *Vocabulary 5-1 ↓*

SCIENCE FAIR LINK!

District Content Descriptor:

Conservation of Energy and Energy Transfer - The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment. (07-PS3-4) - Energy is spontaneously transferred out of hotter regions or objects and into colder ones. (07-PS3-3)

Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (07-PS3-3)

Fayette County
2018-19
District Content Map

Date: October 23. 2018 | **School Day:** 045

Learning Objectives – "Students can…"

1. Analyze and respond to our weekly Science Article: Climate Science for Kids (BW)

2. "Keep Your Cool" - Thermal Competition / Teams & Planning - Project 2-1

Assessment

In-class completion of the notebook/bell work
Thermal Competition / Teams & Planning - Project 2-1

Homework

1. Completing Project 2-1 Planning/Presentation – 10/25

2. Complete BW vocabulary (5 terms) – 10/24

3. Notebook Assessment 2-1 (Self-Reflection) - 10/24

4. Science Fair - Data Collection – 11/7

Reminders / DO NOT COPY

Science Fair Projects are due in class – 11/26

Model notebook entries can be found below at the Teacher's NB. 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. **Why does "silica" make a good thermal shield? Use a statement from the article to support your answer**

2. **The silica is very brittle - what do they have to do to overcome this limitation?**

3. **How hot do these "tiles" get when re-entering our atmosphere? Where does all this heat come from?**

4. **Why are damaged tiles a serious problem for astronauts?**

Linked Documents and Class Resource

Teacher's NB 10/23

Science Article: Space Shuttle / Thermal Tiles

Keep Your Cool - Thermal Competition Project ↓

Vocabulary 5-1 ↓

SCIENCE FAIR LINK!

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)

Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (07-PS3-3)

Fayette County
2018-19
District Content Map

Date: October 24. 2018 | **School Day:** 046

Learning Objectives – "Students can…"

1. Use critical thinking to solve a problem. (BW)

2. Notebook Assessment 2-1 (Self-Reflection)

Assessment

In-class completion of the notebook/bell work
Notebook Assessment 2-1 (Self-Reflection)

Homework

1. Completing Project 2-1 Planning/Presentation – 10/25

2. Quiz 9-1: Labs & Notebook Concepts - 10/26

3. Science Fair - Data Collection – 11/7

Reminders / DO NOT COPY

Science Fair Projects are due in class – 11/26

Model notebook entries can be found below at the Teacher's NB. 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.

A space shuttle re-enters the atmosphere. As the shuttle pushes against the atmosphere it heats up due to friction with air. Thermal failure of a space shuttle occurs at 2300 ^{0}F.

If a shuttle re-entering the atmosphere reached 1,250 ^{o}C, will the astronauts safely make it back to Earth? Support your response using a calculation.

Linked Documents and Class Resource | *Teacher's NB 10/24* | *Keep Your Cool - Thermal Competition Project ↓* | *NB Assessment Rubric*

SCIENCE FAIR LINK!

District Content Descriptor:

Conservation of Energy and Energy Transfer - The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment. (07-PS3-4) - Energy is spontaneously transferred out of hotter regions or objects and into colder ones. (07-PS3-3)

Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (07-PS3-3)

Fayette County 2018-19 District Content Map

Date: October 25. 2018 | **School Day:** 047

Learning Objectives – "Students can…"

1. Analyze and respond to the YouTube - Q Review. (BW)

2. "Keep Your Cool" - Thermal Competition / Data Collection - Project 2-1

Assessment

In-class completion of the notebook/bell work
Thermal Competition / Data Collection - Project 2-1

Homework

1. Completing Project 2-1 Data Collection – 10/29

2. Quiz 9-1: Labs & Notebook Concepts - 10/26

3. Science Fair - Data Collection – 11/7

Reminders / DO NOT COPY
Science Fair Projects are due in class – 11/26

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

Bell work

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

1. What does it mean to "isolate a variable"?

2. What do we use to determine success when we test a variable?

3. In the example about bowling – what is <u>speed</u> of the bowling ball?

4. How did they isolate the variable speed?

5. Provide an example of an isolated variable in your own science fair experiment – and explain how you will isolate the variable.

YouTube Video Link – CRASH COURSE SCIENCE KIDS[1]

Linked Documents and Class Resource | *Teacher's NB 10/25* | *Keep Your Cool - Thermal Competition Project ↓* | *Science Video: Bowled Over - Variables*

SCIENCE FAIR LINK!

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)

PS3.A: Definitions of Energy

Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (07-PS3-3),(07-PS3-4)

Fayette County
2018-19
District Content Map

Date: October 26. 2018 | **School Day:** 048

Learning Objectives – "Students can…"

1. Share ideas by writing a paragraph in their science journal. (BW)

2. Quiz 9-1: Labs & Notebook Concepts

Assessment

In-class completion of the notebook/bell work
Quiz 9-1: Labs & Notebook Concepts

Homework

1. Completing Project 2-1 Data Collection – 10/29

2. Return your signed grade sheet – 10/29

2. Science Fair - Data Collection – 11/7

Reminders / DO NOT COPY
Science Fair Projects are due in class – 11/26

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

Bell work

Science Journal: Day 8

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

"My science fair project is…"

Linked Documents and Class Resource *Teacher's NB 10/26* *Quiz 9-1** *SCIENCE FAIR LINK!*

Keep Your Cool - Thermal Competition Project ↓

District Content Descriptor:

Conservation of Energy and Energy Transfer - The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment. (07-PS3-4) - Energy is spontaneously transferred out of hotter regions or objects and into colder ones. (07-PS3-3)

PS3.A: Definitions of Energy
Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (07-PS3-3),(07-PS3-4)

Fayette County 2018-19 District Content Map

Vocabulary 5-1

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

Vocabulary Term	***Definition***
Insulate*	to separate from conducting bodies by means of nonconductors so as to prevent transfer of electricity, heat, or sound.
Absorption	the state or process of being **absorbed**. assimilation; incorporation: the **absorption** of small farms into one big one. uptake of substances by a tissue, as of nutrients through the wall of the intestine.
Reflection*	the throwing back by a body or surface of light, heat, or sound without absorbing it
Convection*	the movement caused within a fluid by the tendency of hotter and therefore less dense material to rise, and colder, denser material to sink under the influence of gravity, which consequently results in transfer of heat
Refraction	deflection from a straight path undergone by a light ray or energy wave in passing obliquely from one medium (such as air) into another (such as glass) in which its velocity is different
Transfer	move from one place to another
Kinetic Energy Equation	is directly proportional to the mass of the object and to the square of its velocity: K.E. = 1/2 m v^2. If the mass has units of kilograms and the velocity of meters per second
Potential Energy Equation	depends on the force acting on the two objects. For the gravitational force the **formula** is P.E. = mgh, where m is the mass in kilograms, g is the acceleration due to gravity (9.8 m / s^2 at the surface of the earth) and h is the height in meters
Quantitative Data*	relating to, or involving the measurement of quantity or amount – results reported in number
Qualitative Data*	relating to, measuring, or measured by the quality of something rather than its quantity – results reported by description
Phenomena	a fact or event of scientific interest susceptible to scientific description and explanation

1. What does it mean to “isolate a variable”?

2. What do we use to determine success when we test a variable?

3. In the example about bowling – what is speed of the bowling ball?

4. How did they isolate the variable speed?

5. Provide an example of an isolated variable in your own science fair experiment – and explain how you will isolate the variable.

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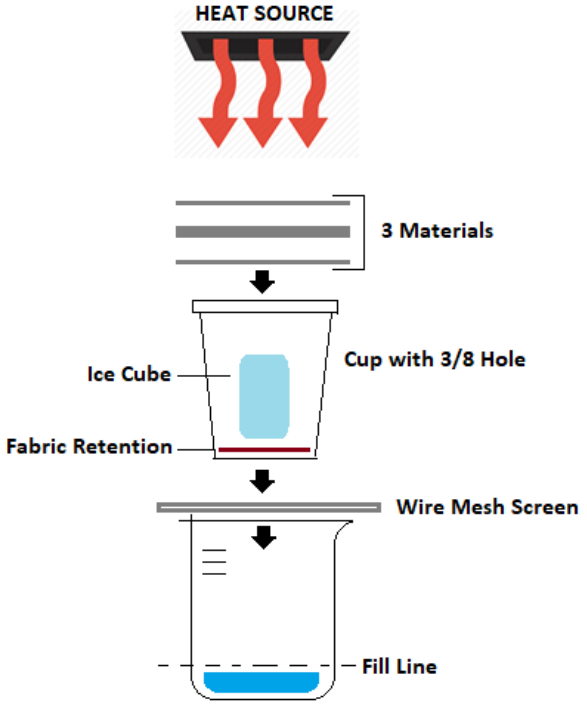
S.O.S – ICE: Thermal Shield Project

In the previous thermal lab(s) we were concerned with "thermal capacity" or how much energy could be absorbed by a substance. In the final thermal-lab we look at the opposite phenomena – <u>insulation from energy</u>.

Read each step and complete the planning, testing and data-collection for the thermal project.

Part 1 – Select a vessel	***Part 2 – Select 3 materials***	***Part 3 – Lab Test / Data Collection***
Paper, Plastic or Styrofoam  *Which cup material will best serve to insulate or reflect the ice from the thermal energy?*	*- Aluminum Foil* *- Burlap Square* *- Bright Construction Paper* *- Dark Construction Paper* *- Fabric Square* *- Plastic Wrap* *- Wax Paper* *Examine each of the materials and predict their thermal properties/value* • *What have we learned about thermal capacity?* • *What phenomena have we observed in our everyday lives that might help us create a better thermal barrier?*	
All cups provided will have a 3/8" hole and a piece of fabric in the bottom as a retention/release for the melt water.	*These materials will be placed over the top of the container as a thermal shield to keep the ice from melting.*	*Each design will be lab tested under a 100w heat lamp. We will time the melt of the ice and how long it takes to get to the measured fill line on the catch-beaker.*
THE OBJECTIVE: ***Using your understanding of thermodynamics, design a thermal barrier to keep your ice from melting. This is a competitive lab project and the rewards for success will be based on the length of time it takes you to reach the fill line on the catch-beaker.***		