

**Pequea Valley School District**  
**Science**

**Unit: Insects**

**Course: Science**

**Grade: 2**

**Planning the Focus Based on the Desired Result**  
**What do you want all students to know, understand and do by the end of the unit?**

**Unit Essential Question(s):**

Unit EQ: What do insects need?

Lesson EQ's:

How do insects grow and change?

What are the structures/behaviors of insects?

What are the parts of an insect?

What are the four stages of the insect life cycle?

**Keystone Eligible Content/PA Core Standard**

S3.1.K.A3

S3.1.K.A5

S3.1.1.A2

S3.1.2.A3

S3.1.3.A2

S3.1.3.A3

S3.1.4.A2

S3.1.4.A3

SS3.1.2.B6

**Pacing:** Approximate number of class sessions per unit

- Trimester

**Tier 3 Vocabulary** (Content specific vocabulary)

- abdomen
- adult
- antennae
- eggs
- head
- larva

- life cycle
- pupa
- scales
- thorax
- teeth
- wings

**Know** - What do learners need to **know** in order to be able to do and understand? *List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.*

- Insects should be respected as living thing with needs and as part of the animal kingdom..
- Insects have certain structures and behaviors.
- Insect life cycles can be the same or different from that of other insects.

**Understand** - What do learners need to **understand**? What is the **big idea**? *List broad concepts or “big ideas” in a statement of enduring understanding.*

- Insects need air, food, water and space.
- Insects have characteristic structures and behaviors.
- Insects have three body parts: head, thorax and abdomen.
- The life cycle of an insect, such as a beetle is egg, larva, pupa and adult, which produces eggs.

**Learning Outcome** - What do learners need to be able to **accomplish** by the unit’s end? *List skills and competencies, NOT learning activities.*

- Conduct investigations to observe insects and their habitats over a period of time.
- Keep a science journal to log observations, drawings, predictions.
- Use evidence from observations to explain the needs of an insect.
- Ask questions and predict outcomes of insect structures and behaviors.
- Draw and label a diagram of an insect, including all three body parts.
- Explain the differences and similarities of insects.
- Complete a life cycle diagram of each insect studied.

### Literature:

### Software/Resources:

FOSS: Insect Manual/Kits

# Pequea Valley School District

## Science

**Unit: Matter**

**Course: Science**

**Grade: 2**

### Planning the Focus Based on the Desired Result

What do you want all students to know, understand and do by the end of the unit?

**Unit Essential Question(s):** What is Matter?

Unit EQ:

Lesson EQ's:

- What is matter?
- What are solids, liquids and gases?
- What is a mixture?
- What is freezing?
- What is evaporation?
- What is melting?
- What is condensation?
- How does matter change?
- What does it mean when something dissolves?
- What are the properties of matter?
- What is the relationship of chemical reactions and matter?

### Keystone Eligible Content/PA Core Standard

S3.2.2.A3  
S3.2.2.A4  
S3.2.2.A5  
S3.2.3.A1  
S3.2.3.A2  
S3.2.3.A3  
S3.2.4.A1  
S3.2.4.A2  
S3.2.4.A3  
S3.2.4.A4  
S3.3.2.A4  
S3.1.2.B6

**Pacing:** Approximate number of class sessions per unit

- Trimester

**Tier 3 Vocabulary** (Content specific vocabulary)

Boiling point

- carbon dioxide
- chemical reaction
- compare
- condensation
- crystal
- data
- dissolve
- evaporation

Fair test

- filter
- freezing point
- gas
- insoluble
- liquid
- mass
- matter
- melting point
- mixture
- odor
- pattern
- property
- react

Shape

- size
- solid
- states of matter
- texture
- volume
- water cycle
- water vapor
- weight

**Know** - What do learners need to **know** in order to be able to do and understand? *List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.*

- Matter exists in three forms (solids, liquids and gases).
- Identify that matter can be described and classified by its observable properties.
- Know that matter can change.
- Know that different kinds of matter exist in various states, depending on variables.
- Matter can be described and classified by its observable properties.
- Heating and cooling a substance may cause change that can be observed.

**Understand** - What do learners need to **understand**? What is the **big idea**? *List broad concepts or “big ideas” in a statement of enduring understanding.*

- Changes occur all of the time in the world around us.
- Some changes happen quickly, others take time.
- Matter is classified as solids, liquids, or gases.
- Properties of matter substances can include: color, size, shape, odor, texture, and weight.
- Water can freeze into a solid and then melt into a liquid again.
- Water can evaporate into a gas and then condense into a liquid again.
- Mixtures can be made by combining solids, liquids, or gases.
- A substance can change in appearance yet still remain the same substance.
- Some mixtures can be separated using a sieve, a filter, or a process of evaporation.
- When some solids are added to water, they will dissolve and seem to disappear.
- Some dissolved solids can be recovered as crystals through evaporation.
- When a solid is dissolving in a liquid, the size of the solid particles, the temperature of the liquid, and stirring can affect the speed at which the solid dissolves.
- When two or more substances are mixed, a chemical reaction may occur. Indicators of a chemical reaction can include a change in color, a change in temperature, or the production of a new substance, such as rust or gas.

**Learning Outcome** - What do learners need to be able to **accomplish** by the unit’s end? *List skills and competencies, NOT learning activities.*

- Students will observe, describe, and classify matter by properties and uses.
- Students will plan and carry out investigations to test the idea that heating causes some materials to change from solid to liquid and cooling causes them to change from liquid to solid.
- Students will construct an argument and provide evidence that some changes caused by heating or cooling can be reversed and some cannot.
- Students will analyze data from testing objects made from different materials to determine if a proposed object functions as intended.
- Students design an object built from a small set of pieces to solve a problem and compare solutions designed by peers given the same set of pieces.
- Students will make an observation of how an object made of a small set of pieces can be disassembled and made into a new object.

**Literature:**

**Software/Resources:**

National Science Resources Center: Science and Technology for Children: Changes

# Pequea Valley School District

## Science

**Unit: Soils**

**Course: Science**

**Grade: 2**

### Planning the Focus Based on the Desired Result

**What do you want all students to know, understand and do by the end of the unit?**

**Unit Essential Question(s):** What is in soil?

Unit EQ:

Lesson EQ's:

What are sand, clay, and humus like?

What are wet sand, clay, and humus like?

How do you do a streak test on soils?

How quickly do soils settle in water?

What is your mystery mixture?

What is in my compost bag now?

### Keystone Eligible Content/PA Core Standard

S3.3.K.A1

S3.3.1.A1

S3.3.3.A1

S3.1.3.A2

S3.1.4.A2

S3.1.2.B6

**Pacing:** Approximate number of class sessions per unit

- Trimester

**Tier 3 Vocabulary** (Content specific vocabulary)

- compost
- clay
- decomposers
- fair test
- gravel
- inorganic matter
- humus

- organic matter
- organism
- property
- sand
- settle
- silt
- soil
- streak test
- texture

**Know** - What do learners need to **know** in order to be able to do and understand? *List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”*

- Soil is made up of different components.
- Properties of soil can be identified by experiments.
- Worms have an important role in soils.
- Soil can be recycled.

**Understand** - What do learners need to **understand**? What is the **big idea**? *List broad concepts or “big ideas” in a statement of enduring understanding.*

What are sand, clay, and humus like?

- Soil is made up of different components with unique properties that involve inorganic and organic materials.
- Inorganic materials include: fragments of rock, gravel, silt and sand.
- Organic materials include: decayed plants and animals (humus).
- Soil has unique properties which can be identified using simple tests and investigations.
- Worms have an important role as nature’s plows.
- Composting is an effective way to recycle organic materials.

**Learning Outcome** - What do learners need to be able to **accomplish** by the unit’s end? *List skills and competencies, NOT learning activities.*

- Record, organize and conduct simple tests/investigations to recognize the importance of soil and its relationship to plants and animals.
- Construct simple tests to identify what components make up soil.
- Identify organic and inorganic materials that are found in soil.
- Explore, record and observe how quickly soils settle in water.
- Discovery and explain, using evidence, what a mystery soil mixture might contain.
- Explain the importance of animals (worms) in soils.
- Explain the importance of composting soil.

### **Literature:**

**Software/Resources:** National Science Resources Center: Science and Technology for Children: Soils