Day 7

COMMONLIT

Name: _____ Class: _____

The Dust Bowl

By Jessica McBirney
2018

The Dust Bowl was a time of harsh dust storms in the central United States during the 1930s. In this informational text, Jessica McBirney discusses the causes of the Dust Bowl and how Americans were impacted by this period of dust storms. As you read, take notes on what contributed to the Dust Bowl.

[1] On the afternoon of April 14, 1935, young Irene Thompson looked up in horror. A huge black cloud that covered the sky was racing towards her. It wasn't a thunderstorm, and it wasn't smoke — it was dust. Before Irene could do anything, the flying dirt became so thick that she could not find any of the buildings on her own farm. She later remembered, "They called it the Black Sunday. And some people actually thought the world was coming to an end." Another man recalled, "It looked like a wall of dirt coming at us — 500 to 1,000 feet high."

"Dust Storm Texas 1935" by NOAA George E. Marsh Album is in the public domain.

Black Sunday was one of the worst dust storms in American history, during a time known as the Dust Bowl. However, it was definitely not the only storm. For almost 10 straight years, between 1930 and 1940, high winds and terrible dust storms destroyed most of the farms and towns in the Great Plains, a region of flat lands that runs through the central United States.

What was the Dust Bowl?

One-third of the Great Plains suffered from severe dust storms during the Dust Bowl. The storms covered 100 million acres across Oklahoma, Texas, New Mexico, Colorado, and Kansas. In the worst storms, the dust in the air became so thick that people could not see more than a few feet in front of them. They had to wear masks and cover their faces with handkerchiefs just to breathe outside.

Natural and Man-made Causes

Several factors caused the Dust Bowl. In the 1920s, the central U.S. had more rain than usual, and agriculture[1] boomed. New immigrants moved to the Great Plains states seeking to start their own successful farms. However, they did not practice environmentally-friendly farming techniques. They made two big mistakes. First, in order to plant as much wheat as possible, they plowed over all of the natural prairie grasses that kept the topsoil[2] in place. Second, they planted crops too often, instead of giving the soil a break every now and then. As long as the rain kept falling, neither of these mistakes caused problems.

1. the science or practice of farming
2. the top layer of soil

[5] But in 1930, the rain stopped coming. The soil became dry, loose, and unable to support crops. This drought would have been bad enough for farmers, but then strong winds picked up across the Great Plains. Those winds picked up all of the dry soil and sent it flying. People called these strong dust storms "black blizzards," which could sometimes last for one or two days straight.

Dusty Refugees

Farming families realized they could not stay in the Great Plains. Their houses and belongings were always dirty; the dust blew into their lungs and made them sick; and their farms were unproductive. They could not afford to stay. Thousands of families packed up their lives and moved west to find work. Immigrants from the Plains were called Okies because most came from Oklahoma. Many headed all the way to California because they heard California had good agricultural jobs. However, the whole United States was suffering from an economic crisis, and California's farms did not have room for many new workers. Okies did manage to get away from the thick dust storms, but they could not escape unemployment and poverty.[3]

Families who stayed faced a never-ending layer of dirt in their houses. Irene Thompson's family stayed in Kansas throughout the Dust Bowl. She remembers constantly cleaning dirt out of her kitchen and bedrooms, and she recalls how many people got "dust pneumonia"[4] from all of the flying dirt. People tried to continue on with life as usual, going to school and inviting friends over for dinner. But they never knew when or where they would be trapped by a dust storm.

Ending the Dust Bowl

The Dust Bowl did end eventually. The U.S. government realized that it had to encourage farmers to practice more responsible farming techniques. The Soil Conservation Service studied the land and came up with some ways to preserve[5] the earth in the future. The agency also worked with farmers to develop farming methods that were better for the soil. A group of government employees planted trees throughout the region to restore root networks and keep the dirt stuck to the ground.

By 1938, the amount of dust blowing around had been reduced by 65%. In 1939, large amounts of rain came and ended the drought. Most farmers returned to the area to reclaim their farms. This time, they had better ideas of how to care for the environment around them; if another drought came, they knew their new farming techniques would help prevent another natural disaster like the Dust Bowl.

"The Dust Bowl" by Jessica McBirney. Copyright © 2018 by CommonLit, Inc. This text is licensed under CC BY-NC-SA 2.0.

3. the state of being extremely poor
4. an infection that causes inflammation in the lungs
5. **Preserve** *(verb):* to keep something in its existing state

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which statement identifies the central idea of the text?
   - A. Farmers aggressively harvested the land in the Great Plains, despite warnings from environmentalists that it could result in dust storms.
   - B. There was nothing that farmers could have done to prevent the Dust Bowl, as they merely chose the wrong time and place to farm.
   - C. Farmer's treatment of the land weakened it against the elements and resulted in dust storms that negatively impacted life in the Great Plains.
   - D. The Dust Bowl negatively impacted life for everyone in America, as dust spread beyond the Great Plains and farmers couldn't produce crops.

2. PART B: Which TWO details from the text best support the answer to Part A?
   - A. "Several factors caused the Dust Bowl. In the 1920s, the central U.S. had more rain than usual, and agriculture boomed." (Paragraph 4)
   - B. "First, in order to plant as much wheat as possible, they plowed over all of the natural prairie grasses that kept the topsoil in place." (Paragraph 4)
   - C. "Those winds picked up all of the dry soil and sent it flying. People called these strong dust storms 'black blizzards,' which could sometimes last for one or two days straight." (Paragraph 5)
   - D. "However, the whole United States suffered from an economic crisis, and California's agriculture sector did not have room for many new workers." (Paragraph 6)
   - E. "A group of government employees planted trees throughout the region to restore root networks and keep the dirt stuck to the ground." (Paragraph 8)
   - F. "By 1938, the amount of dust blowing around had been reduced by 65%. In 1939, large amounts of rain came and ended the drought." (Paragraph 9)

3. Which of the following describes how the author introduces dust storms in the text?
   - A. as mysterious events that people struggled to understand for years
   - B. as deadly storms that claimed many people's lives in the Great Plains
   - C. as similar to other storms that people in the Great Plains encountered
   - D. as serious storms that frightened people by their appearance and power

4. How does paragraph 6 contribute to the development of ideas in the text?
   - A. It shows the extent of the effects that dust storms had on families.
   - B. It emphasizes how dust storms often extended beyond the Great Plains.
   - C. It shows how families protected themselves from the dust storms.
   - D. It reveals why some farmers decided to stay in the Great Plains.

5. What is the relationship between the government's actions and improvement in the Great Plains?

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

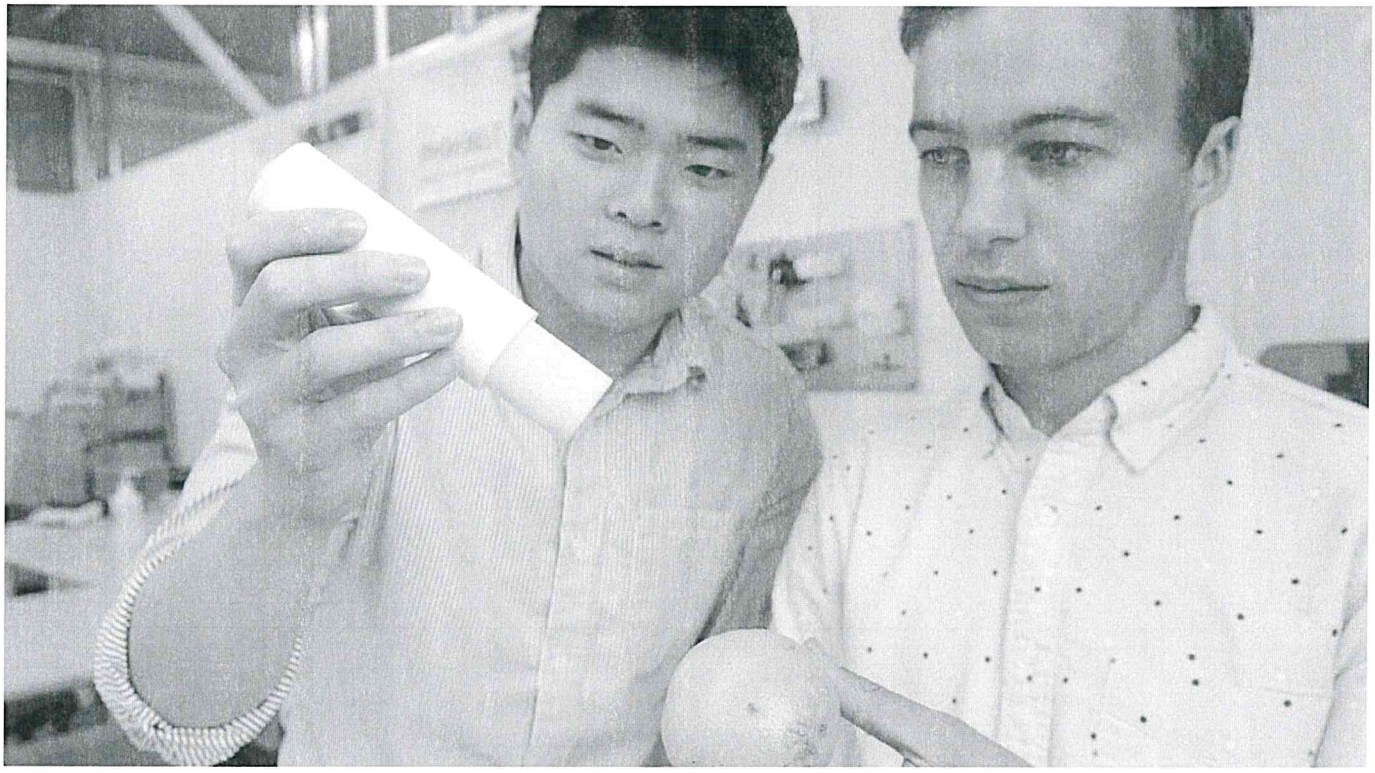
1. Have you ever experienced extreme weather or a natural disaster? What happened? How did it make you feel? What did you do to protect yourself?

2. In the context of the text, how did humans create an imbalance in nature during the Dust Bowl? How did nature react to this? What are other examples in which humans have created an imbalance in nature? What have been the consequences?

newsela Day 7

Program lets students invent medical devices that can do things better

By Seattle Times, adapted by Newsela staff on 08.16.17
Word Count **660**
Level **860L**



University of Washington engineering students Ha Seung Chung (left) and Shawn Swanson demonstrate their inexpensive replacement for the EpiPen. Photo: Greg Gilbert/Seattle Times/TNS

SEATTLE, Washington — Many people were angry last year after the price of EpiPens suddenly rose. An EpiPen is a medical device used on a person when they are having a strong allergic reaction, for example, to a bee sting or peanuts.

Allergic reactions can be mild, like a rash. They can also be very strong. Sometimes, someone having an allergic reaction is unable to breathe. Because of this, EpiPens are important. They make sure that people having a bad allergy reaction can get treatment right away.

A team of students at the University of Washington saw this huge price increase of EpiPens as an opportunity. Maybe they could invent a cheaper device that could do the same thing, only better. The team is still working on the idea.

They are part of a university program that brings students together with doctors and other medical workers. The group aims to solve challenging medical problems.

This article is available at 5 reading levels at https://newsela.com.

Students Came Up With Great Ideas

The students in the program, which is called Engineering in Health, have invented many devices. They built an eye-dropper that is easy to use and a mouth guard that fits athletes who wear braces. They also designed a full- body brace for children who have trouble learning to walk.

"There's so many great ones," said Jonathan Posner, an engineering professor at the university.

Posner helped to create Engineering in Health. The program matches medical workers with University of Washington students. Many of the students study engineering.

Several students from the program have started their own companies. A few have gotten money from wealthy people, the university, or national organizations to work on their ideas.

Others have applied for patents, which is a process that allows them to protect their idea. Some of the devices are even being tested on patients.

EpiForAll Could Be Hugely Important

One of the best projects from last year's class was the EpiForAll. It is a cheaper, easy to use EpiPen. The device is meant to be sold empty, then a pharmacist loads it with medicine. When the medicine expires after about a year, the pharmacist can refill the pen.

Shawn Swanson is one of the students on the team who took the class last year. He works full time on the auto-injector with help from other students who are still in the class.

The team worked with an allergy expert at a Seattle children's hospital. The expert provided EpiPens containing medicine that had expired. The students took apart the pen and figured out how it worked. Then they came up with a new design for a pen that costs about $2 to manufacture.

EpiForAll won a first-place prize and $15,000 in a university contest. The contest is called the Buerk Center's Hollomon Health Innovation Challenge. Teams compete by coming up with new solutions to difficult medical problems. Winning the challenge gave the EpiForAll team some fame and money to keep the project going.

Program Chooses Applications Carefully

Students from all areas of study take the Engineering in Health class. Most students start the yearlong class in the fall.

One team created a better way for medical workers to practice inserting intravenous catheters. They are small tubes that supply medicine through a person's veins. The new device is called an IV trainer.

Every year, university medical workers write one-page applications that describe a need and a problem. The program receives about 50 applications every year. During the course, students focus on six or eight ideas they think they could possibly help solve.

The students begin their work by interviewing doctors and nurses. In the winter and spring quarters, they design and build models of what they want to create.

This article is available at 5 reading levels at https://newsela.com.

Per Reinhall leads mechanical engineering at the University of Washington. Mechanical engineering is the study and building of tools and machines. He said the school is now looking for money that would allow students to keep working on a project after the class ends.

Main Idea:

This article is available at 5 reading levels at https://newsela.com.

Quiz

Use SRP for full credit

1 The word "device" is essential to understanding what the students do.

Which sentence from the article BEST explains what "device" means?

(A) They built an eye-dropper that is easy to use and a mouth guard that fits athletes who wear braces.

(B) A few have gotten money from wealthy people, the university, or national organizations to work on their ideas.

(C) Winning the challenge gave the EpiForAll team some fame and money to keep the project going.

(D) During the course, students focus on six or eight ideas they think they could possibly help solve.

2 Read the selection from the introduction [paragraphs 1-4].

Allergic reactions can be mild, like a rash. They can also be very strong.

What is the BEST definition of "mild" as it is used in the sentence above?

(A) gentle

(B) kind

(C) minor

(D) silly

3 Read the section "EpiForAll Could Be Hugely Important."

Select the paragraph that shows how EpiForAll works.

4 Read the paragraph from the section "Program Chooses Applications Carefully."

Every year, university medical workers write one-page applications that describe a need and a problem. The program receives about 50 applications every year. During the course, students focus on six or eight ideas they think they could possibly help solve.

Which of the following is the MOST accurate explanation of this paragraph?

(A) Students have not solved many of the problems sent in.

(B) Students focus on only a few of the ideas sent in on applications.

(C) Medical workers expect students to be smarter than they are.

(D) Medical workers show the students how to solve the problems.

Number Correct: _____
Improvement: _____

Addition of Decimals II – Round 2

Directions: Evaluate each expression.

1.	7.4 + 3	
2.	7.4 + 0.3	
3.	7.4 + 0.03	
4.	7.4 + 0.003	
5.	7.4 + 0.0003	
6.	6 + 2.2	
7.	0.6 + 2.2	
8.	0.06 + 2.2	
9.	0.006 + 2.2	
10.	0.0006 + 2.2	
11.	0.6 + 22	
12.	7 + 0.8	
13.	0.7 + 0.08	
14.	0.07 + 0.8	
15.	0.7 + 8	
16.	7 + 0.08	
17.	5 + 0.4	
18.	0.5 + 0.04	
19.	0.05 + 0.4	
20.	0.5 + 4	
21.	5 + 0.04	
22.	5 + 0.4	

23.	3.6 + 2.3	
24.	3.6 + 0.23	
25.	3.6 + 0.023	
26.	0.36 + 0.023	
27.	0.036 + 0.023	
28.	0.13 + 56	
29.	1.3 + 5.6	
30.	1.3 + 0.56	
31.	1.3 + 0.056	
32.	0.13 + 0.056	
33.	0.013 + 0.056	
34.	2 + 0.8	
35.	0.2 + 0.8	
36.	0.02 + 0.08	
37.	0.002 + 0.008	
38.	0.16 + 14	
39.	1.6 + 1.4	
40.	0.16 + 0.14	
41.	0.016 + 0.014	
42.	15 + 0.15	
43.	1.5 + 1.5	
44.	0.15 + 0.15	

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Number Correct: _____

Improvement: _____

Subtraction of Decimals – Round 2

Directions: Evaluate each expression.

1.	66 – 60	
2.	66 – 6	
3.	6.6 – 6	
4.	6.6 – 0.6	
5.	99 – 90	
6.	99 – 9	
7.	9.9 – 9	
8.	9.9 – 0.9	
9.	22 – 20	
10.	22 – 2	
11.	2.2 – 2	
12.	3 – 0.4	
13.	3 – 0.04	
14.	3 – 0.004	
15.	0.3 – 0.04	
16.	8 – 0.2	
17.	8 – 0.02	
18.	8 – 0.002	
19.	0.8 – 0.02	
20.	5 – 0.1	
21.	5 – 0.01	
22.	5 – 0.001	

23.	6.8 – 4	
24.	6.8 – 0.4	
25.	0.68 – 0.4	
26.	0.68 – 0.04	
27.	7.3 – 1	
28.	7.3 – 0.1	
29.	0.73 – 0.1	
30.	0.73 – 0.01	
31.	9.5 – 2	
32.	9.5 – 0.2	
33.	0.95 – 0.2	
34.	8.3 – 5	
35.	8.3 – 0.5	
36.	0.83 – 0.5	
37.	0.83 – 0.05	
38.	7.2 – 4	
39.	7.2 – 0.4	
40.	0.72 – 0.4	
41.	0.72 – 0.04	
42.	9.3 – 7	
43.	9.3 – 0.7	
44.	0.93 – 0.7	

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Equivalent Ratios

Name: _____

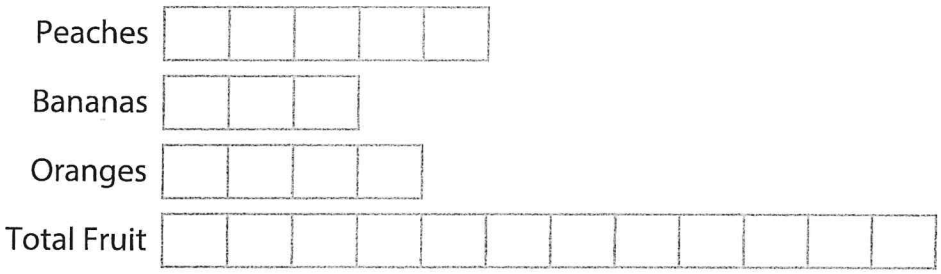
Compare Quantities Using Ratios

Study the example problem showing how to use ratios to compare two quantities. Then solve problems 1–6.

Example

Noelle buys 5 peaches, 3 bananas, and 4 oranges at a local fruit stand to make fruit punch. What is the ratio of the number of bananas to the number of peaches she bought?

A tape diagram can help you compare the quantities.



There are 3 bananas and 5 peaches.

The ratio of bananas to peaches can be written as 3 to 5, 3 : 5, or $\frac{3}{5}$.

1. What is the ratio of peaches to oranges?

_____

2. What is the ratio of the number of bananas to the total number of pieces of fruit?

_____

3. Write a ratio in words to compare a whole to a part. Then write the ratio using numbers.

_____

_____

Vocabulary

ratio a comparison of two quantities.

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Solve.

4 In Ellen's sixth-grade class, there are 14 boys and 11 girls. Write each ratio using numbers in two ways.

Number of girls to number of boys

_____

Number of boys to total number of students

_____

Total number of students to number of girls

_____

Number of boys to number of girls

_____

5 For every 4 miles that Pedro runs, he walks 3 miles. Tell whether each statement is *True* or *False*.

a.	The ratio of miles walked to miles run is 4 : 3.	☐ True	☐ False
b.	The ratio of miles walked to total miles is 3 : 7.	☐ True	☐ False
c.	The ratio of miles run to total miles is 7 to 3.	☐ True	☐ False
d.	The ratio of total miles to miles run is $\frac{7}{4}$.	☐ True	☐ False
e.	The ratio of miles run to miles walked is 4 to 3.	☐ True	☐ False

6 For sixth-grade field day, 6 students in Alice's class are playing volleyball, 5 students are playing soccer, and 9 students are playing basketball. Alice said that the ratio of students playing volleyball to basketball was 6 : 9. Alex said that the ratio of students playing basketball to volleyball was $\frac{9}{6}$. Who is correct? Explain.

_____

_____

_____

_____

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Name: _____

Write Expressions with Variables

Study the example showing how to write an expression from words. Then solve problems 1–10.

Example

Write an expression with the same meaning as "add a number times 2 to 5."

Find operation words to help you write the expression. *Add* a number times 2 to 5. This expression will be an addition of two terms.

First term	+	Second term

The first term is 5. The second term is $2x$. So the expression is $5 + 2x$.

1 What does the variable x in the example represent?

_____

2 The number 2 in the expression $5 + 2x$ is called the coefficient of x. How does changing the coefficient to 6 change the meaning of the expression?

_____

3 In the expression, $5 + 2x$, how is the first term different from the second term?

_____

_____

_____

4 Write an expression for each word phrase.

a. Multiply 4 by a number and then subtract 5.

_____

b. 15 more than half a number

_____

Vocabulary

variable a letter that stands for an unknown number.

constant a term that is a known number without variables.

coefficient a factor of a variable term that is a known number. The coefficient of the term $4x$ is 4.

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Solve.

5 Connie says an expression for the phrase "10 more than the square of a number" is $x^2 + 10$. Sharon says it is $10x^2$. Who is correct? Explain.

6 Write an expression for each word phrase.

a. 5 less than the quotient of a number and 2

b. 5 minus the quotient of a number and 2

7 How are the expressions that you wrote in problem 6 similar? How are they different?

8 Write a word phrase for the expression $16 \div (x + 4)$.

9 Write an expression with two terms. One term should have a coefficient with a variable and the other term should be a constant. Name the coefficient, the variable, and the constant in the expression. Then write a word phrase for your expression.

10 Mario says that the expression $4 + 3n^2$ has four terms: 4, 3, n, and 2. Is he correct? Explain.

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Name: _____ Date: _____

Lesson 1.4: Reading "What Are Clouds?"

You may have seen many types of clouds in the sky—sometimes they look like thin, wispy strings, and other times like full, puffy cotton balls. In this lesson, you will explore how these different types of clouds are formed. As you read, you will use what you know about water condensation and how it relates to cooling and cloud formation to think about the question *What causes an air parcel to cool?* The article will introduce you to a pioneering scientist who first studied clouds over 50 years ago. Reading about her work and the discoveries she and others made will help you to better understand clouds and how they form.

Unit Question

- Why do some rainstorms have more rain than others?

Chapter 1 Question

- What causes the rainfall in Galetown?

Key Concepts

- When liquid water becomes warmer it can evaporate and become water vapor in the air. All air contains water.
- When water vapor in an air parcel cools, it can condense into liquid water which can form a cloud and fall as rain.

Vocabulary

- air parcel
- condensation
- energy
- evaporation
- temperature
- transfer
- water vapor
- weather

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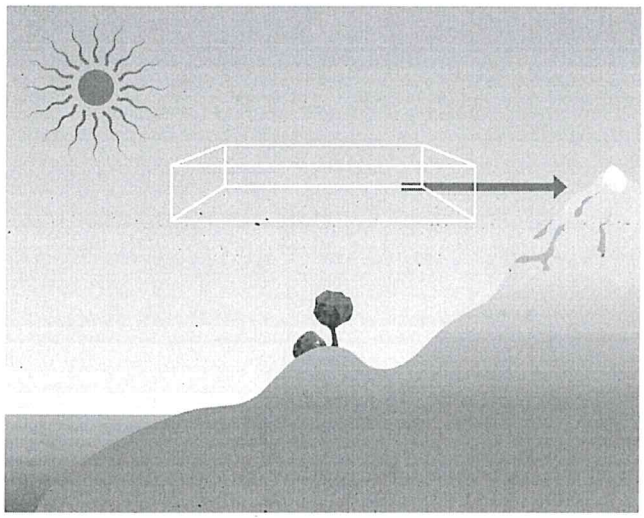
Name: _____ Date: _____

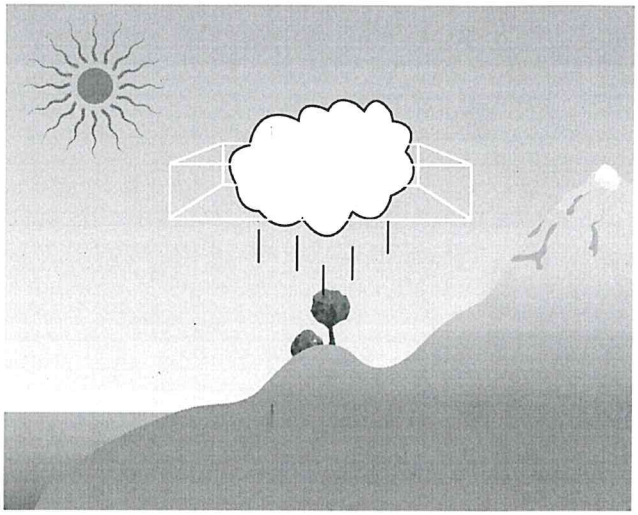
Warm-Up

Observe the image and answer the questions below.

Before



After



What is the **Before** image showing?

_____

_____

What is the **After** image showing?

_____

_____

What does the **arrow** show?

_____

_____

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Name: _____ Date: _____

Reading "What Are Clouds?"

1. Read and annotate the article "What Are Clouds?"
2. Choose and mark one or two of your annotations to discuss with your partner. Once you have discussed these annotations, mark them as discussed.
3. Now, choose and mark a question or connection, either one you already discussed or a different one you still want to discuss with the class.
4. Answer the reflection question below.

What is something about the text that you discussed with your partner?

_____

_____

_____

_____

Active Reading Guidelines

1. Think carefully about what you read. Pay attention to your own understanding.
2. As you read, annotate the text to make a record of your thinking. Highlight challenging words and add notes to record questions and make connections to your own experience.
3. Examine all visual representations carefully. Consider how they go together with the text.
4. After you read, discuss what you have read with others to help you better understand the text.

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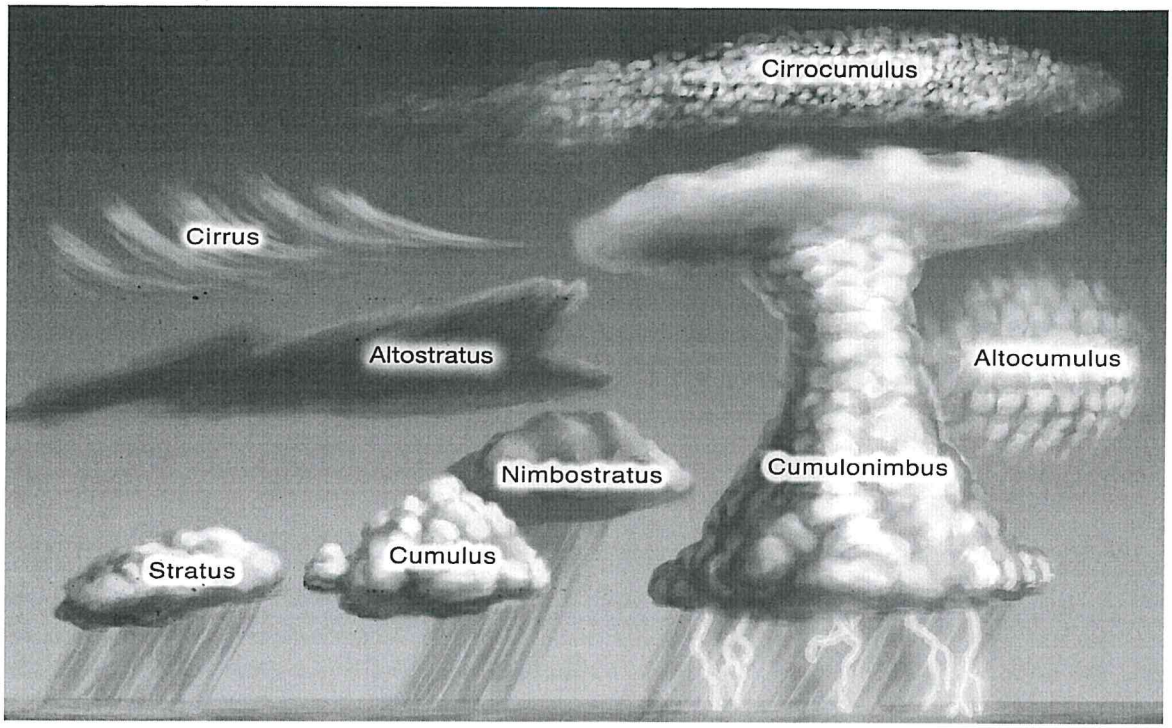


Clouds take different shapes depending on the temperature of the air around them.

What Are Clouds?

Looking Up at the Sky

Dr. Joanne Simpson became fascinated with clouds at an early age. Simpson would grow up to study clouds and become the first woman to earn a PhD in meteorology—but as a child, she simply loved how they looked. When she was a young girl, walking around her town and sailing on the nearby ocean, she noticed all kinds of unusual clouds. She saw clouds that looked like towers looming high, bunches of hanging grapes, and even UFOs! She wondered what they were made of and how they formed so many different amazing shapes.

When Simpson went to college in the 1940s, nobody thought clouds were important for scientists to study. However, Simpson's professors encouraged her to study clouds because she was a woman and they didn't think women could be serious scientists. Clouds seemed to them like a good unimportant subject for a woman to study. Simpson went on to prove her professors wrong about both clouds and female scientists.

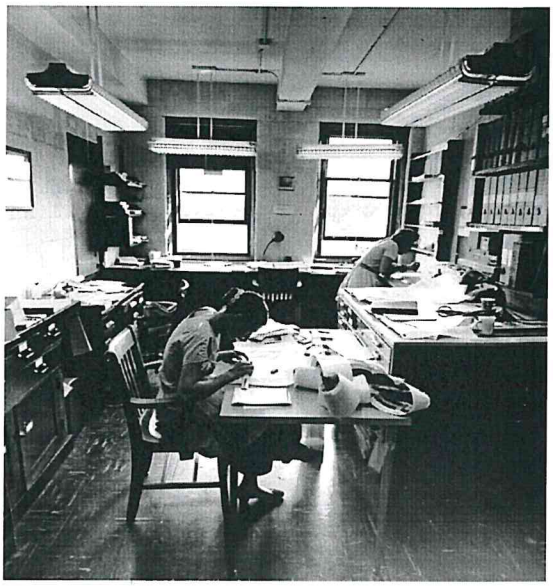
Determined to succeed despite sexism, Simpson continued her study of clouds and cloud formation. She collected data as she flew in airplanes high above Earth's surface, taking notes and sketching in her field journal to document the cloud formations she saw. Most interesting of all to Simpson were the gigantic clouds she called hot towers. These cumulonimbus clouds looked like

skyscrapers sticking up above the clouds around them. Simpson wanted to know why hot towers were so unusual, so she set out to study them. She collected data about the temperature, wind conditions, and amount of water vapor in these unusual cloud formations. Eventually, she was able to explain that hot tower clouds form when warm air with lots of water vapor in it rises quickly from Earth's surface into the troposphere, the layer of the atmosphere closest to the Earth, cooling as it goes. Based on her research about hot towers and other kinds of clouds, Simpson is considered one of the most important weather scientists in the history of meteorology.

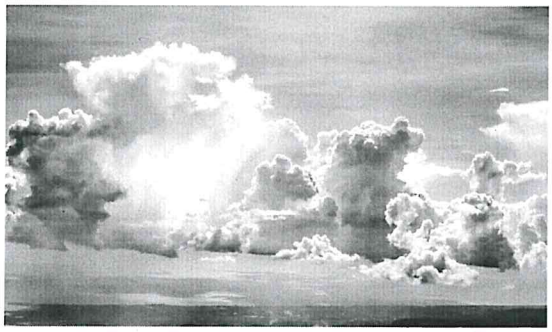
What All Clouds Share

Research by meteorologists like Simpson shows that all clouds, even the most unusual types, have a lot in common. Meteorologists use a helpful concept, the idea of air parcels, to study all kinds of clouds and track them as they move through the troposphere. An air parcel is an amount of air that moves as a unit.

All clouds form when the water vapor in air parcels comes into contact with colder surrounding air. When it meets the colder air, the water vapor in each air parcel becomes liquid in a process called condensation. In fact, all clouds are made of the same basic ingredient: visible droplets of water floating in the troposphere. If it's cold enough, the water droplets can freeze into tiny ice crystals. How does water vapor get into the troposphere in the first place? It comes from liquid water on Earth's surface. When liquid water gets warm enough, it turns into water vapor through a process called evaporation. The water vapor becomes part of the air and is ready to become part of a cloud when the conditions are right.



Joanne Simpson photographed and collected observations and evidence about all kinds of clouds.



The hot tower clouds that Simpson identified are a type of cumulonimbus cloud.

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Cloud Formation and Energy

Cooling is an important cause of rainfall—cooling air parcels can cause clouds to form and rain to fall. What causes an air parcel to cool? The process is driven by energy. When a warm air parcel is surrounded by colder air, the energy from the warm air parcel is transferred to the colder air until the temperature of all the air is equal. While an air parcel is losing energy, the temperature of the air parcel decreases. The energy transfer that causes the warm air parcel to cool can also cause the water vapor in the parcel to condense into liquid water. This liquid water is what forms a cloud. The more energy the air parcel loses, the more it cools and the more liquid water it forms, making more rainfall possible. When the droplets of liquid water in the clouds become big enough, they fall to the ground as rain.

Joanne Simpson's Legacy

Joanne Simpson started her career focused on the beautiful shapes she saw in the sky, wondering how and why the amazing clouds that she saw might form. Simpson's curiosity as a child led her to a pioneering career in the field of meteorology. Her work helped us understand how energy, evaporation, and condensation form the clouds that we see in the sky. Meteorologists today still make use of Simpson's work as they study the weather.

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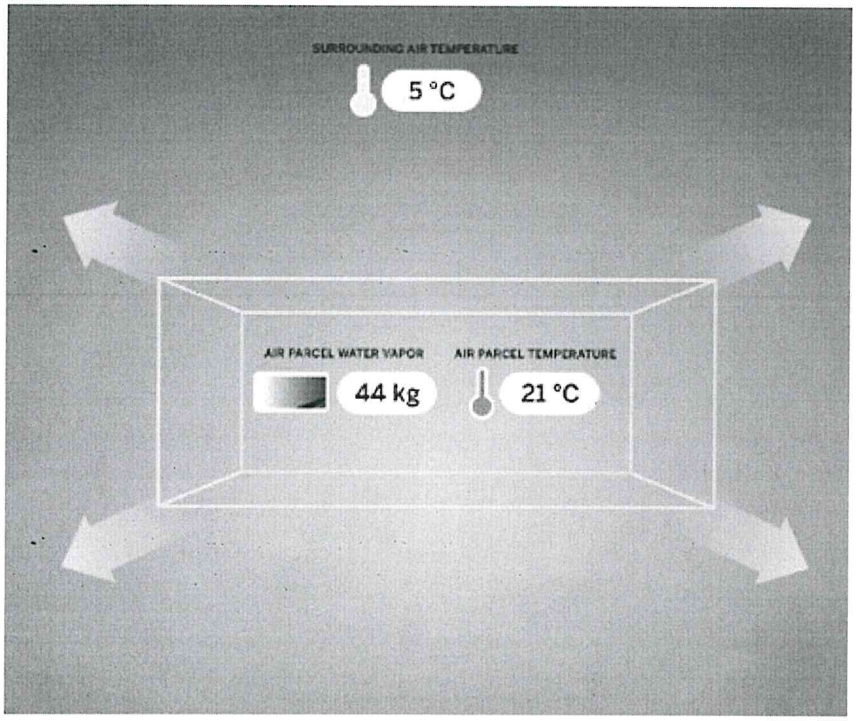

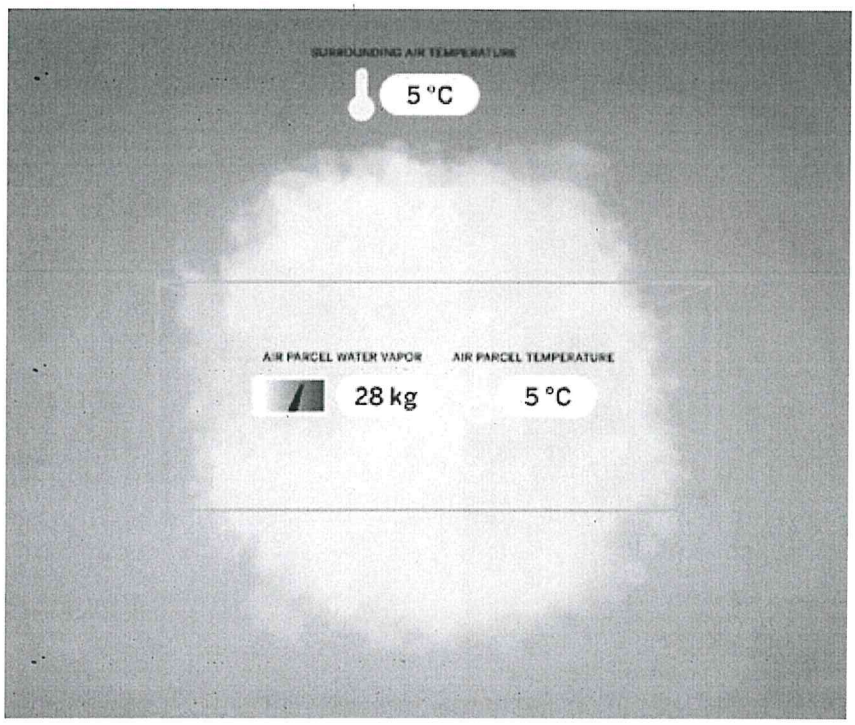

This diagram shows how energy is transferred during cloud formation. As energy is transferred out of an air parcel, its temperature drops. When the air parcel has lost enough energy and become cold enough, water vapor in the parcel condenses, forming a cloud.

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Name: _____ Date: _____

Homework: Modeling Condensation

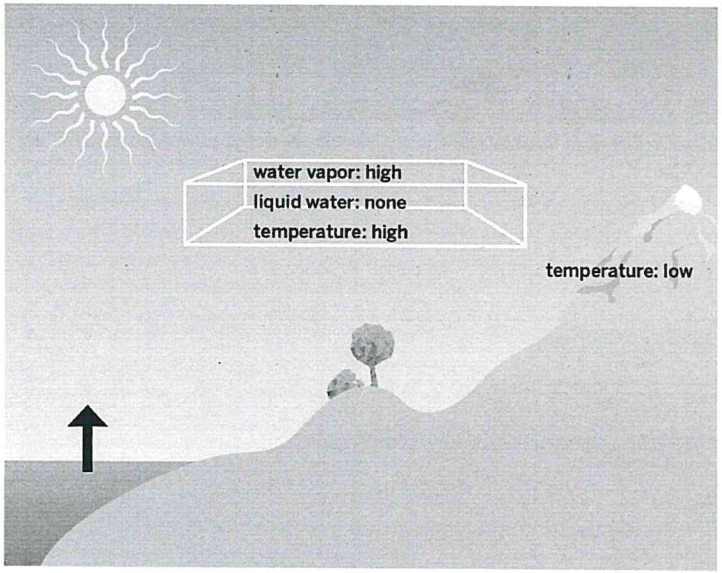
Goal: Make a model that shows how condensation occurs.

Do:

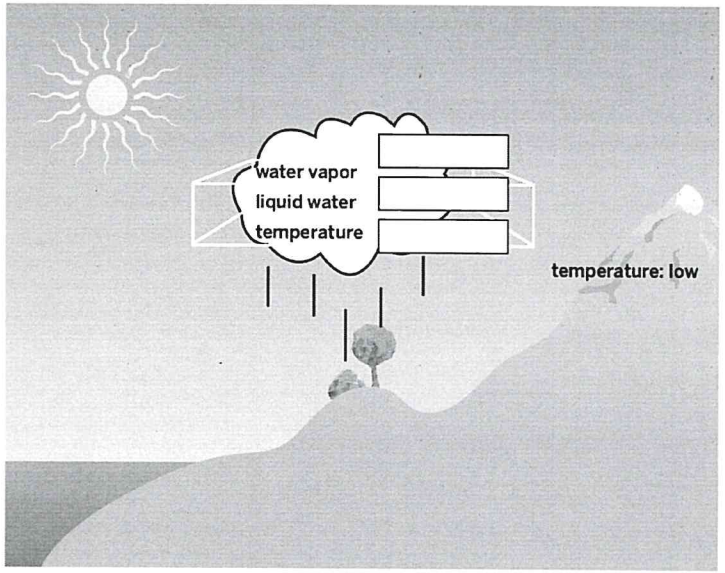
- Show the temperature of the air parcel and the surrounding air after condensation takes place.
- Show the amount of liquid water.
- Use the words in the Modeling Tool Key to fill in the boxes.

Weather Patterns Modeling Tool: Condensation

Before



After



Modeling Tool Key

Temperature:
high or low

Liquid water (cloud and rain):
high or low

Water vapor:
high or low

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Name: _____ Date: _____

Homework: Reading "Why Don't All Clouds Produce Rain?"

Read and annotate the "Why Don't All Clouds Produce Rain?" article. Then, answer the question below.

Name three reasons why a cloud might form without rain happening.

_____

_____

_____

_____

_____

_____

_____

_____

Active Reading Guidelines

1. Think carefully about what you read. Pay attention to your own understanding.
2. As you read, annotate the text to make a record of your thinking. Highlight challenging words and add notes to record questions and make connections to your own experience.
3. Examine all visual representations carefully. Consider how they go together with the text.
4. After you read, discuss what you have read with others to help you better understand the text.

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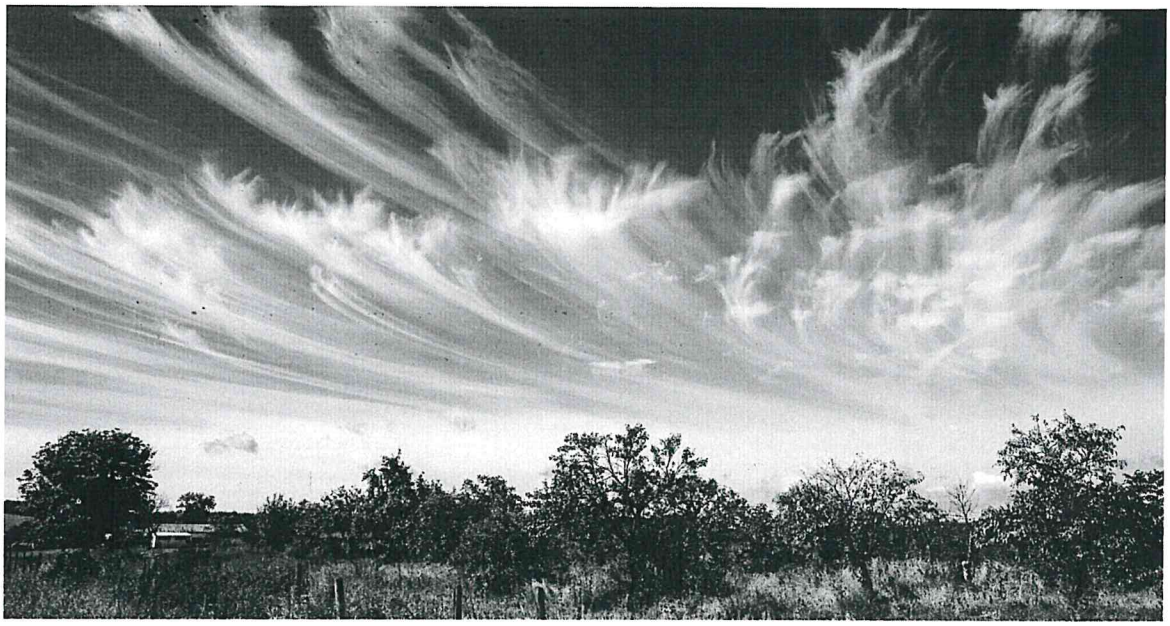
Why don't all clouds produce rain? © 2018 The Regents of the University of California. All rights reserved. Permission granted to purchaser to photocopy for classroom use. Image Credit: Shutterstock.



Thin, wispy clouds like these usually don't produce rain or other types of precipitation.

Why Don't All Clouds Produce Rain?

For precipitation to form and fall, there must be clouds—precipitation never falls from a clear blue sky. However, not all clouds produce precipitation. You probably see clouds every day, but you probably don't experience rain every day. Why do some clouds produce precipitation and others don't?

Clouds produce rain when tiny droplets of liquid water begin to stick together, forming larger and larger drops. When those drops get heavy enough, they fall as rain. However, the conditions have to be right for those processes to take place. If a particular cloud doesn't have the right conditions, it won't produce any rain. For example, if there aren't enough droplets of water in a cloud to collide and form large drops, the tiny droplets will stay suspended in the air and it won't rain. In some very hot and dry places, rain may start to fall from a cloud but the drops evaporate while they are still high in the air. Thin, wispy clouds are usually made up of tiny ice crystals, and the ice crystals are spread too far apart to collide and form snowflakes. These are just a few of the factors that can keep the water droplets in clouds from turning into precipitation that falls to the ground.