

NAME _____
HR _____

Science Experiment

The Case of the Spreading Sickness

Summer had turned to fall and temperatures were dropping. Wind whistled along the streets. Kids had gone back to school two months ago, and everything had been strangely quiet for Detective Grimes. He spent a leisurely morning getting breakfast at the local diner and then opening his office a little late. He checked his answering machine for messages and was pleasantly surprised to find nothing. However, the phone suddenly started ringing. *Who could that be?* thought Detective Grimes.

Detective Grimes pulled the phone off the receiver and put it to his ear. "Hello. This is the Salem Detective Agency. Detective Grimes speaking. How can I help you?" he said.

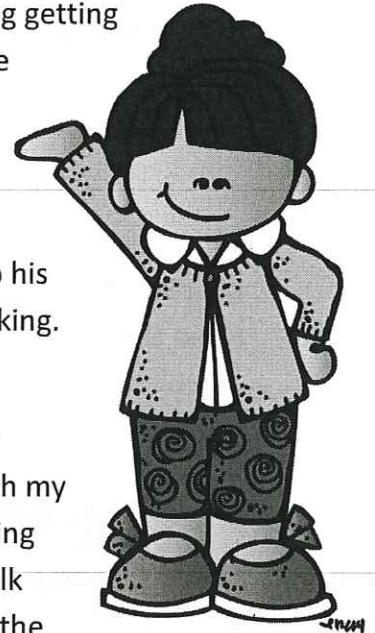
"Detective! I'm so glad I reached you. You are my last hope. My students are dropping like flies. The flu bug is rapidly spreading through my classroom. And now my students are in a debate about whether washing their hands actually helps. Could you please come to the school and talk with them?" Though she didn't say it, Detective Grimes could tell that the person on the phone was Mrs. Clean, the 4th grade teacher at Salem Elementary.

"I'll be over as soon as I can!" he answered. However, before he went, he stopped at the local grocery store for a couple supplies that would help him solve this case.

With a plastic grocery bag on the seat beside him, Detective Grimes pulled up to the school. He picked a parking spot and climbed out of his car. Grabbing the bag, he closed his car door and walked to the front entrance of Salem Elementary.

The first thing he had to do was check in with the front office. "Good morning Mrs. Note," Detective Grimes said cheerfully.

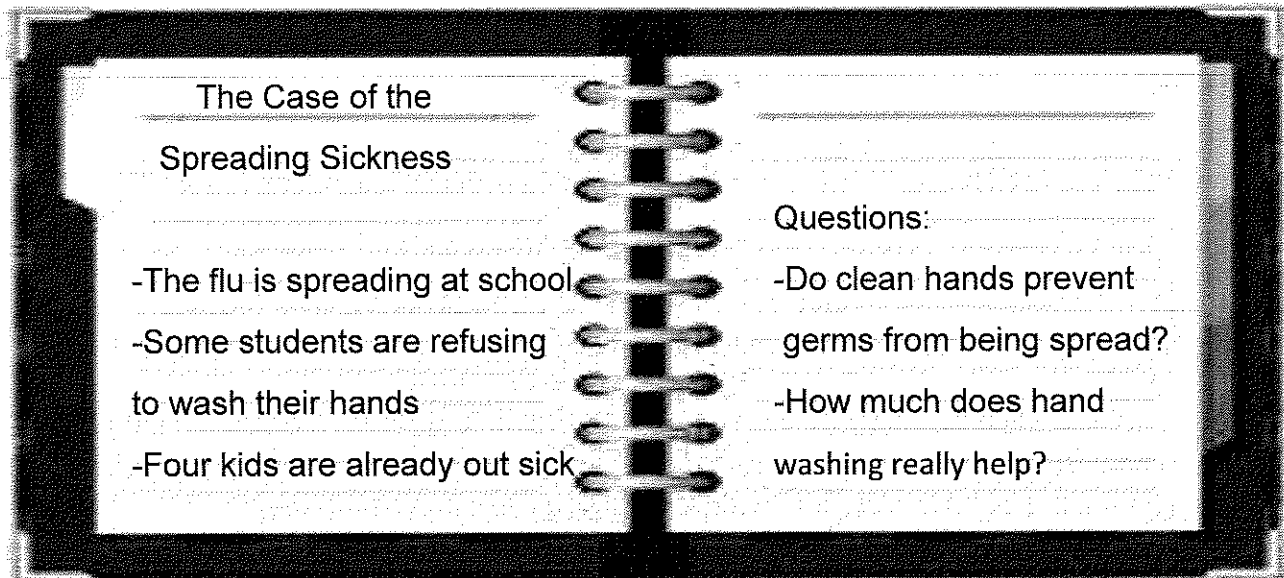
"Detective, what are you doing here? Is there a problem in the school?" Mrs. Note sounded worried. Detective Grimes assured her that it would be an open and shut case. He'd be gone before she knew it.



"However," he said, "I'll have to come back at the end of the week for a follow up." The secretary, Mrs. Note smiled and gave him a visitor's badge. She pointed him in the right direction, last classroom on the left hand side, and he started off.

Inside the room, students had books in their laps reading silently to themselves. Mrs. Clean looked utterly distraught! She explained to him about a group of students in the class that had decided that hand-washing doesn't help them stay away from illness. She told him about her worries that her entire class would get sick. "There was already four kids out last week with the flu, and I'm afraid it'll just get worse," she finished.

"I see you're concern. Let me just get out my case notebook and jot down a couple notes for myself. Detective Grimes opened the notebook and turned to the first clean sheet. At the top, he wrote, "The Case of the Spreading Sickness". Then he wrote down the important information that Mrs. Clean shared with him.



Detective Grimes thought for a moment before putting away his casebook. "Mrs. Putnam," he said, "I have just the experiment to test out this idea."


Detective Grimes pulled out the supplies from his bag and began setting up the experiment with the help of Mrs. Putnam's 4th grade class. Complete the experiment yourself and record your findings.

The Case of the Spreading Sickness

Experiment and Student Observation Sheet

Experiment Materials: A fresh loaf of bread (unopened), 3 ziplock baggies

Experiment Instructions:

- With a paper towel or cloth, remove one slice of bread. Stick it in a ziplock baggie and seal it. This is the control for the experiment. It will show the normal progression of mold on bread without germs.
- With freshly sanitized hands, remove one slice of bread. Stick it in a ziplock baggie and seal it. This shows what happens to bread with only a small number of germs.
-  Pull of a slice of bread and let the class pass it around. Touch it with one hand and pass to the next kid. When all students have touched it, stick it in a ziplock baggie and seal it. This shows how unwashed hands affects the bread.

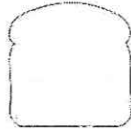
use bread without preservatives, bakery bread or homemade (without bleached flour)

Which slice of bread will grow mold first?
Second? Last?

My hypothesis...

Results after 3 days... (draw a picture)

Control



Washed

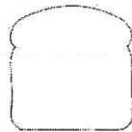


Dirty



Results after 5 days... (draw a picture)

Control



Washed



Dirty



After investigating....

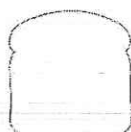
Describe what the control bread looked like...

Describe what the hand sanitized bread looks like...

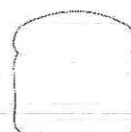
Describe what the dirty hands bread looks like...

Results after 1 week... (draw a picture)

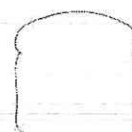
Control



Washed



Dirty



What was incorrect about the kids' thinking? Why did they think this?

What causes the difference in the mold growth in the three slices of bread?

What can be done to prevent illness spreading in the classroom? Why is this important?

4.1 SCIENTIFIC METHOD

NAME _____
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- _____ Observation A. the factor in an experiment that changes as a result of the manipulation of the independent variable. It is the data you collect.
- _____ Prediction B. A forecast of what could happen
- _____ Conclusion C. a tentative explanation based on background knowledge and available data
- _____ Inference D. A repeat of an experiment to make sure the data is correct
- _____ Constant E. A testable statement about what you think will happen in an experiment. It is a prediction about the relationship between variables. (Written in "if...then..." form)
- _____ Independent variable F. A description and data that can be observed, but not measured. (The cat is red)
- _____ Dependent variable G. A summary statement based on the results of an investigation
- _____ Trial H. Things kept the exact same in an experiment to make sure the experiment is fair
- _____ Hypothesis I. Data that can be counted or measured and the results can be recorded using numbers. Quantitative data can be represented visually in graphs and charts. (34 grams)
- _____ Procedures J. A statement or comment about what you see, feel, taste, hear, or smell.
- _____ Qualitative data K. the factor in an experiment that is altered by the experimenter. This is purposely changed or manipulated; "the cause"
- _____ Quantitative data L. The step-by-step instructions for how to conduct the experiment

Put the six steps of the Scientific Method in order, 1-6.

_____ Conclusion

_____ Hypothesis

_____ Observation

_____ Experiment

_____ Problem

_____ Results

4.9 NATURAL RESOURCES

- _____ River A. An area over which surface water flows to a single collection place
- _____ Lake B. A body of usually fresh water surrounded by land
- _____ Watershed C. A large natural stream of water
- _____ Bay D. Body of water partially surrounded by land; usually leads into an ocean

Important mineral resources found in Virginia:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

Do your best to remember these.

Natural Resource	Human Resource
Definition:	Definition:
Example:	Example:

4.6 CLOUDS & WEATHER

NAME _____

HR _____ DATE _____

- _____ Meteorology
- _____ Atmosphere
- _____ Temperature
- _____ Humidity
- _____ Tornado
- _____ Hurricane

- A. Violent windstorm that lasts only minutes
- B. The measure of the amount of heat in the air
- C. The study of weather
- D. A violent storm that develops over the ocean
- E. Measure of the amount of moisture in the air
- F. The thin blanket of gases that surround the Earth

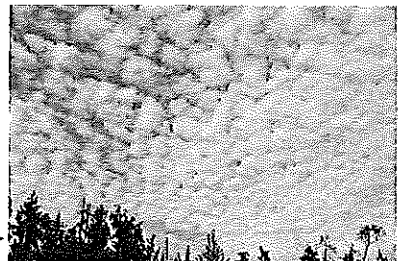
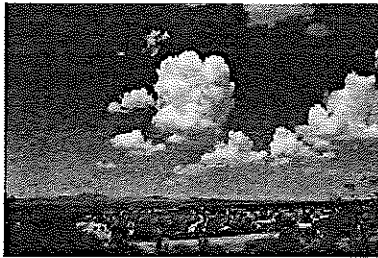
- _____ Front
- _____ Air Pressure
- _____ Anemometer
- _____ Barometer
- _____ Precipitation
- _____ Air Mass

- A. Water that falls back to Earth from clouds
- B. The boundary between two air masses
- C. A huge body of air that has the same temperature and humidity throughout
- D. The force with which air pushes
- E. An instrument that measures wind speed
- F. An instrument that measures air pressure

- _____ Cirrus
- _____ Cumulus
- _____ Cumulonimbus
- _____ Stratus

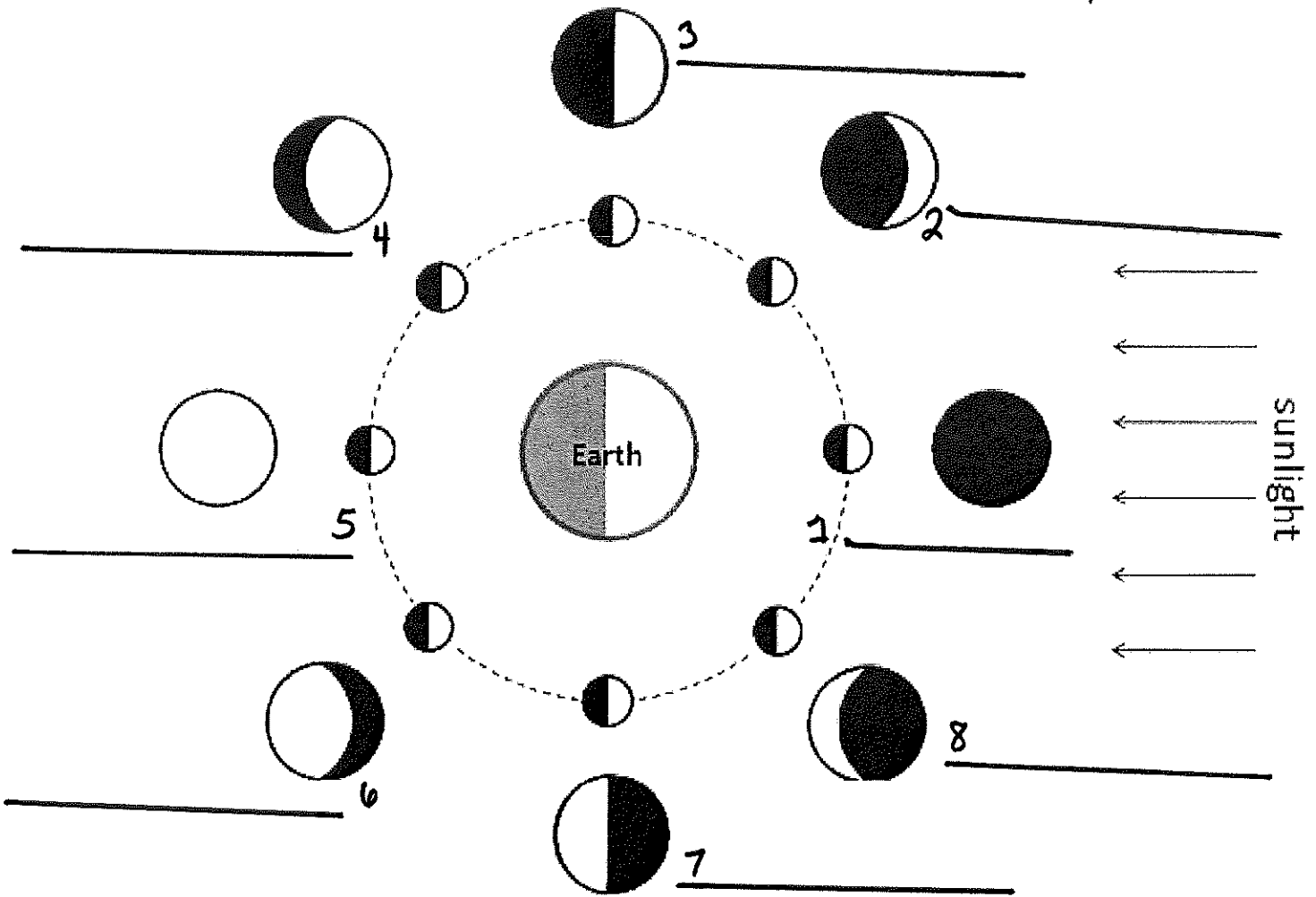
- A. A cumulus cloud that is taller, dark on the bottom, and produces precipitation.
- B. Thin, wispy cloud
- C. Flat and sheet like clouds spread across the sky. This can become rain clouds if they move higher in the sky.
- D. Puffy and white clouds that look like cotton. Seen when the weather is nice and calm, but they can turn into storm clouds.

Label the clouds below using the 4 types of clouds listed above.



4.8 MOON PHASES

Label the moon phases below



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FULL MOON
 NEW MOON
 1st QUARTER
 LAST QUARTER

WANING CRESCENT
 WANING GIBBOUS
 WAXING CRESCENT
 WAXING GIBBOUS

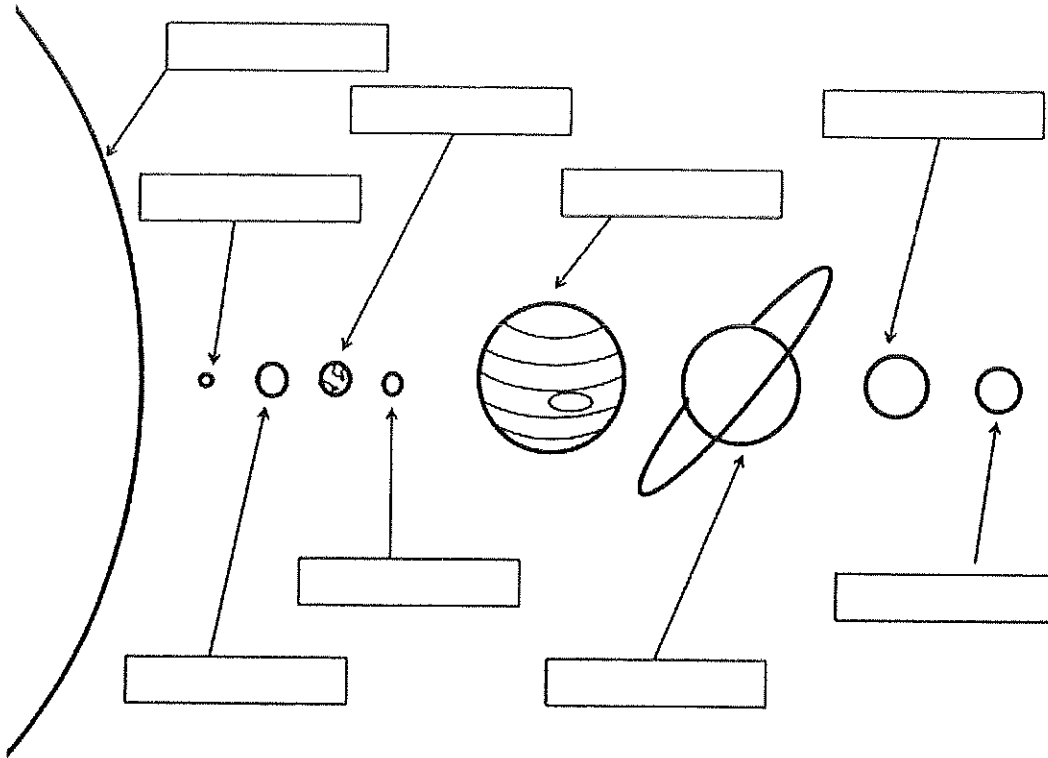
4.7 SOLAR SYSTEM

NAME _____

HR _____ DATE _____

Fill in the blanks using the following words...

Mars, Earth, Mercury, Neptune, Sun, Jupiter, Uranus, Saturn, Venus



Planets in Order from Largest to Smallest
1.
2.
3.
4.
5.
6.
7.
8.

Terrestrial Planets	Gas Planets
1.	1.
2.	2.
3.	3.
4.	4.

_____ is no longer considered a planet. It is now classified as a _____ planet.

The Earth completes one _____ around the sun ever 365 ¼ days.

The moon _____ around Earth about once every month.

The Earth experiences seasons because of the _____.

The sun is a yellow _____ and is approximately _____ years old.

Earth Centered Model:	Sun Centered Model:
Who?	Who?
1.	1.
2.	2.
Picture:	Picture:

WORD BANK

ARISTOTLE
AXIL TILT
COPERNICUS
4,6 BILLION

PTOLEMY
GALILEO
STAR
ROTATION
REVOLUTION