

Fourth Grade “Meteorology” Assessment

- 1a. The _____ is the process in which water from the ocean evaporates into the air and then falls back to the Earth as rain, snow, or hail. The water then returns to the oceans and the process begins again.
- a. weather
 - b. water cycle
- 1b. Draw a picture of the water cycle. Include precipitation, evaporation, and condensation in your drawing.

- 1c. Describe the process of the water cycle:

- 2a. During the water cycle, water _____ into the air and then falls back to the earth as precipitation.
- a. condenses
 - b. evaporates

- 2b. _____ occurs when liquid turns into gas.

- 2c. What is evaporation?

- 3a. Condensation occurs when a gas becomes a _____.
- a. liquid
 - b. solid

- 3b. Condensation occurs when a gas becomes a _____.

3c. Explain how condensation occurs:

4a. Evaporated water that condenses in the clouds falls to Earth as _____.
a. meteors
b. precipitation

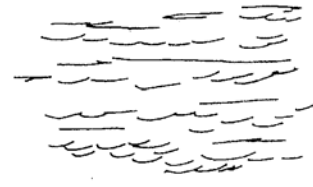
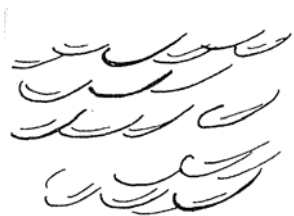
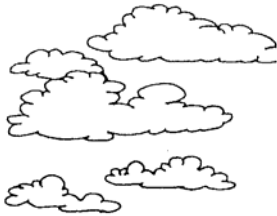
4b. Evaporated water that condenses in the clouds falls to Earth as _____.

4c. Explain what precipitation is and list three types of precipitation.

1. _____
2. _____
3. _____

5a. Cirrus, stratus, and cumulus are all types of _____.

5b. Label each cloud: stratus, cumulus, cirrus.



5c. Draw a cumulus cloud, cirrus cloud, and stratus cloud.

6a. The _____ contains the troposphere, stratosphere, mesosphere, and ionosphere.
a. precipitation
b. atmosphere

6b. The _____ contains the troposphere, stratosphere, mesosphere, and ionosphere.

6c. What are the four layers of the atmosphere? List them in the order of closest to the Earth to farthest away from the Earth.

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

7a. Which layer of the atmosphere contains the air we breathe? _____

- a. mesosphere
- b. troposphere

7b. What is the lowest layer of the atmosphere? _____

7c. Describe the troposphere:

8a. The _____ heats the atmosphere by heating the surface of the _____.

8b. Which of the following DOES NOT explain how the Sun heats the atmosphere?

- a. heating the surface of the Earth which heats the air above it.
- b. by creating a storm in the troposphere
- c. warming the layers of the atmosphere as it shines through it.

8c. How do the Sun and Earth heat the atmosphere?

9a. Which of the following statements is true?

- a. Hot air rises.
- b. Cold air rises.

9b. Which of the following statements is true?

- a. Hot air rises because its molecules are further apart than those of cooler air.
- b. Cold air rises because its molecules expand when they get cold.

9c. Hot air rises because:

10a. Prevailing winds in the United States blow from _____ to _____.
a. east, west
b. west, east

10b. Winds that blow constantly in a certain direction are called _____ winds and in the United States, they blow from the _____ to the _____.

10c. Describe prevailing winds.

11a. Differences in air temperature and air pressure cause _____.
a. lightning
b. wind

11b. Differences in air temperature cause _____.

11c. Describe the processes that create wind.

12a. Air pressure is _____.
a. the force of gravity against your body
b. the weight of the air pressing against the Earth

12b. Which is heavier: cold air or warm air? _____
Therefore, an increase in air pressure will likely mean a change in the _____ and _____ temperatures.

12c. What does a rise in air pressure mean?

13a. High pressure areas usually have _____ skies.

- a. cloudy
- b. clear

13b. High pressure areas usually have _____ skies.

- a. cloudy
- b. clear
- c. green
- d. dark

13c. High pressure areas usually have _____ skies. Explain how this affects the weather:

14a. Low pressure areas usually have _____ skies.

- a. cloudy
- b. clear
- c. green
- d. dark

14b. Low pressure areas usually have _____ skies.

- a. cloudy
- b. clear
- c. blue
- d. none of the choices

14c. High pressure areas usually have _____ skies. Explain how this affects the weather:

15a. The four terms used to describe air masses are warm, _____, moist, and _____.

15b. Which of the following is true?

- a. Air masses are large bodies of air with the same temperature and amount of moisture.
- b. Air masses are heated air above the surface of the Earth.

15c. Define air masses:

List the four types of air masses:

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

16a. A _____ front forms when a warm air mass pushes into a cold air mass.

- a. cold
- b. warm

16b. Mild, gradual changes in weather usually accompany _____ fronts.

16c. Describe a warm air front:

17a. Violent weather such as thunderstorms accompany which type of front?

- a. cold front
- b. warm front

17b. A _____ front forms when cold air pushes into a region where there is a mass of warm air.

- a. cold
- b. warm

17c. Describe a cold air front:

18a. Match the weather condition with the type of front it forms along.

- | | | |
|-------|-------------|---------------|
| _____ | thunderhead | |
| _____ | steady rain | a. Cold Front |
| _____ | tornado | b. Warm Front |
| _____ | hurricane | |

18b. Tell whether each of the following weather conditions forms along a warm front or a cold front.

- Tornado _____
- thunder _____
- stratus clouds _____
- tornado _____
- hurricane _____
- drizzle of rain _____
- blizzard _____
- thunderhead _____

18c. Describe the weather activity during a warm front and a cold front and list two differences between the them:

Difference #1: _____

Difference #2: _____

19a. When electrical charges jump from cloud to cloud _____ occurs.

19b. Which of the following statements is true?

- a. Lightning occurs before thunder in the clouds.
- b. Lightning and thunder occur in the clouds at the same time.

19c. Explain how the following occur:

Lightning: _____

Thunder: _____

20a. A funnel-shaped storm that moves across land is a _____.

- a. hurricane
- b. front
- c. tornado
- d. blizzard

20b. What is a small, violent windstorm called? _____

20c. Explain how a tornado is formed:

21a. A storm with high winds and heavy rain that form over the ocean is called a _____.

21b. A _____ with high winds a heavy rain that form over the ocean occur most frequently in the _____ season.

21c. Describe a hurricane and how it is formed:

22a. Air pressure is measured by a tool called a _____.
a. thermometer
b. barometer

22b. A barometer measures _____.

22c. List three tools that meteorologists can use to help forecast weather.

23a. The average weather in one place over a long period of time is called _____.

23b. What is climate?

23c. Define climate and describe the climate in the area you live in:

24a. Which changes more often in your area: weather or climate? _____

24b. What four factors have the greatest affect on weather?
1. _____
2. _____
3. _____
4. _____

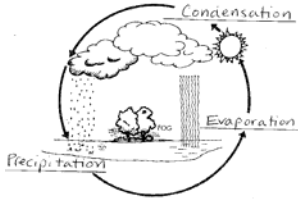
24c. What is the difference between weather and climate?

The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 8a, 8b, 8c: Standard K-4.4.2.a recognizing that the sun is a principal source of Earth's heat and light

Answer Key

- 1a. b
1b.



- 1c. The water cycle is the process in which water from the ocean evaporates into the air and then falls back to the Earth as rain, snow, or hail. The water then returns to the oceans and the process begins again.

- 2a. b. water cycle
2b. evaporates
2c. Possible answer
-Evaporation is the changing of liquid into gas.
-It is often caused by heat.

- 3a. a. liquid
3b. liquid
3c. Condensation occurs when a gas becomes a liquid.

- 4a. b. precipitation
4b. precipitation
4c. Possible answers could include:
-Precipitation is evaporated water that condenses in the clouds and falls to Earth.
-snow, hail, rain, sleet

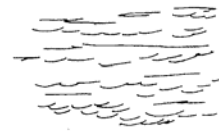
- 5a. clouds
5b.



Cumulus



Cirrus

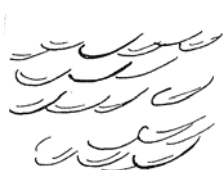


Stratus

- 5c.



Cumulus



Cirrus



Stratus

- 6a. b. atmosphere
 6b. atmosphere
 6c. troposphere (closest to the Earth), stratosphere, mesosphere, and ionosphere (farthest from the Earth)
- 7a. b. troposphere
 7b. troposphere
 7c. Acceptable answers could include:
 -the layer closest to the Earth
 -contains the air that we breathe
- 8a. Sun, Earth
 8b. b. by creating a storm in the troposphere
 8c. Acceptable answers could include:
 -The sun provides the energy that heats the Earth's surface
 -The heated surface of the Earth warms the air above it
 -It is this reflected heat that warms the atmosphere
 -Some of the sun's rays warm the atmosphere when they pass through it
- 9a. a. Hot air rises.
 9b. a. Hot air rises because its molecules are further apart than those of cooler air.
 9c. Acceptable answers could include:
 -Heated air rises because its molecules are further apart.
 -Hot air weighs less because its molecules are spread apart.
- 10a. b. west, east
 10b. prevailing, west, east
 10c. Acceptable answers could include:
 -Prevailing winds blow from west to east
 -Prevailing winds are responsible for the weather patterns
 -Prevailing winds blow constantly in a certain direction
- 11a. b. wind
 11b. wind
 11c. Acceptable answers could include:
 -When air warms, the molecules in the air spread apart.
 -This causes the air to weigh less.
 -The warmer air rises.
 -In cooler air, molecules move closer together.
 -Cooler air weighs more and sinks.
 -The movement of this air is wind.
- 12a. b. the weight of the air pressing against the Earth
 12b. cold air, weather, cooler
 12c. Acceptable answers could include:
 -Increased air pressure likely means a change in current weather
 -Will bring drier air

-Cooler temperatures

- 13a. b. clear
13b. b. clear
13c. clear; usually nicer, calmer weather
- 14a. a. cloudy
14b. a. cloudy
14c. cloudy; usually more turbulent, stormy weather
- 15a. cold, dry
15b. a. Air masses are large bodies of air with the same temperature and amount of moisture.
15c. Acceptable answers could include:
-Air masses are large bodies of air with the same temperature and amount of moisture.
warm, moist air mass
warm, dry air mass
cold, moist air mass
cold, dry air mass
- 16a. b. warm
16b. warm
16c. Acceptable answers could include:
-A warm air front is formed when warm air moves up and over a cold air mass, and the cold air is pushed back.
- 17a. a. cold front
17b. a. cold
17c. Acceptable answers could include:
-A cold front forms when a cold air pushes into a region where there is mass of warm air.
- 18a. a, b, a, a
18b. Warm front - drizzle of rain, stratus clouds
Cold Front - tornado, thunder, blizzard, thunderhead, tornado, hurricane
18c. Acceptable answers could include:
-Cold front: often bring storms, force warm air to rise swiftly, warm air cools rapidly, forms heavy clouds, causes precipitation to drop quickly
-Warm front: no dramatic changes in the weather, can bring on storms, warm air slowly moves over the cold, cools air slowly, causes many different types of clouds, cloud thicken and drop precipitation
Differences:
-in cold fronts, warm air quickly rises, but in warm fronts air rises slowly
-in cold fronts, warm air cools rapidly, but in warm fronts air cools slowly
- 19a. lightning

- 19b. b. Lightning and thunder occur in the clouds at the same time.
- 19c. Acceptable answers could include:
- Lightning can jump from a cloud to the Earth or it can jump from cloud to cloud
 - When lightning moves through a cloud, it causes air to expand
 - The expanding air makes a loud noise called thunder
 - Lightning and thunder occur at the same time, but we see lightning before we hear thunder because light travels faster than sound
- 20a. c. tornado
- 20b. tornado
- 20c. Acceptable answers could include:
- Tornados form along cold fronts
 - Cold fronts push warm moist air up and sink cooler air
 - Cooler air above the ground cause the warm air to twist
 - The twisting winds suck warm air into the center of the clouds
 - As the wind gains strength, a funnel cloud forms and drops toward the ground
- 21a. hurricanes
- 21b. hurricanes; summer
- 21c. Acceptable answers could include:
- another type of violent storm
 - form over warm oceans near the equator
 - usually form between the months of June and November
 - it is a strong, whirling storm of high winds and heavy rains
- 22a. b. barometer
- 22b. Air pressure
- 22c. Possible answers could include
- thermometers, barometers, weather satellites, weather stations, weather maps
- 23a. climate
- 23b. Climate is the average weather in one place over a long period of time.
- 23c. Climate is the average weather in one place over a long period of time.
Answers will vary for a description of climate in their area.
- 24a. weather
- 24b. temperature, wind, moisture, air pressure
- 24c. Acceptable answers should include:
- Weather describes conditions for short periods of time whereas climate refers to the average weather conditions over a long time.