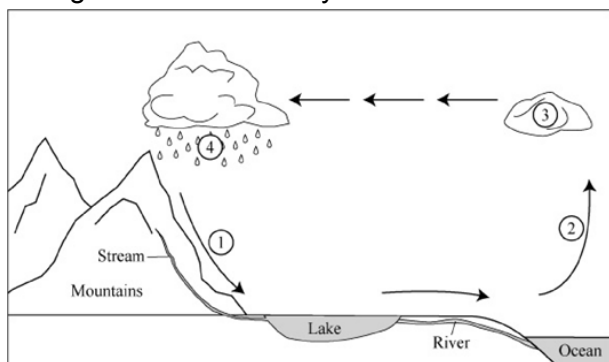


## GCS Grade 7 Science Benchmark 1

1. What are the two main gases found in air?
  - a. helium and oxygen
  - b. carbon and nitrogen
  - c. nitrogen and oxygen
  - d. carbon dioxide and hydrogen
2. Mountain climbers usually require oxygen tanks in the upper altitudes. Which best explains why the extra oxygen is needed?
  - a. No oxygen is available at high altitudes
  - b. The extra oxygen at high altitudes increases body temperature
  - c. The decrease in air pressure at high altitudes reduces the amount of available oxygen
  - d. The increase in air pressure at high altitudes reduces the amount of available oxygen
3. Which atmospheric layer is the thinnest?
  - a. mesosphere
  - b. stratosphere
  - c. thermosphere
  - d. troposphere
4. Clouds form when which happens?
  - a. The air is dry
  - b. The wind blows hard
  - c. Temperatures are very high
  - d. Moist air rises and then cools.
6. On a hot day, a puddle dries up. Which part of the water cycle does this describe?
  - a. condensation
  - b. evaporation
  - c. precipitation
  - d. runoff
7. Which causes precipitation to occur?
  - a. Water evaporates into the air
  - b. Water droplets spread out in the air
  - c. Water vapor condenses on tiny particles in the air
  - d. Water droplets combine and become heavy enough to fall
8. Which profession predicts the weather?
  - a. astronomer
  - b. geologist
  - c. meteorologist
  - d. seismologist
9. If a cold air mass moves into North Carolina during the summer months, which type of weather will most likely result?
  - a. hot and sunny
  - b. cold and sunny
  - c. cloudy and dry
  - d. cloudy and rainy

A diagram of the water cycle is shown



5. Which process in the water cycle does 3 represent?
  - a. condensation
  - b. evaporation
  - c. precipitation
  - d. runoff
10. Which is best characterized by high spiraling winds and extremely low barometric pressures?
  - a. tornadoes
  - b. precipitation
  - c. snow storms
  - d. high humidity
11. Which type of cloud produces thunderstorms?
  - a. cirrus
  - b. cumulonimbus
  - c. cumulus
  - d. stratus
12. Which weather condition is most likely to result in a winter storm?
  - a. spiraling winds
  - b. a fast-moving cold front
  - c. a developing low pressure system
  - d. vertical development of cumulonimbus clouds

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13. The weather forecast predicts high humidity. What other atmospheric property is associated with high humidity?

- a. warm air
- b. high winds
- c. low temperatures
- d. decreased precipitation

14. Meteorologists use satellites to predict the weather. How are satellites most useful for them?

- a. They provide weather forecasts
- b. They measure the amount of precipitation
- c. They show the movement of weather systems
- d. They transmit television signals for communication.

15. In which direction do most weather systems travel across the United States?

- a. east to west
- b. west to east
- c. north to west
- d. north to south

16. Which type of cloud often looks wispy and feathery, and is often seen at the leading edge of a warm front?

- a. cirrus
- b. cumulonimbus
- c. cumulus
- d. stratus

17. Which type of cloud is fog?

- a. cirrus
- b. cumulonimbus
- c. cumulus
- d. stratus

18. How does air usually move in the atmosphere?

- a. from east to west
- b. from space towards Earth
- c. from mountains to oceans
- d. from high pressure areas to low pressure areas

20. It is raining in Little Rock, Arkansas, in the morning. Which state will probably experience rain by the afternoon?



- a. Oklahoma
- b. Tennessee
- c. Louisiana
- d. Missouri

21. Which statement best supports the need for meteorologists to measure the amount of ground-level ozone in the atmosphere?

- a. Exposure to ozone can lead to digestive disorders
- b. Exposure to ozone can lead to respiratory problems
- c. Ozone levels can help meteorologists identify acid rain
- d. Ozone levels can help meteorologists predict the weather

22. Which of the following processes result from the release of sulfur compounds into the air?

- A) global warming
- B) humidity changes
- C) acid rain
- D) ozone destruction

23. Which most likely will be the effect after reforestation of 3,000 acres of farmland?

- a. an increase in oxygen
- b. a decrease in nitrogen
- c. an increase in carbon dioxide
- d. a decrease in carbon monoxide

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19. Which describes how the Coriolis effect influences ocean currents in the Northern Hemisphere?
- The effect deflects ocean currents to the left.
  - The effect deflects ocean currents to the right.
  - The effect deflects ocean currents in a northern direction
  - The effect deflects ocean currents in a southern direction
24. Through environmental regulations, the Environmental Protection Agency controls the amount of pollution that is allowed to come from cars. How does this most likely help the general population?
- The air stays cleaner
  - Cars can travel at faster speeds
  - The skills of the drivers improve
  - It becomes safer to drive on the roads
25. Which will do the most to protect the atmosphere?
- Stop drilling for oil
  - Reduce fossil fuel emissions
  - Reduce the number of new roads
  - Stop building new houses and office buildings.
26. A developer built a mall. What can the developer do to best improve the air quality around the site where the mall was built?
- increase the amount of vegetation planted
  - increase the land surface that the mall covers
  - decrease the amount of available parking surfaces
  - decrease the amount of irrigation needed for vegetation
27. Which is the basic unit of life?
- cell
  - membrane
  - nucleus
  - organelle
30. How can a scientist determine if he is viewing a plant or animal cell?
- determine if the cell has a nucleus
  - determine if the cell has a cell wall
  - determine if the cell has mitochondria
  - determine if the cell has a cell membrane
31. Which of the following is likely to be found in a cell from a maple leaf but not in a human nerve cell?
- cell wall
  - mitochondria
  - cell membrane
  - cytoplasm
32. Which is a function of cytoplasm in both plant and animal cells?
- creating energy
  - directing cellular activity
  - disposing of cellular waste
  - providing support for organelles
33. What might be the first thing to happen if the cell wall of a plant cell were destroyed?
- The cell would lose its structural form
  - The cell would not be able to store food, water, or nutrients
  - The cell would not be able to keep its chromosomes in a central location
  - The cell would lose control of the transport of materials in and out of the cell.
34. Which organelle keeps DNA from having direct contact with cytoplasm?
- vacuole
  - chromosome
  - cell membrane
  - nuclear membrane
35. Waste products, like carbon dioxide, leave cells through the:
- ribosomes
  - nucleus
  - cell membrane
  - mitochondria
36. Respiration takes place in which cell organelles?
- mitochondria
  - chloroplasts
  - vacuoles
  - ribosomes
28. Which statement is part of the cell theory?

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- a. All living things are made of one or more cells.
- b. All cells must divide by meiosis to make more cells
- c. All cells contain a nucleus that controls the functions of the cell
- d. All cells are surrounded by a cell membrane or a cell wall, but not both.

29. A student wants to use a compound light microscope to determine whether a cell is a plant cell or an animal cell. Why should she begin by using the low-power objective lens rather than the high-power objective lens?

- a. Less light passes through the cell under low power
- b. The field of view is greater under low power than it is under high power
- c. The magnification is greater under low power than it is under high power
- d. all of the above

37. The process by which plant cells produce glucose is:

- a. photosynthesis
- b. respiration
- c. protein synthesis
- d. diffusion

38. Which of the following structures is most likely to be found in both a spinach cell and a muscle cell?

- a. nucleus
- b. chloroplast
- c. large, water-filled vacuole
- d. cell wall

39. The brain of a large animal is like the \_\_\_\_\_ of a cell:

- a. cytoplasm
- b. nucleus
- c. mitochondria
- d. cell membrane

40. Which of the following is in order from simplest to most complex?

- a. organ, tissue, cell, organ system
- b. organ system, organ, tissue, cell
- c. cell, tissue, organ, organ system
- d. cell, organ, organ system, tissue

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### Answer Key

Item #	Standard	RBT	Answer
1	7.E.1.1	Remembering	C
2	7.E.1.1	Analyzing	C
3	7.E.1.1	Remembering	D
4	7.E.1.2	Analyzing	D
5	7.E.1.2	Understanding	A
6	7.E.1.2	Analyzing	B
7	7.E.1.2	Understanding	D
8	7.E.1.2	Remembering	C
9	7.E.1.3	Applying	D
10	7.E.1.3	Analyzing	A
11	7.E.1.3	Understanding	B
12	7.E.1.3	Understanding	B
13	7.E.1.4	Analyzing	A
14	7.E.1.4	Applying	C
15	7.E.1.4.a	Understanding	B
16	7.E.1.4.c	Understanding	A
17	7.E.1.4.c	Analyzing	D
18	7.E.1.5	Applying	D
19	7.E.1.5	Analyzing	B
20	7.E.1.5	Analyzing	B

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Item #	Standard	RBT	Answer
21	7.E.1.6	Analyzing	B
22	7.E.1.6	Analyzing	C
23	7.E>1.6	Analyzing	A
24	7.E.1.6	Analyzing	A
25	7.E.1.6	Understanding	B
26	7.E.1.6	Analyzing	A
27	7.L.1.3	Remembering	A
28	7.L.1.2	Understanding	A
29	7.L.1.2	Applying	B
30	7.L.1.2	Understanding	B
31	7.L.1.2	Analyzing	A
32	7.L.1.2	Understanding	D
33	7.L.1.2	Applying	A
34	7.L.1.2	Understanding	D
35	7.L.2.2	Applying	C
36	7.L.2.2	Analyzing	A
37	7.L.2.2	Understanding	A
38	7.L.1.2	Understanding	A
39	7.L.1.2	Understanding	B
40	7.L.1.2	Analyzing	C