



The Bee 2022 STEM BEE

Sample Questions

PRELIMINARIES

Format: Three 5-minute speed rounds comprised of 10 multiple-choice questions each (30 total questions)

- 1) **What is the first step in the scientific method?**
 - a. ask a question
 - b. propose a hypothesis
 - c. make an observation
 - d. draw conclusions

- 2) **3, 10, 17, 24, 31, 38,..... what is the next number in this pattern?**
 - a. 43
 - b. 44
 - c. 45
 - d. 46

- 3) **Which of the following is NOT a phase of the Earth's moon?**
 - a. waxing gibbous
 - b. first quarter
 - c. full moon
 - d. waning quarter

- 4) **The prefix "hydro" in the word hydrosphere means:**
 - a. life
 - b. water
 - c. earth
 - d. air

- 5) **When cells have paired chromosomes, they are:**
 - a. haploid
 - b. diploid
 - c. singular
 - d. plural

SEMIFINALS (Top 4 teams after preliminaries)

Format: 5 rounds, 5 8th grade level questions per round during a 60-second time period (each team will have the opportunity to answer 25 questions if time allows.)

- 1) **What type of heat transfer occurs during direct touch?**
 - a. Conduction
 - b. Convection
 - c. Radiation
 - d. Vaporization

- 2) **What would be the biotic factors in an aquarium?**
 - a. Snail, gravel, and water
 - b. Snail, fish, and plants
 - c. Water, light, and gravel
 - d. Plants, light, and water

- 3) **Cellular respiration requires:**
 - a. Carbon dioxide
 - b. Sunlight
 - c. Glucose
 - d. Water

- 4) **Objects at rest will remain at rest and objects in motion will remain in motion unless acted upon by an unbalanced force is known as which of Newton's Laws of Motion?**
 - a. First
 - b. Second
 - c. Third
 - d. Fourth

- 5) **The relative positions of the Earth, Sun, and Moon cause:**
 - a. Tides
 - b. Seasons
 - c. Gravity
 - d. Forces

FINALS (Top 2 teams after semifinals)

Format: 1 open-ended 8th grade level question in rotating order.

- 1) **Name the three types of particles in an atom.**

- 2) **According to the Merriam Webster dictionary, what word has the definition of, “a statistical observation that is markedly different in value from the others of the sample.”**

- 3) **What is the ultimate energy source for nearly all life on Earth?**

- 4) **When a species becomes better suited to its environment, it’s said that the species has:**

- 5) **What is the process that enables organisms that are best suited for the environment to live and pass on their genetic traits?**

ANSWER KEY

PRELIMINARIES

- 1) C
- 2) C
- 3) B
- 4) D
- 5) B

SEMIFINALS

- 1) A
- 2) B
- 3) C
- 4) A
- 5) A

FINALS

- 1) Protons / Neutrons / Electrons
- 2) Outlier
- 3) Sun
- 4) Adapted
- 5) Natural Selection