

### TMT Science 20 ACT Prep V1

1. List the particles that make up the nucleus of an atom.

**protons, neutrons**

2. The color of tree bark has changed to suit an environment. As a result, insects of a prior color that make use of camouflage die out, leaving the insects whose coloring matches the new tree bark color. This is due to what evolutionary phenomenon?

**natural selection**

3. Which is denser: a rock or a Styrofoam ball?

**a rock**

4. In a plant cell, what is the organelle that helps with the process of photosynthesis (converting light into energy)?

**the chloroplast**

5. Given the following information from the period table, how many neutrons does Oxygen have?

**8 neutrons**



6. In a freezer, the water in a bowl turns to ice. What must be the absolute highest temperature in the freezer (in °C)?

**0°C**

7. A penny is released off of the roof of the school building. Before it starts to drop, does it have more kinetic or potential energy?

**potential energy**

8. When an atom gains or loses an electron, it becomes positively or negatively charged as a result. When this occurs, what is this type of atom called?

**an ion**

9. In the following chemical reaction formula, name one of the reactants:  $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

**hydrogen or oxygen**

10. Which organelle undergoes cellular respiration, creating energy-rich molecules (or power) for the cell?

**the mitochondria**

11. How is it possible for two brown-haired parents to biologically have a blond-haired child, knowing blond hair is a recessive trait?

**both parents must carry the recessive gene**

12. Fill in the blank: Transcription is a process where the DNA of a gene is copied by \_\_\_\_\_.

**messenger RNA or mRNA**

13. Between a molecule of bleach ( $\text{NaClO}$ ) and a molecule of table salt ( $\text{NaCl}$ ), which has more mass?

**bleach ( $\text{NaClO}$ )**

14. A proton and an electron are shot towards each other. What will happen as they get close to each other?

**they will attract each other**

15. Considered the brain of the cell, which organelle contains a cell's DNA and helps to control movement and eating?

**the cell nucleus**

16. Students are trying to determine whether winds at various speeds will affect how far a thrown paper airplane will fly. Describe a possible control group for this experiment.

**throw a paper airplane without any wind**

17. Give an example of a liquid with a neutral pH.

**water**

18. A person's mass is 54.4 kg, while their weight is 533 N on Earth. If this person were to travel to the moon, which of these measurements would remain the same?

**the mass of 54.4 kg**

19. Two objects with the same volume, or size, have different masses. Which object would have greater density?

**the object with the greater mass**

20. A certain organelle uses a process called translation to transfer RNA to synthesize proteins. Which organelle is this?

**the ribosome**