

TMT Science 20 ACT Prep V3

- When undergoing photosynthesis, what organelle is vital to this process?
the chloroplast
- A common ion, K^+ , has 19 protons. How many electrons does the Potassium ion have?
18 electrons
- What would happen to a pot full of ice cubes as they are heated to over $100^\circ C$?
the cubes would melt into water, which would then boil
- One parent carries only the dominant genes that allow him to roll his tongue. The other carries only the recessive alleles, being unable to roll her tongue. What is the probability that their biological child will be unable to roll his or her tongue?
0%; the child will always have at least one dominant gene
- What is located inside of the cell nucleus in a eukaryote?
nucleolus OR chromatin (chromosomes) OR DNA (RNA)
- In the following chemical reaction formula, what coefficient is needed in the blank to balance the equation?
 $2AgNO_3 \rightarrow 2Ag + O_2 + \underline{2}NO_2$
- On the 14-point pH scale, where would you rank a tomato?
lower than a 7; tomatoes are acidic
- Two students want to test if playing video games for a certain amount of time each day will improve their reaction time in real life. In this experiment, what would be the dependent variable?
their reaction times
- Explain natural selection in your own words.
anything along the lines of "survival of the fittest"
- Aluminum has 13 electrons. How many energy levels must it have?
3 energy levels
- Someone who has a mass of 60 kg on Earth (where gravity is about 10 m/s^2) has a weight of 600 N. If this person traveled to a planet where gravity is 5 m/s^2 , what is the person's weight?
 $60 \text{ kg} \cdot 5 \text{ m/s}^2 = 300 \text{ N}$ (300 kg·m/s²)
- An egg was dropped and broke on the ground. When did the egg have the most potential energy?
right before the egg began to fall
- If Neon's atomic number is 10 and its atomic mass is 20, how many electrons does it have?
10 electrons
- What process are ribosomes responsible for?
translation
- Two objects with the same volume, or size, have different masses. Which object would have the greater density?
the object with the greater mass
- A Carbon atom has 6 protons and neutrons. Knowing that Oxygen's atomic mass is 16 amu, what is the mass of a molecule of carbon monoxide (CO)?
 $6 + 6 + 16 = 28 \text{ amu}$
- What is the purpose of mitochondria in eukaryotes?
they produce energy (through cellular respiration)
 $\frac{1}{2}$ POINT: they are the "powerhouse" of the cell
- The collision of tectonic plates between two pieces of continental crust at a converging boundary produces what geological formation?
a mountain range
- In translation, the process of protein synthesis converts what molecule into a chain of amino acids?
messenger RNA (mRNA)
- A proton, a neutron, and an electron each cross paths with another neutron. What will happen to each particle as they approach the neutron?
nothing; the neutron does not affect the other particles