

Name: _____ Date: _____

Answer Key: Tiny Architect's Blueprint: Pre-K Cell Creation Challenge

Construct original cellular systems and predict organelle interactions by designing healthy city-models of microscopic life.

1. Imagine you are building a 'Tiny City' cell. If the Cell Membrane is like a city wall, which of these would happen if the wall had no doors?

Answer: B) No food (nutrients) could get inside

To survive, cells must perform metabolic absorption; without 'doors' or pores in the membrane, essential nutrients cannot enter to feed the cell.

2. True or False: If the Nucleus (the Brain) tells the cell to make a copy of itself, the cell will start to divide and grow.

Answer: A) True

The nucleus controls reproduction; it holds the 'blueprints' (DNA) that tell the cell when it is time to make a new twin cell.

3. If a cell is like a busy kitchen, the Ribosomes are like the ____ that follow recipes to make protein snacks.

Answer: B) Tiny chefs

Ribosomes are protein synthesizers; they 'act' like chefs by putting together amino acid 'ingredients' to build the cell's structures.

4. You are designing a super-fast muscle cell for a cheetah. Which organelle do you need to add extra of to provide enough running energy?

Answer: A) Mitochondria (The Battery)

Mitochondria power cellular respiration, turning food into movement energy (ATP) needed for high-speed activities.

5. True or False: The Golgi Apparatus works like a post office to package up proteins and send them to the right places.

Answer: A) True

Name: _____ **Date:** _____

The Golgi apparatus modifies and packages materials for secretion, ensuring the cell's 'mail' gets to the correct destination.

6. In our cell city, the Lysosome acts like a _____ because its main job is to break down waste and keep the cell clean.

Answer: B) Recycling truck

Lysosomes handle excretion and recycling by using enzymes to digest old parts and waste, similar to a recycling crew.

7. If a plant cell refuses to stand up straight, it might be because its 'water balloon' part (the Vacuole) is empty. What does the plant need?

Answer: C) A drink of water

Vacuoles provide structural support through turgor pressure; when they absorb water, they help the plant stay upright and firm.

8. True or False: The Endoplasmic Reticulum (ER) is like a slide or a highway that helps move things around inside the cell.

Answer: A) True

The ER serves as a transport network and folding center, moving synthesized proteins and lipids toward their next destination.

9. If the Nucleus goes on vacation and leaves no instructions, the cell will stop _____ and cannot make a copy of itself.

Answer: C) Growing

Without the nucleus directing DNA replication, the cell loses its ability to undergo mitosis (reproduction/growth).

10. A cell needs to move away from something scary! Which organelle provides the 'vroom-vroom' energy for this movement?

Answer: B) The Mitochondria

Mitochondria are the powerhouse; they provide the chemical energy (respiration) required for any physical movement of the cell.