Divide and Develop

Track how cell division changes organisms.

LS.2.d "cell division is the mechanism for growth and reproduction; and"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each sentence that explicitly uses *allows* or *supports* to connect cell division to an outcome. Write G beside a growth outcome and R beside a reproduction outcome.

More Cells, New Organisms

1. During a growth spurt, your body does not make giant cells. Instead, many body cells divide. Before a cell divides, it copies its DNA. The cell then separates the copied DNA so that each new cell receives a complete set of instructions. One cell becomes two cells of the same kind. Repeated division increases the number of cells in skin, bone, and muscle. This increase in cell number allows a multicellular organism to grow and replace damaged or worn-out cells.

2. Cell division can also produce new organisms. In binary fission, a bacterium copies its DNA and divides into two bacterial cells. Each daughter cell can carry out life processes on its own, so the two cells are two organisms, not parts of one larger organism. This is asexual reproduction because one parent produces offspring without joining with another parent's cell. Some single-celled eukaryotes also reproduce by cell division. The key result is an increase in the number of independent organisms.

3. In sexual reproduction, cell division has several roles. Specialized cells made by cell division, sperm and eggs, join during fertilization to form one first cell of a new organism. That cell divides again and again as the organism develops. The divisions produce many cells, and later some cells become specialized for different jobs. Thus, cell division supports reproduction by helping create a new organism and supports growth by increasing its cell number. Whether division leads to growth or reproduction depends on what the new cells become and how they function.

2 ANSWER WITH EVIDENCE

Use the passage

1. What happens to a body cell's DNA before the cell divides, and why does this matter for the two new cells?

2. Why does binary fission produce two organisms instead of two parts of one organism?

3. How does asexual reproduction by binary fission differ from sexual reproduction?

4. After fertilization forms the first cell of a new organism, how does cell division help that organism develop?

3 YOUR TURN

Your own words

Make a two-panel sketch. In Panel 1, show cell division helping a cut in a person's skin heal. In Panel 2, show binary fission in one bacterium. Add a caption for each panel that explains whether division increases cells in one organism or increases the number of organisms.

ANSWER KEY

Divide and Develop

GRADES 7-8 · LS.2.d

PART 1 · READ AND MARK

Underline each sentence that explicitly uses *allows* or *supports* to connect cell division to an outcome. Write G beside a growth outcome and R beside a reproduction outcome. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What happens to a body cell's DNA before the cell divides, and why does this matter for the two new cells?	**The cell copies its DNA before dividing. Each new cell then receives a complete set of instructions.**
2	Why does binary fission produce two organisms instead of two parts of one organism?	**Each daughter bacterial cell can carry out life processes on its own, so each is an independent organism.**
3	How does asexual reproduction by binary fission differ from sexual reproduction?	**In binary fission, one parent produces offspring without joining with another parent's cell. In sexual reproduction, a sperm and egg join during fertilization.**
4	After fertilization forms the first cell of a new organism, how does cell division help that organism develop?	**The first cell divides again and again, producing many cells. Later, some cells become specialized for different jobs.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Panel 1: Sketch one skin cell dividing into two cells near a cut. Caption: Cell division makes more skin cells in one person, helping repair the cut. Panel 2: Sketch one bacterium dividing into two separate bacteria. Caption: Binary fission increases the number of independent bacterial organisms from one to two.

Accept equivalent explanations that distinguish adding cells to one multicellular organism from producing independent organisms. In the first panel, students may show growth or repair as long as the caption identifies an increase in cells within one organism.