1. What is sexual reproduction? What is asexual reproduction?

**Review Packet: Cell Division**

Sexual = Two organisms make one offspring

Asexual = One organism makes two offspring

1. After asexual reproduction, are the offspring similar or different? How similar or different are they?

The offspring are identical

1. Why is sexual reproduction important?

It mixes genes and the genes create new outcomes for the offspring

1. Prokaryotic cell division is called…

Binary Fission

1. Describe the process.
2. Double DNA
3. DNA migrates to opposite sides of the cell
4. Cell pulls apart at the poles.
5. Why do cells undergo cell division?

To create more cells

1. Draw a chromosome. Label the centromere, sister chromatids and the overall chromosome.



1. What parts of the chromosome are identical?

Sister chromatids

1. What is the cell cycle?

The life cycle of the cell

1. What are the steps to the cell cycle?

G1, S, G2, M

1. Which steps are considered long? Which are considered short?

G1, G2 – Long

S, M - Short

1. What happens during interphase? What happens during mitosis?

Normal cell processes and DNA doubling - Interphase

Cell division - Mitosis

1. What is mitosis?

Asexual cell division

1. What are the phases of mitosis?

Prophase, Metaphase, Anaphase, Telophase

* 1. How can you remember them?

Interesting Pies, Mike Always Tries

1. What is the longest phase of mitosis?

Prophase

1. Fill in the chart below

|  |  |  |
| --- | --- | --- |
| **Name of Phase** | **What Happens?** | **One Word To Remember the Phase** |
| Prophase | 1. Nuclear membrane breaks apart 2. Chromosome condense 3. Centrioles appear | Prep |
| Metaphase | 1. Chromosomes line up in the middle of a cell 2. Centrioles attach to the centromere | Middle |
| Anaphase | 1. Centromeres pull apart 2. Chromosomes move away from the middle 3. This step ends when the chromatids reach each pole | Away |
| Telophase | 1. Nuclear membrane reappears 2. Chromosomes unravel 3. Centrioles disappear | The End |

1. When is DNA doubled?

S Phase

1. What is the purpose of doubling DNA before mitosis?

Make sure there is enough DNA for both identical daughter cell

1. What word describes the division of cytoplasm between two newly formed cells?

Cytokinesis

* 1. How does that word happen?

Animal cells pull apart or have a cleavage furrow come between them.

Plant cells grow a cell plate between the two new nuclei.

1. If cells are grown in a petri dish, they will stop dividing when they are close to each other. Why?

Density dependent inhibition. They don’t want to compete for resources.

* 1. What would happen if you took your finger and swiped down the middle of that dish?

Cells on the outer edge of the swipe will grow inward

1. What is cancer?

Disease of uncontrolled cellular division.

1. Why is cancer considered a disease of cell division?

It happens when a cell reproduces whenever it wants.

1. How does cancer spread?

Cells can “shed” off the cancer and travel through the lymph system to other organs.

1. What is a karyotype?

A genetic map of chromosomes

1. How many chromosomes are in a typical human karyotype?

23 pairs or 46

1. When looking at a karyotype, how can you tell if something is wrong?

More than 23 pairs of chromosomes, less than 23 pairs of chromosomes or differences in the structure of the chromosome.

1. When looking at a karyotype, how can you tell if the baby is a male? How can you tell if the baby is a female?

Male – XY

Female - XX

1. What is meiosis?

Process of creating gametes

1. Where does meiosis occur?

Wherever gametes are made (ovaries and testes in many animals)

1. What are the differences between mitosis and meiosis?
2. 2 divisions
3. 4 Cells
4. Prophase 1 – Crossing Over
5. Metaphase 1 – Chromosomes line up in pairs
6. Why does meiosis allow for genetic diversity?

It makes more possibilities – more variety and outcomes.

1. What are the differences between mitosis and meiosis?
2. 2 divisions
3. 4 Cells
4. Prophase 1 – Crossing Over
5. Metaphase 1 – Chromosomes line up in pairs
6. Use the space below to draw two pictures. Use the space on the left to draw a picture that includes all of the times a cell undergoing mitosis will split. On the right, draw a picture of all of the times a cell undergoing meiosis will split.

|  |  |
| --- | --- |
| Mitosis | Meiosis |
|  |  |

1. Use the space below to draw all of the steps to mitosis.



1. Use the space below to draw all of the steps to meiosis.

