

## How Cells Divide: Mitosis

Worksheet to accompany PBS Nova Animation

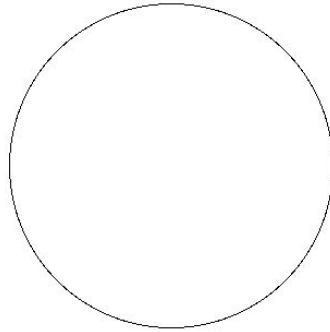
<http://www.pbs.org/wgbh/nova/baby/divide.html>

### *Step 1 – Before We Split*

1. What is the end product of mitosis?
2. How many chromosomes are in the human genome?
3. How many chromosomes are in a sperm or egg cell

Draw the cell as it appears during this stage. Label the following parts:

- Nuclear envelope
- Nucleolus
- Chromatin
- Centrioles

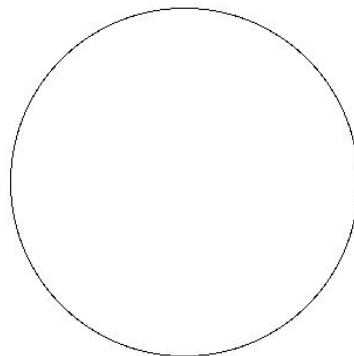


### *Step 2 – Interphase*

4. What replicates during this time?
5. Why are chromosomes not visible during this stage?

Draw the cell as it appears during this stage. Label the following parts:

- Nuclear envelope
- Nucleolus
- Chromatin
- Centrioles

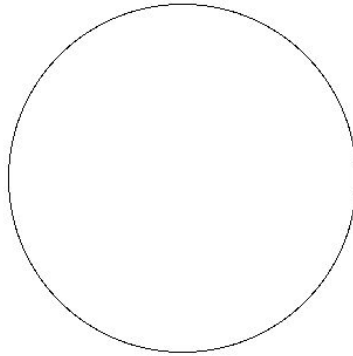


***Step 3 – Prophase***

6. Each chromosome at this stage is made of two identical copies. What are they named?
7. What forms the spindle?
8. What is happening to the nuclear membrane at this stage?

Draw the cell as it appears during this stage. Label the following parts:

- Nuclear envelope
- Spindle fibers
- Chromosomes
- Centrioles



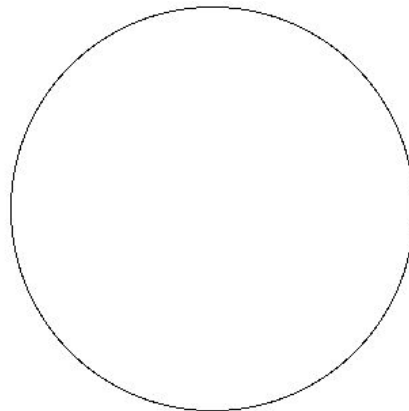
***Step 4 – Prometaphase (skip this stage)***

***Step 5 – Metaphase***

9. Describe the movement of the chromosomes from prophase to metaphase.
10. What is directing the movement of the chromosomes?

Draw the cell as it appears during this stage. Label the following parts:

- Chromosomes
- Spindle fibers
- Centrioles
- Metaphase plate

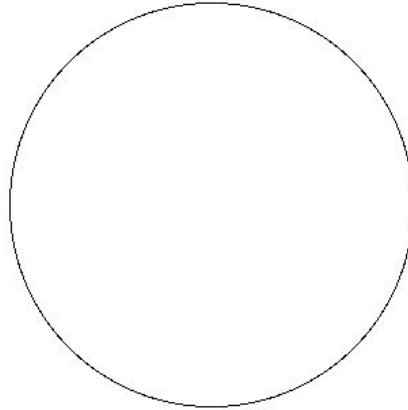


**Step 6 - Anaphase**

11. Describe the movement of chromosomes during this stage.

Draw the cell as it appears during this stage. Label the following parts:

- Chromatids
- Spindle fibers
- Centrioles

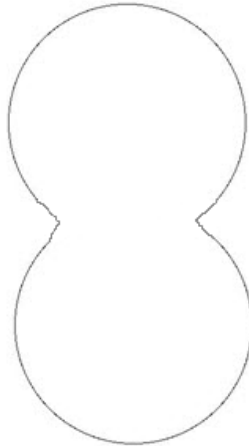


**Step 7 – Telophase**

12. Why is mitosis considered complete after this stage, even though the cell hasn't fully divided?

Draw the cell as it appears during this stage. Label the following parts:

- Chromatids (now considered chromosomes)
- Nuclear envelope
- Centrioles
- Spindle Fibers
- Nucleolus



**Step 8 – Cytokinesis**

Draw the cell as it appears during this stage. Label the following parts:

- Chromosomes
- Nucleolus
- Centrioles
- Nuclear envelope

