

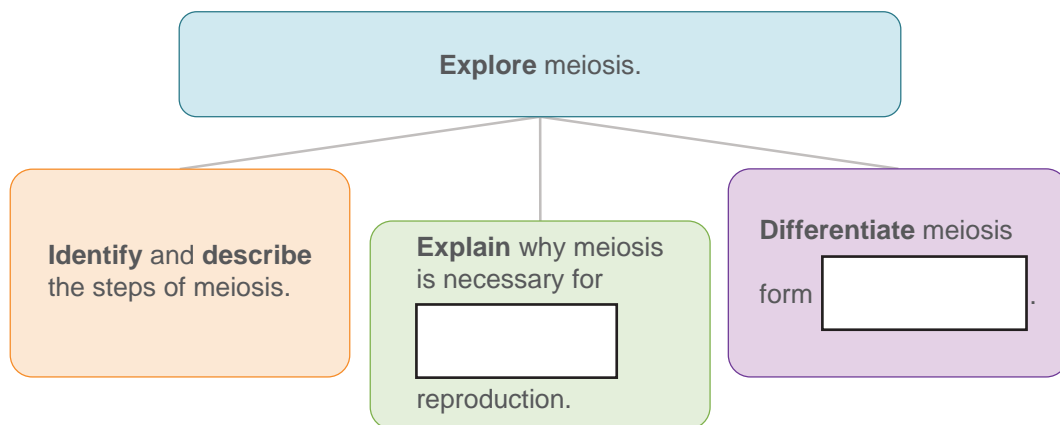
# Warm-Up | Meiosis



## Lesson Question



## Lesson Goals



## Words to Know

Fill in this table as you work through the lesson. You may also use the glossary to help you.

diploid	having pairs of [ ]
haploid	having [ ] the number of chromosomes of a diploid cell
meiosis	the process in which [ ] cell divisions occur, reducing the number of chromosomes by [ ]
sexual reproduction	a type of reproduction in which the [ ] cells of two parents combine to produce offspring

# Warm-Up

## Meiosis

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### Words to Know

egg	the reproductive cell of the <input type="text"/>
fertilization	the <input type="text"/> of an egg and sperm to form a zygote
sperm	the reproductive cell of the <input type="text"/>
zygote	a fertilized egg that results from the <input type="text"/> of a sperm and an egg

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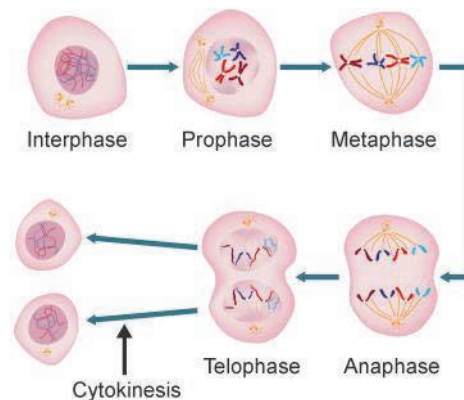
### Mitosis

• Before mitosis begins,  is replicated in interphase.

• During mitosis, the  divides.

- Prophase
- Metaphase
- Anaphase
- Telophase

• After mitosis, two identical cells are formed through .



## Instruction

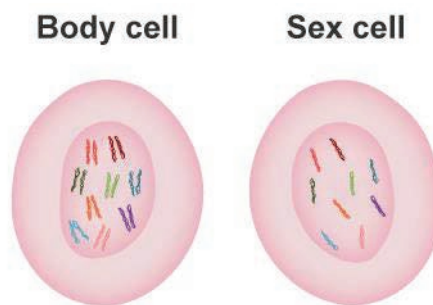
## Meiosis

Slide

2

**Body and Sex Cells**

- Body cells are .
- Diploid cells contain pairs of .
- Human body cells contain  pairs of chromosomes, or 46 total.
- Sex cells are .
- Haploid cells have  the number of chromosomes of a diploid cell.
- Humans sex cells have 23 chromosomes.



4

**Meiosis**

- Sex cells are formed through **meiosis**.
  - Two cell  occur – meiosis I and meiosis II
  - The number of chromosomes is reduced by

# Instruction

## Meiosis

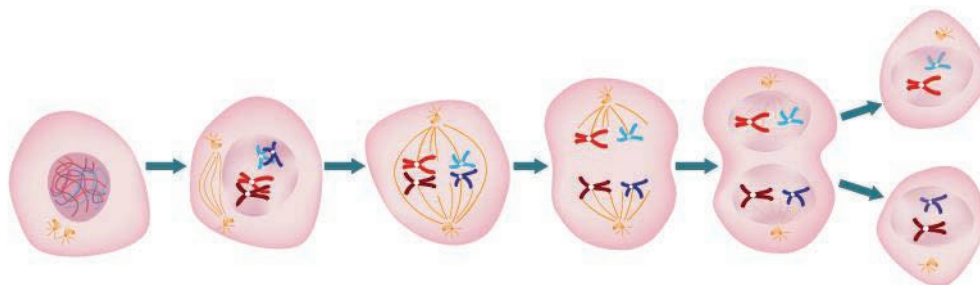
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4

### Meiosis I

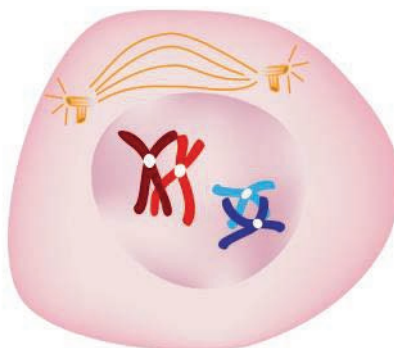
Meiosis I has four steps: , metaphase I, , and telophase I.

*Circle the interphase.*



### Prophase I

- Prophase I:
  - DNA  to form chromosomes.
  - Each chromosome moves toward, and pairs up with, its .
  - around the nucleus begins to .
  - Spindle fibers form.



## Instruction

## Meiosis

Slide

4

**Metaphase I**

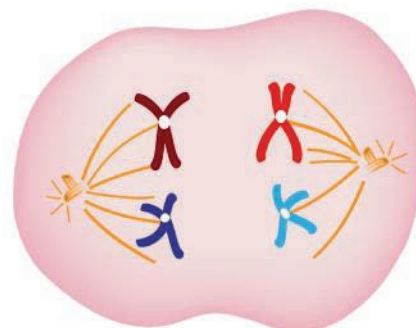
- Metaphase I:
  - Each pair of chromosomes lines up along the middle of .
  - Spindle  attach to the chromosomes.



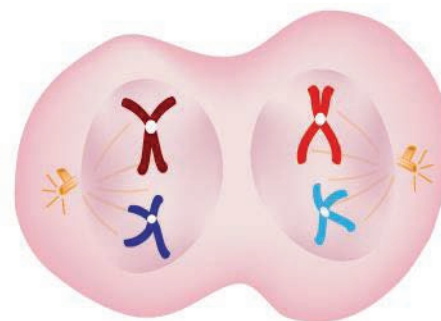
6

**Anaphase I**

- Anaphase I:
  - Pairs of chromosomes .
  - Each chromosome moves to an opposite end of the cell.

**Telophase I**

- Telophase I:
  - The nuclear membrane forms around chromosomes.
  - The  starts to divide.



# Instruction

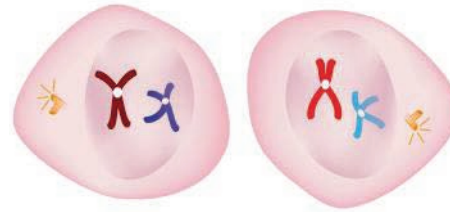
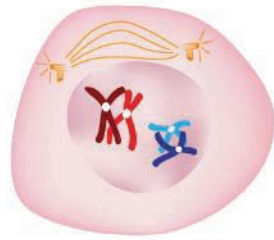
## Meiosis

Slide

6

### Cytokinesis after Meiosis I

After cytokinesis, two  cells are formed.



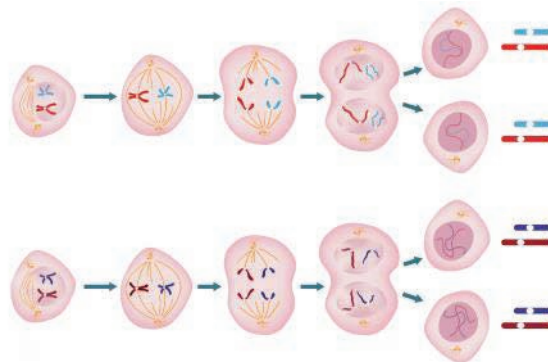
After



8

### Meiosis II

Meiosis II has four steps: prophase II, , , and telophase II.



# Instruction

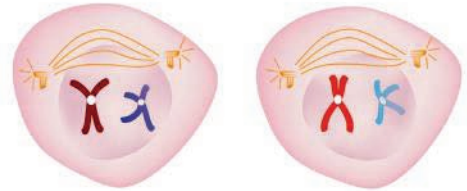
## Meiosis

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8

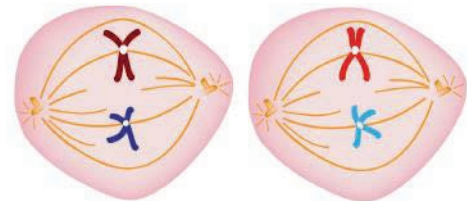
### Prophase II

- Prophase II:
  - DNA  to form chromosomes.
  - fibers form in each cell.
  - The  membrane disappears.



### Metaphase II

- Metaphase II:
  - Chromosomes line up along the  of the cell.
  - Spindle fibers attach to chromosomes.



10

### Anaphase II

- Anaphase II:
  - Each  is pulled .



# Instruction

## Meiosis

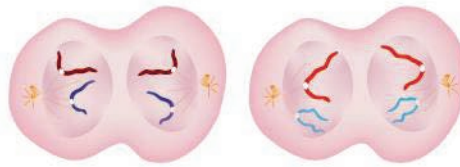
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10

### Telophase II

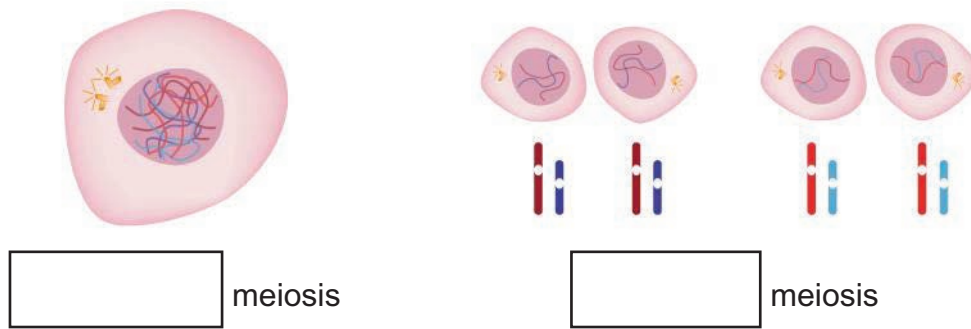
• Telophase II:

- Spindle fibers .
- membranes form.
- The cytoplasm starts to .



### Cytokinesis after Meiosis II

After cytokinesis,  haploid cells are formed.





## Instruction

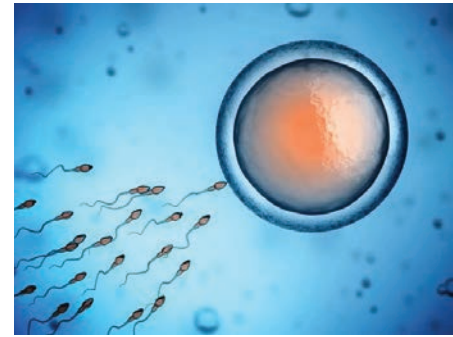
## Meiosis

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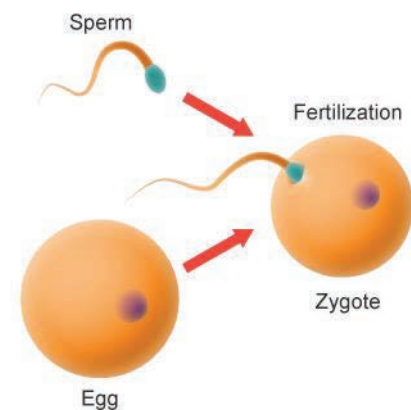
14

**Sexual Reproduction**

- **Sexual reproduction** is a type of reproduction in which the sex cells of two parents combine to produce offspring.
- Sexual reproduction involves sex cells.
  - The female reproductive cell is an .
  - The male reproductive cell is a .

**Fertilization**

- During **fertilization**, the egg and sperm join.
- A  is formed.
- The zygote develops into a new .

**Meiosis and Sexual Reproduction**

- Meiosis ensures that:
  - the  of chromosomes after  is the normal  number of chromosomes for that organism.
  - differences result.

# Instruction

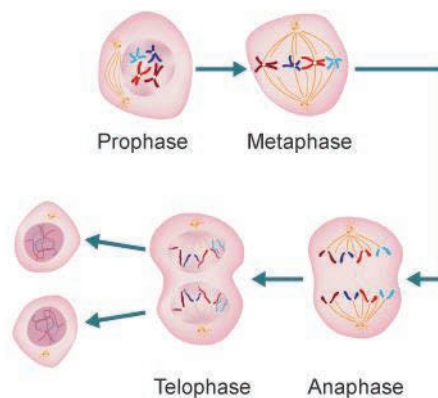
## Meiosis

Slide

17

### Mitosis

- Mitosis involves  cell division.
- Chromosomes are replicated  
 mitosis begins.
- The nucleus divides.
- Two cells with  nuclei result.



### Mitosis and Meiosis

Mitosis	Meiosis
begins with diploid cell	begins with diploid cell
replicates DNA before first step	replicates DNA before first step
involves <input type="text"/> division of nucleus	involves <input type="text"/> divisions of nucleus
produces two <input type="text"/> cells	produces four <input type="text"/> cells

## Summary

## Meiosis

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Lesson  
Question

What is meiosis and why is it important?

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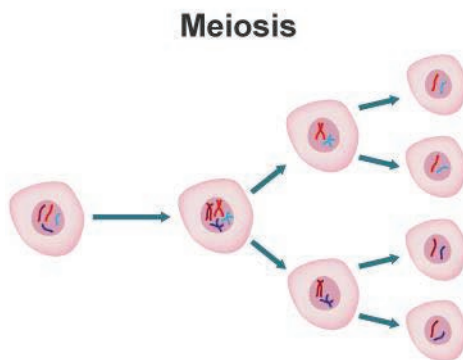
## Answer

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2

## Review: Key Concepts

- Meiosis involves two cell divisions.
- The steps of  are prophase I, metaphase I, anaphase I, and telophase I.
- The steps of  are prophase II, metaphase II, anaphase II, and telophase II.
- Meiosis results in  haploid cells.



# Summary | Meiosis

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2

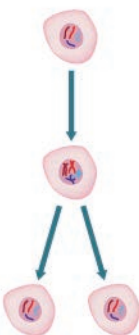
## Review: Key Concepts

- Meiosis produces sex cells that are involved in sexual .
- In sexual reproduction, haploid sex cells combine to form a diploid zygote in a process called .
- Meiosis ensures that the typical number of chromosomes in organisms is maintained after fertilization and that genetic differences result.

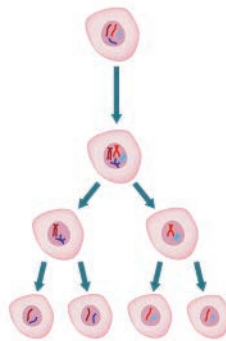
## Review: Key Concepts

- Both mitosis and meiosis begin with a  cell.
- In both mitosis and meiosis,  is replicated before the first step.
- Mitosis involves  division of the  and meiosis involves two divisions of the nucleus.
- Mitosis produces two  cells and meiosis produces four haploid cells.

**Mitosis**



**Meiosis**





# Summary

## Meiosis

*Use this space to write any questions or thoughts about this lesson.*