

Cell Division: Mitosis & Meiosis

With Digital Activities

**For
Special
Ed**

Special Needs for Special Kids





This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, loves to rip any worksheet that comes his way AND he is able to do this unit. He is my tester!!

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This unit contains over 200 pages of material, but don't worry I have detailed lesson plans to show you how to make this last 14 days or more.

Everything highlighted in yellow comes with a digital version of the activity.

Mitosis and Meiosis

Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the pre-recorded version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games
- Flashcards
 - This unit includes a set of flashcards, one for each stage of mitosis
 - I would print these on cards stock and laminate if possible.
 - For additional ideas on how to use these, go to:
<https://specialneedsforspecialkids.org/2018/06/13/making-a-life-sized-timeline/>

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

- *Color Coding:* this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
 - a. For more info, read more here:
<https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/>
 - b. I also have a blog post on differentiating one activity 3 ways:
<https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/>

The lesson plans contain:

Overall tips for teaching
students with significant
needs

Quick Look

| Day | Activity | Day | Activity |
|-----|--|-----|--|
| 1 | <ul style="list-style-type: none"> • Book • Vocab cards introduction • Large sequencing cards intro. | 8 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Sorting activity |
| 2 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Circle map | 9 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Sorting activity |
| 3 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Circle map | 10 | <ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Vocabulary puzzle |
| 4 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Labeling activities | 11 | <ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Vocabulary puzzle |
| 5 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Labeling activities | 12 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Close worksheet |
| 6 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Venn Diagram | 13 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Close worksheet |
| 7 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Lg cards to sequence mitosis • Sequencing worksheet | 14 | <ul style="list-style-type: none"> • Book • Vocab cards activity • Assessment |

The lesson plans contain:


A quick look at what you will do each day.

Day 8

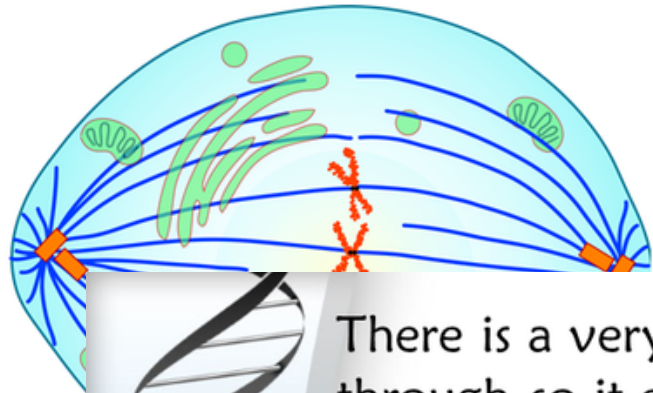
| Activity | Notes | Materials |
|--|--|---|
| Read or listen to a recording of the book (10 minutes) | <ul style="list-style-type: none"> Read through the story, asking lots of questions Continue to make connections between book and vocabulary board | <ul style="list-style-type: none"> Book Vocabulary board |
| Vocabulary cards Bean Bag Toss (10 minutes) | <ul style="list-style-type: none"> Glue the cut apart symbols to the paper plates (one on each plate) Arrange them around the room Students toss the bean bag trying to get it to land on a paper plate Students retrieve the paper plate and share the vocabulary card they retrieved | <ul style="list-style-type: none"> Vocabulary cards Vocabulary cards cut apart Small paper plates (you can also use pieces of construction paper) Bean bags |
| Large Mitosis sequencing cards (10 minutes) | <ul style="list-style-type: none"> Students will practice standing in the correct order to show the sequence of mitosis. Ideas for more structure included in the actual activity (blog post reference) | <ul style="list-style-type: none"> Large Mitosis sequencing cards |
| Sequencing activity review (5 minutes) | <ul style="list-style-type: none"> Review the completed sequence worksheet from yesterday | <ul style="list-style-type: none"> Completed activity from yesterday |
| Sorting activity (10 minutes) | <ul style="list-style-type: none"> Do the one or more of the sorting worksheets Do some today and some tomorrow Add color coding if needed by drawing highlighted lines or dashed lines for students to trace Make sure students have either their vocabulary cards to reference Make connections to the book as necessary | <ul style="list-style-type: none"> Sorting worksheet Scissors Glue Vocabulary cards |
| Sharing (10 minutes) | <ul style="list-style-type: none"> Each student shares their finished matching worksheet | <ul style="list-style-type: none"> Completed activity Communication devices |

The lesson plans contain:

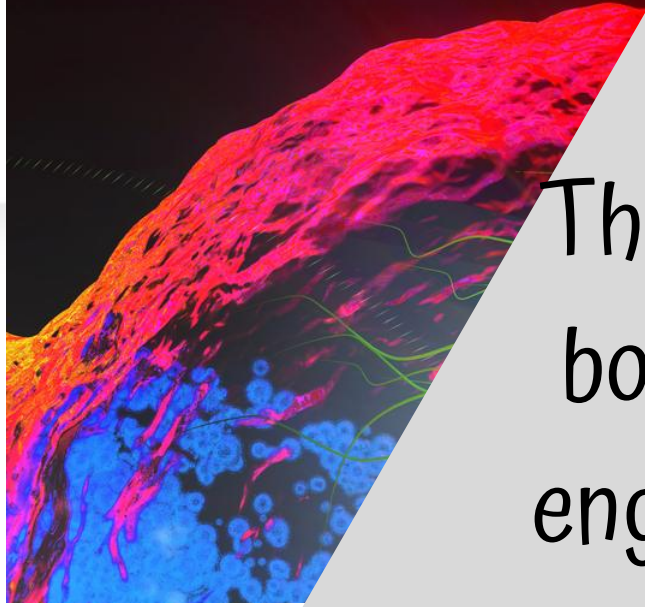
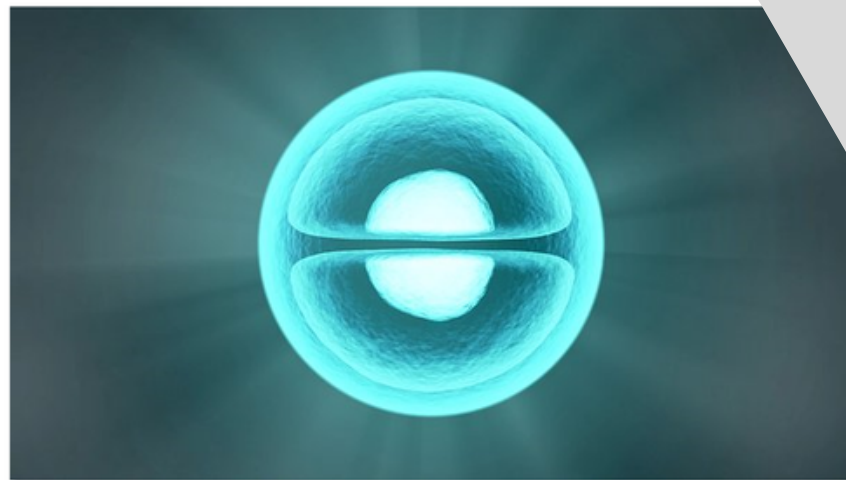
Detailed instructions on how that day's lesson should run.



The next phase is **metaphase**. In this phase, the chromosomes, that have found their identical partner, start lining up along the center of the cell.



There is a very specific process the cell goes through so it ends up with 2 new cells that have exactly the same genetic information.



This unit contains a 44-page book. It has simple text and engaging photos. I encourage teachers to start **EVERY** lesson with this book.

It comes in a pdf and a voice recorded version so you don't have to print it out.

Once it is big enough, it simply pinches in the middle and makes 2 new cells that are exactly the same.



There is an mp4 version of the book which you can play in google or assign for students to watch and listen to in google classroom.

Play (k)

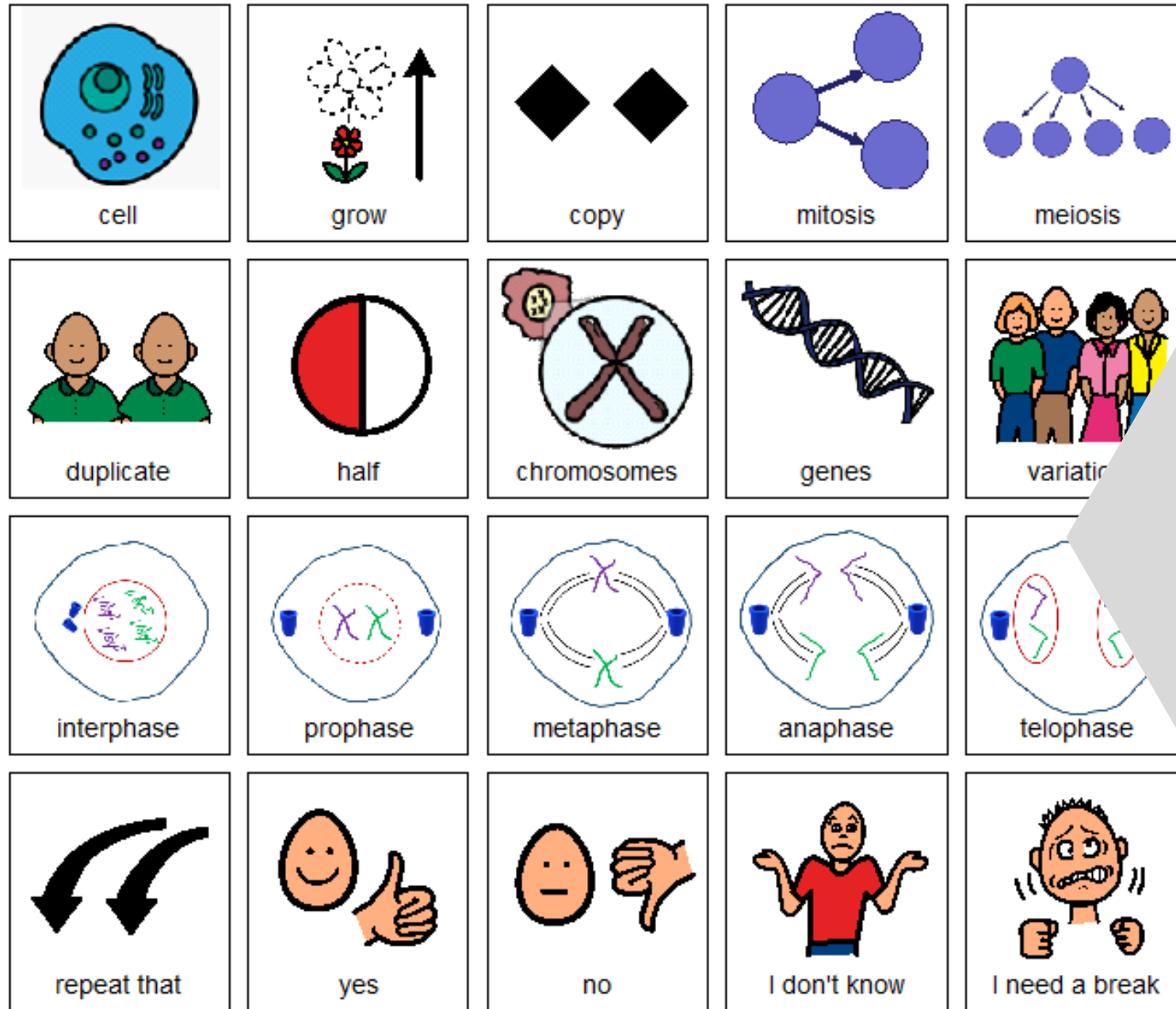
▶ ▶| 🔊 1:34 / 7:49

Christa Joy, Special Needs for Sp... CC

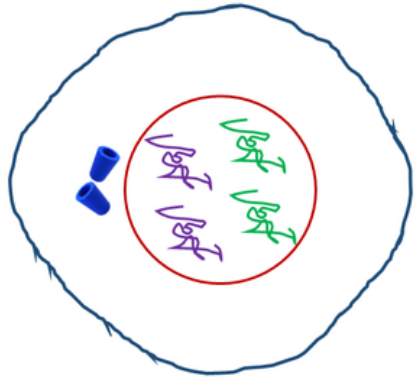
This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!

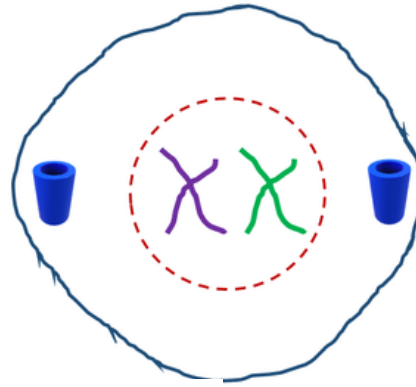


Interphase



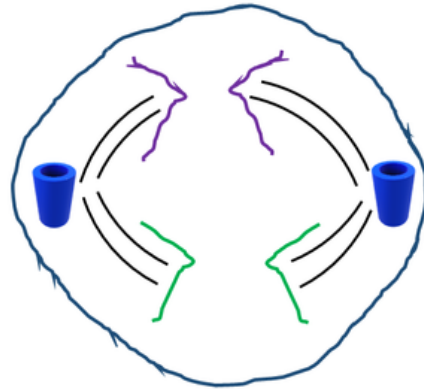
Christa Joy, Special Needs for Special Kids

Prophase



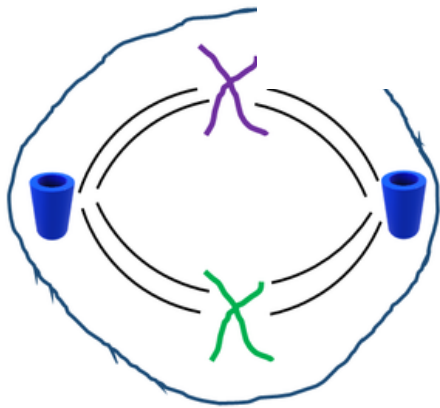
Christa Joy, Special Needs for Special Kids

Anaphase



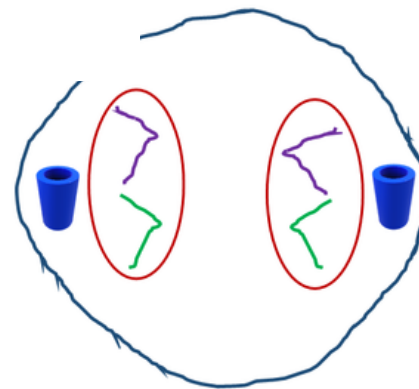
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Metaphase



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Telophase

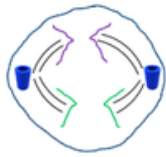


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There are large cards in the printable version that depict each stage of mitosis. There are suggestions for how to use these as group activities.

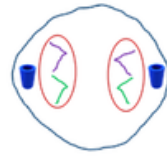
anaphase

Stage 3. Spindles from the centrioles pull the pairs of chromosomes apart to opposite sides of the cell.



telophase

Stage 4. A new nucleus forms around each set of chromosomes. Cell pinches in the middle.



chromatin

Genetic material in nucleus during interphase; loose coiled strands.



chromosome

Made up of DNA, they tell the cell what to do.



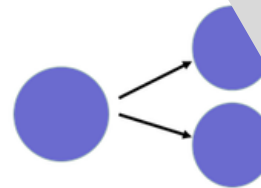
cytokinesis

Division of the cell at the end of mitosis and meiosis.



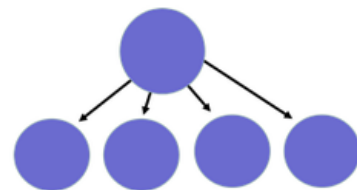
mitosis

Cell division that ends with two daughter cells that have the same set of chromosomes as the original cell.



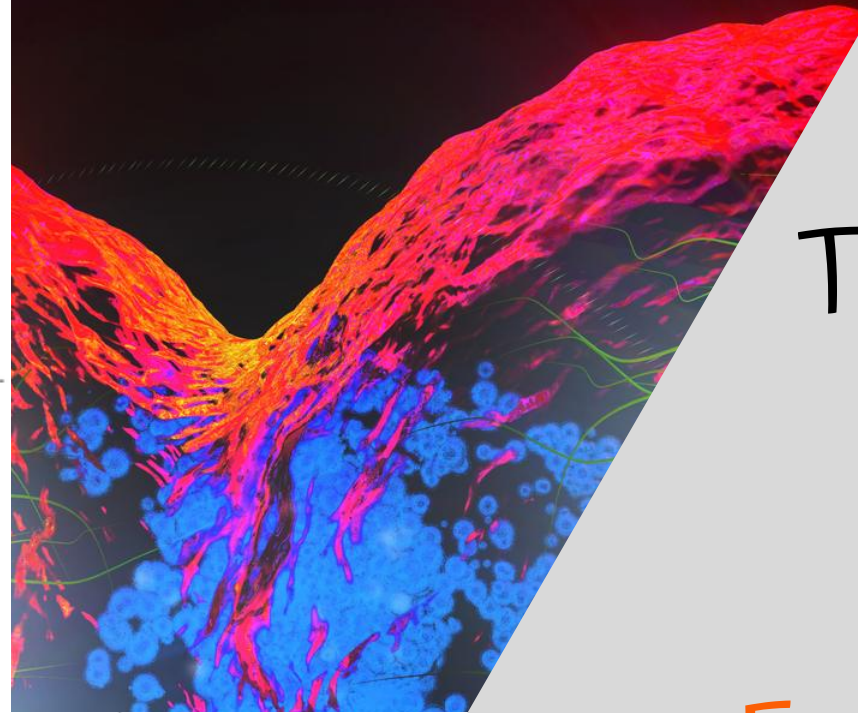
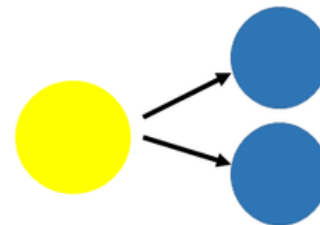
meiosis

Cell division that ends with 4 new cells that have half the number of chromosomes as the original cell.



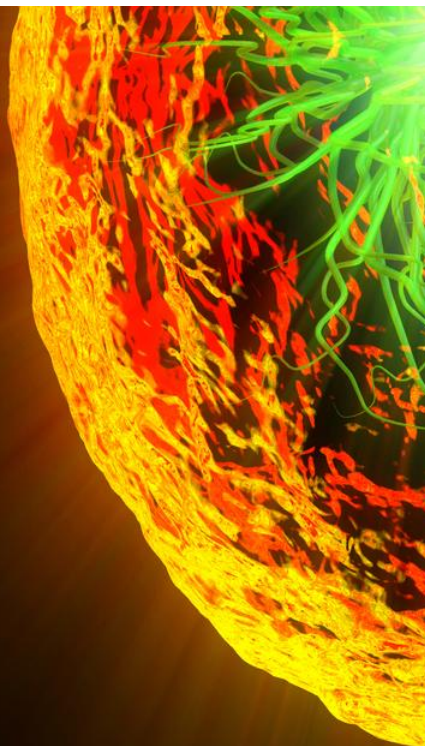
mother cell

The original cell in mitosis and meiosis.



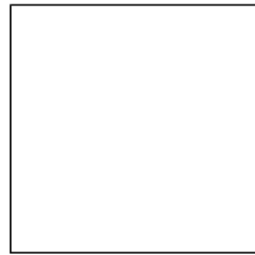
This unit comes with 16 vocabulary cards.

Every day students will do a group activity using these cards to get more familiar with words that are likely new to them.



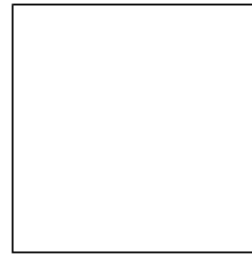
diploid

Cell containing two complete sets of chromosomes, one from each parent.



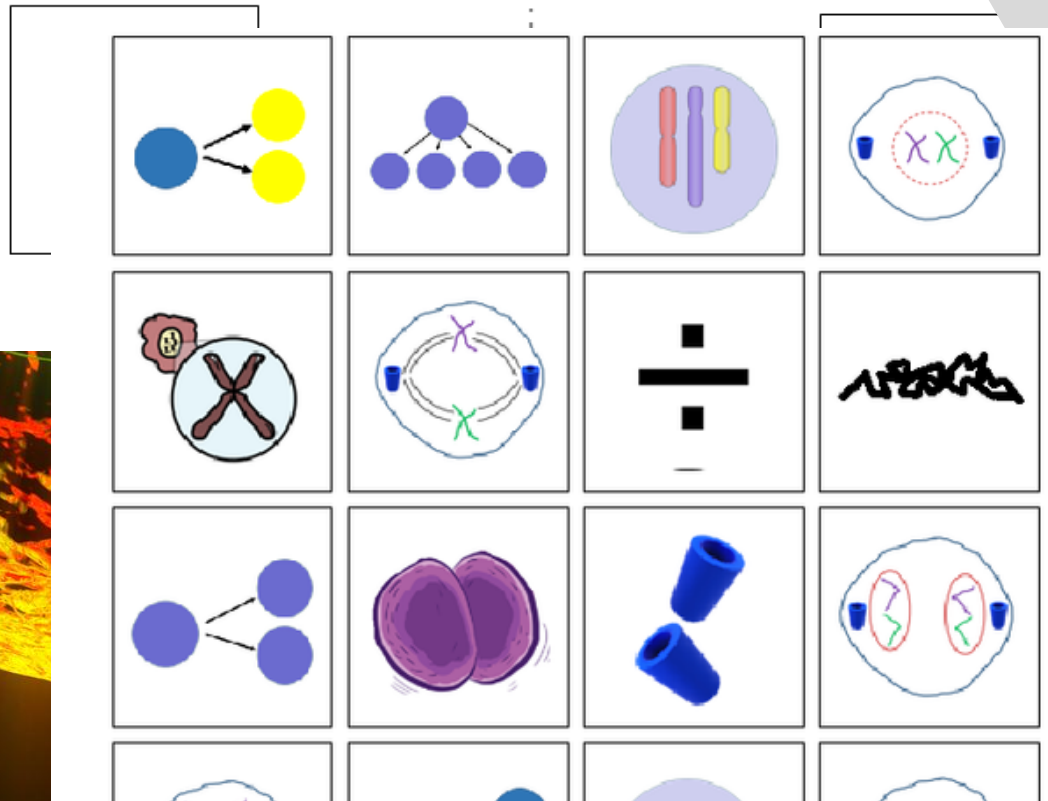
haploid

Cell having a single set of unpaired chromosomes.



centriole

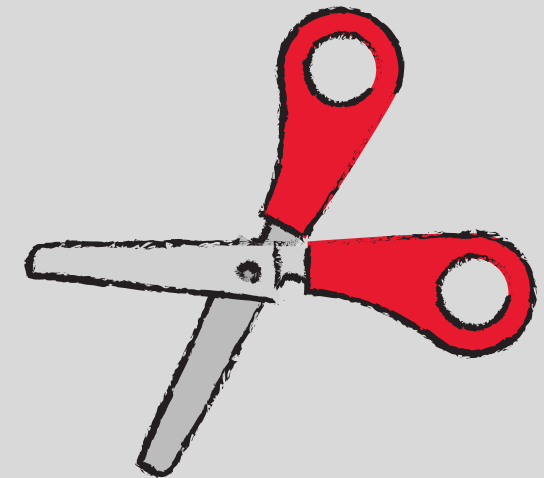
Organelle that uses spindle or fibers to pull the chromosomes apart during mitosis and meiosis.



binary fission

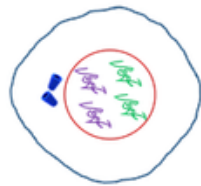
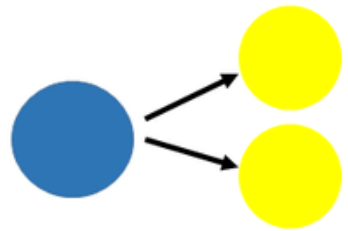
Most simple form of cell division in bacteria.

Students will also test their knowledge of these new words and symbols with a cut and paste activity on days 10&11.



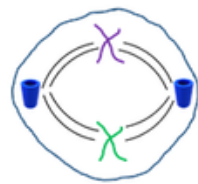
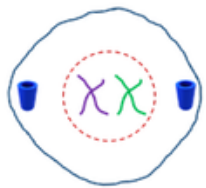
daughter cell

interphase



prophase

metaphase



new nucleus forms around chromosomes. Cell pinches in middle.

Cell having a single set of unpaired chromosomes.

Division of the cell at the end of mitosis and meiosis.

Stage 3. Spindles from the centrioles pull the pairs of chromosomes apart to opposite sides of the cell.

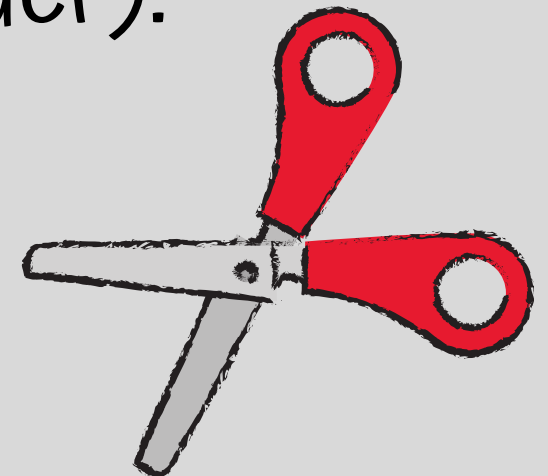
The rest phase and when the chromosomes are duplicated.





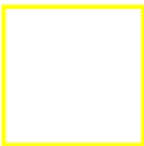



Cell division that ends with 4 new cells that have half the number of chromosomes as the original cell.

Organelle that uses spindle or fibers to pull the chromosomes apart during mitosis and meiosis.

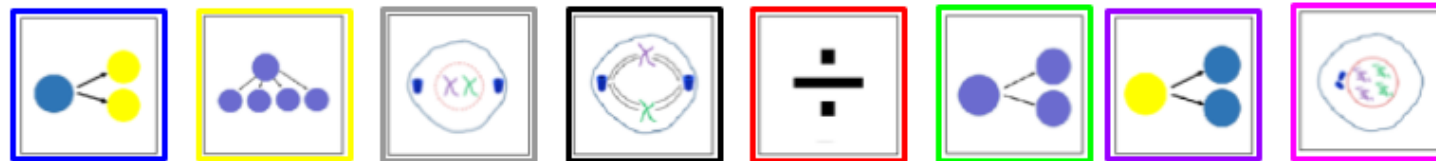
You have 2 choices:

1. Students match the picture to the definition (easier).
2. Students match the definition to the picture (harder).



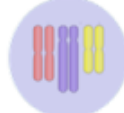

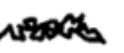





| | | | |
|---|---|--|--|
| <p>cytokinesis</p> <p>Division of the cell at the end of mitosis and meiosis.</p>  | <p>mitosis</p> <p>Cell division that ends with 2 new cells that have the same set of chromosomes as the original cell.</p>  | <p>daughter cell</p> <p>2 new cells that result from mitosis.</p>  | <p>interphase</p> <p>The rest phase and when the chromosomes are duplicated.</p>  |
| <p>meiosis</p> <p>Cell division that ends with 4 new cells that have half the number of chromosomes as the original cell.</p>  | <p>mother cell</p> <p>The original cell in mitosis and meiosis.</p>  | <p>prophase</p> <p>Stage 1. Chromatin forms into chromosomes that form pairs.</p>  | <p>metaphase</p> <p>Stage 2. The chromosomes align in the center of the cell.</p>  |

Place the words in the correct order for mitosis.



There are digital versions of the vocabulary matching activities. Both versions (matching the pictures and matching the definitions) are included.

| | | | |
|---|--|--|--|
| anaphase | telophase | diploid | haploid <small>Day 11 differentiated</small> |
|  |  |  |  |
| chromatin | chromosome | centriole | binary fi |
|  |  |  |  |

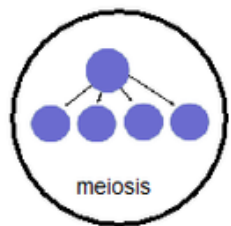
Place the words in the correct order for mitosis.


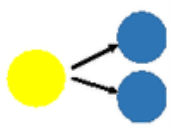

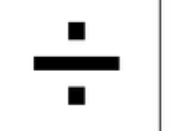

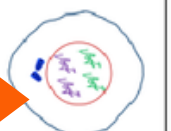
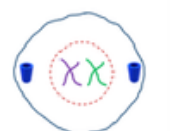


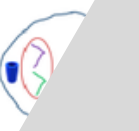
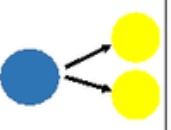


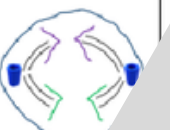
| | | | |
|--|--|--|---|
| Cell having a single set of unpaired chromosomes. | Stage 4. A new nucleus forms around each set of chromosomes. Cell pinches in the middle. | Organelle that uses spindle or fibers to pull the chromosomes apart during mitosis and meiosis. | Made up of DNA, they tell cell what to do. |
| Genetic material in nucleus during interphase; loose coiled strands. | Cell containing two complete sets of chromosomes, one from each parent. | Stage 3. Spindles from the centrioles pull the pairs of chromosomes apart to opposite sides of the cell. | Most simple form of cell division done by bacteria. |

The differentiated versions include color coding so more students can complete these worksheets independently.

Meiosis

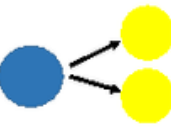

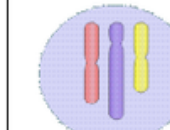
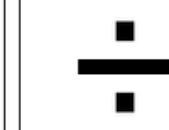






wrong answers mixed in

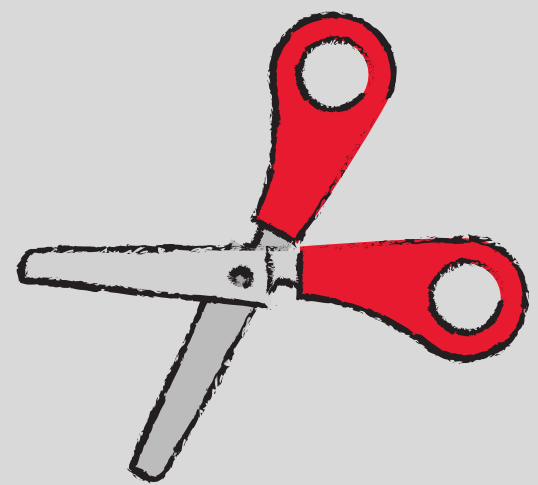


| | | | | |
|--|---|--|--|---|
|  binary fission |  mother cells |  haploid |  cytokinesis |  cell divisions |
|  interphase |  prophase |  pencil |  bacteria |  |
|  daughter cells |  cell divisions |  metaphase |  anaphase | |

There are 2 circle maps in this unit. Each has a version that is errorless and one that has wrong answers mixed in that students will set aside.






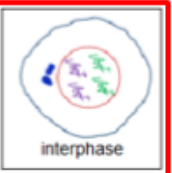
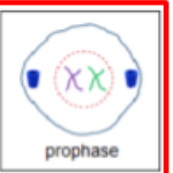

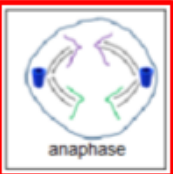
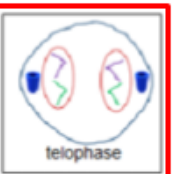
errorless

| | | | | |
|---|---|--|--|--|
|  daughter cells |  mother cells |  haploid |  cytokinesis |  cell divisions |
|  interphase |  prophase |  metaphase |  anaphase |  telophase |



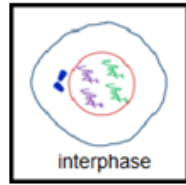
Day 2
differentiated

Place pictures in circle map about mitosis.

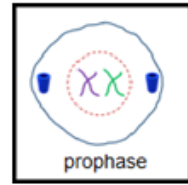
| | | | |
|--|---|---|---|
|  daughter cells |  mother cells |  diploid |  |
|  2 cell divisions |  interphase |  prophase |  |
|  anaphase |  telophase | | |

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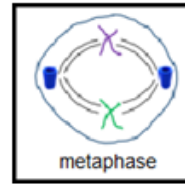
There is a drag and drop version of the circle maps in this unit. The differentiated versions contains only correct answers.















interphase



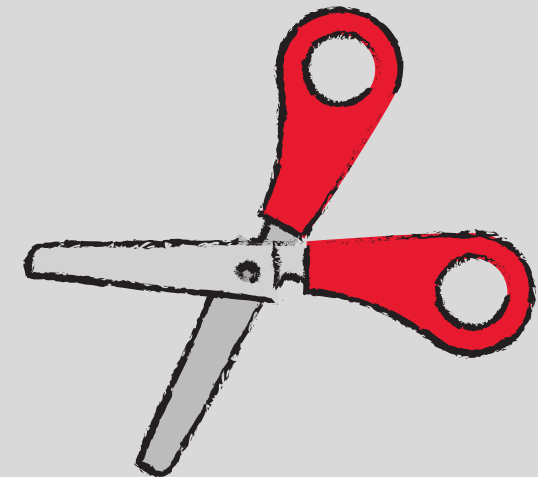
prophase

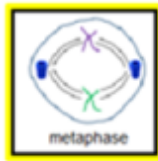


metaphase

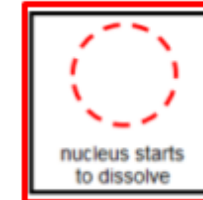
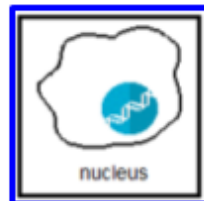
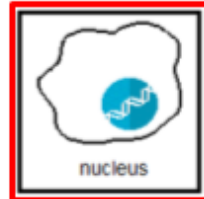
| | | |
|---|--|--|
|  nucleus |  chromatin |  centrioles |
|  nucleus |  chromosomes |  centrioles |
|  spindles |  chromosomes |  centrioles |
|  chromosomes line up |  nucleus starts to dissolve |  chromosomes double |

There are a sorting activities included. You can easily add color coding if needed to quickly differentiate these. This is done for you in the digital version.





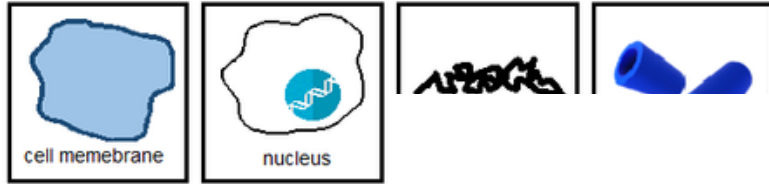
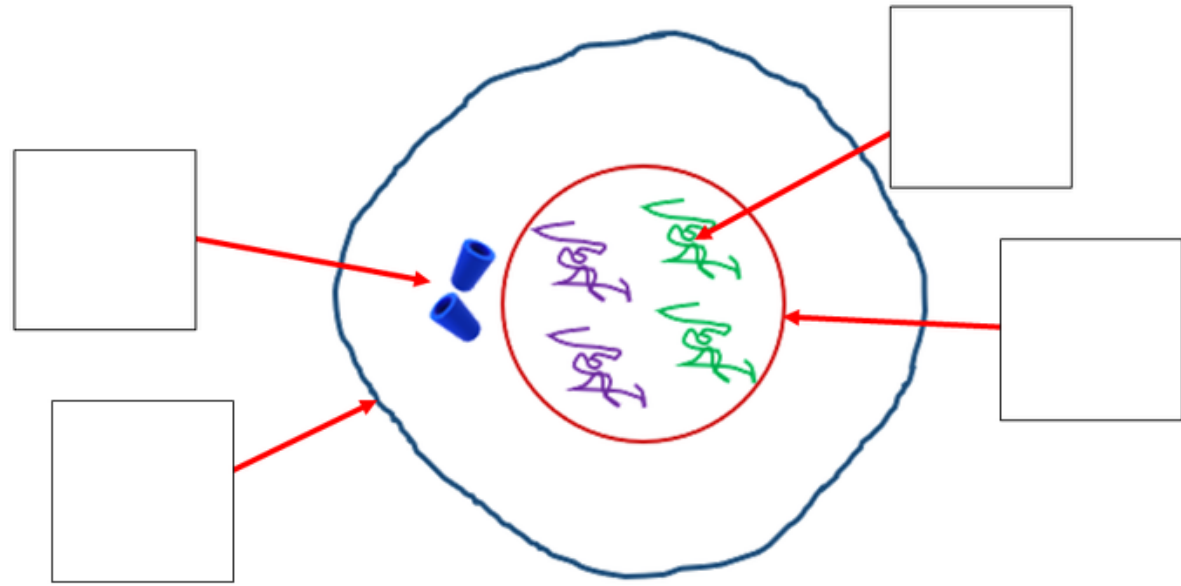
Sort the pictures into the correct column



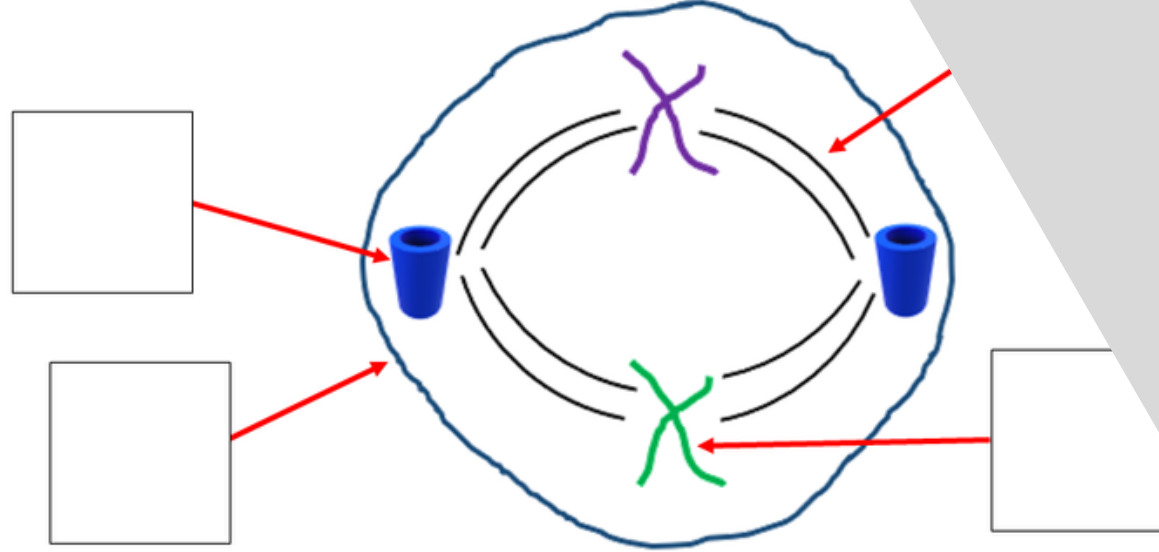
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The sorting activities are included as a digital activity. It comes in a regular and differentiated form using color coding.

Interphase

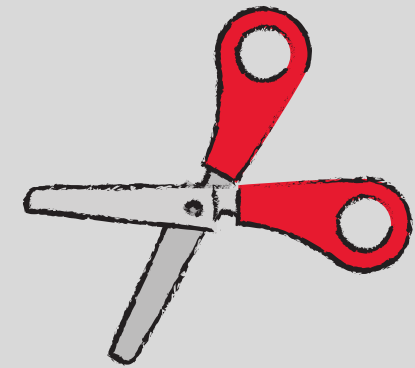


Metaphase

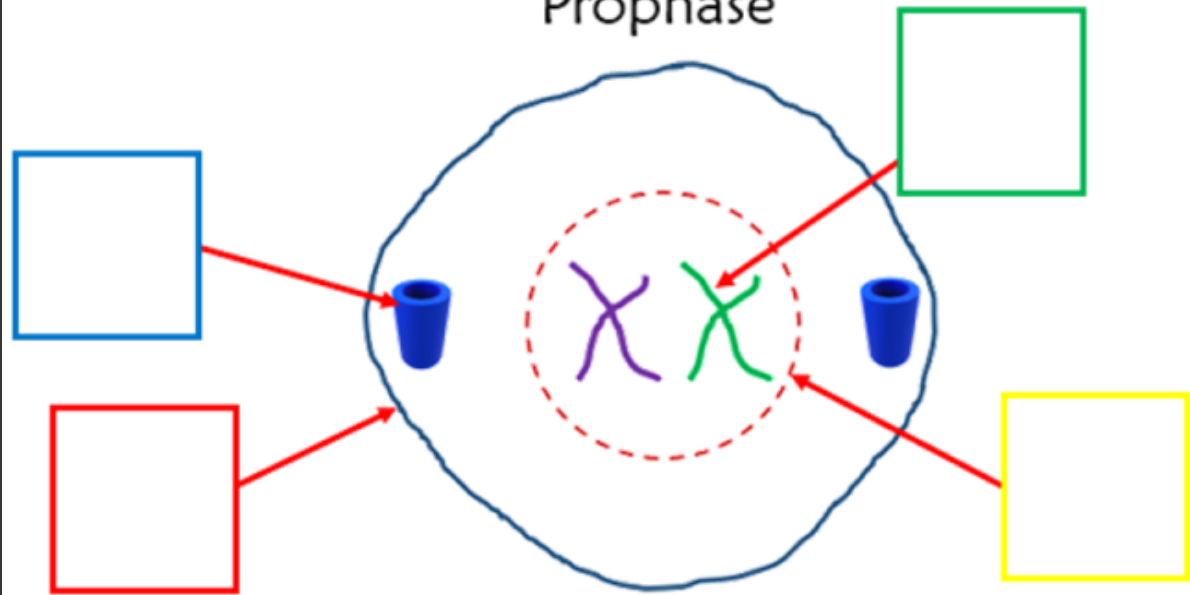


There are labeling worksheets included in this unit. There is one for each stage of mitosis.

This set labels the cell structures involved in each stage.



Prophase

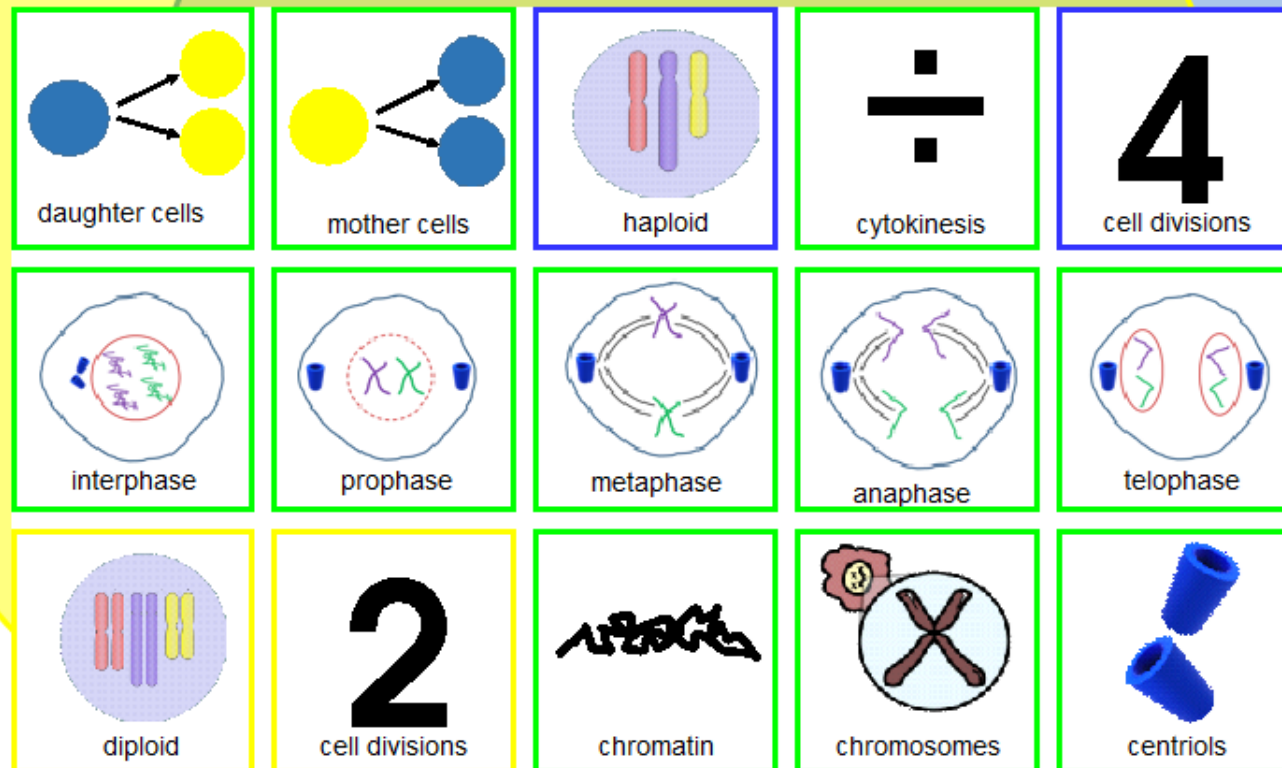
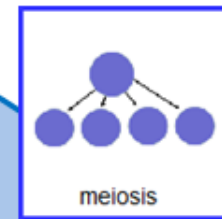
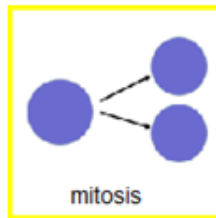


Day 4
differentiated

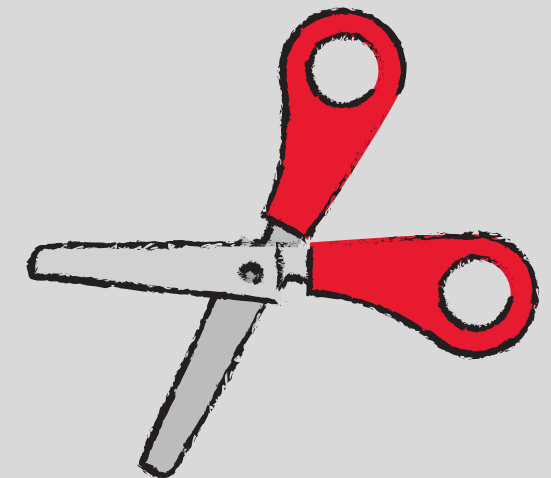
Label the structures involved
in prophase during mitosis.

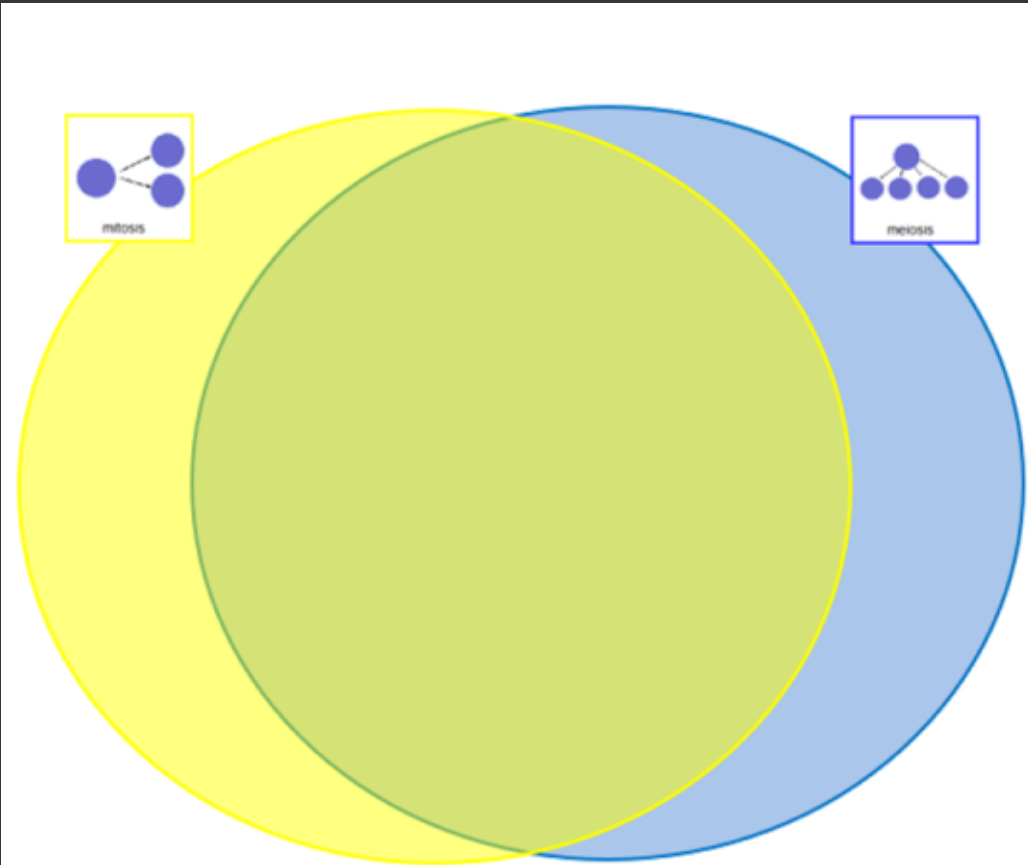


All of the labeling activities come in digital versions. The differentiated set uses color to differentiate.



There is a Venn diagram in this unit. It compares mitosis and meiosis. There is a color-coded option provided.





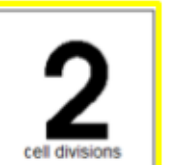
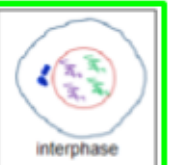
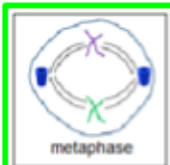

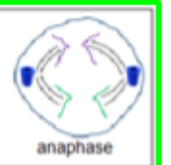
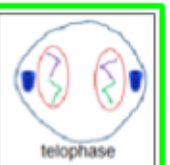


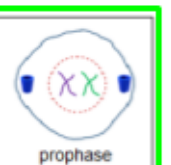
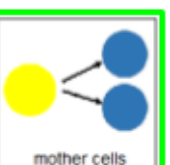






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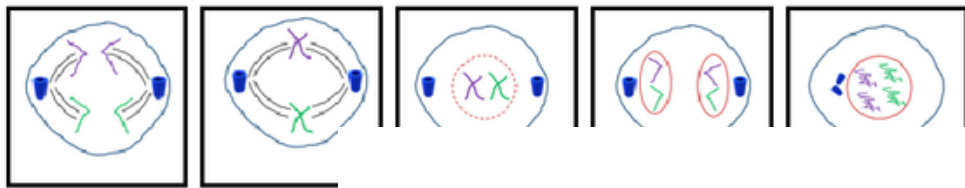
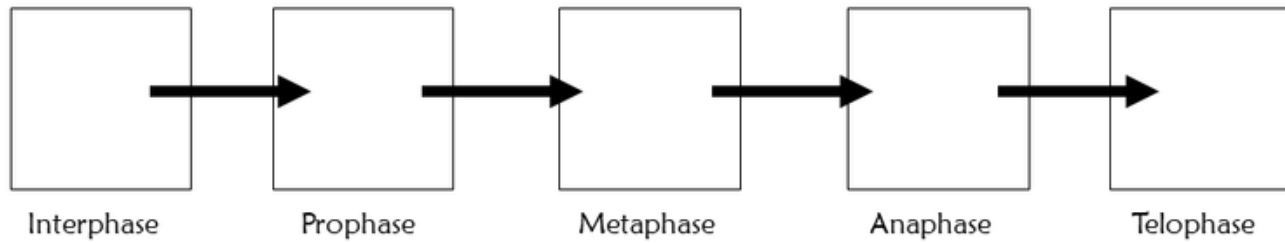
Day 6
 differentiated

Place the pictures in the correct locations on the Venn Diagram.

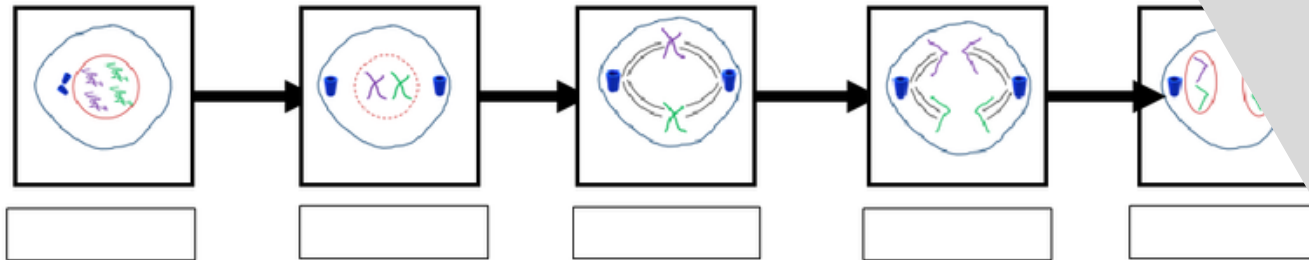
| | | | |
|--|---|---|---|
|  daughter cells |  haploid |  diploid |  cytokinesis |
|  2 cell divisions |  interphase |  metaphase |  anaphase |
|  telophase |  prophase |  chromatin |  centrioles |
|  mother cells |  centrioles |  centrioles |  centrioles |

It also comes in a digital version. The differentiated one uses color coding.

Sequence the following stages of mitosis.



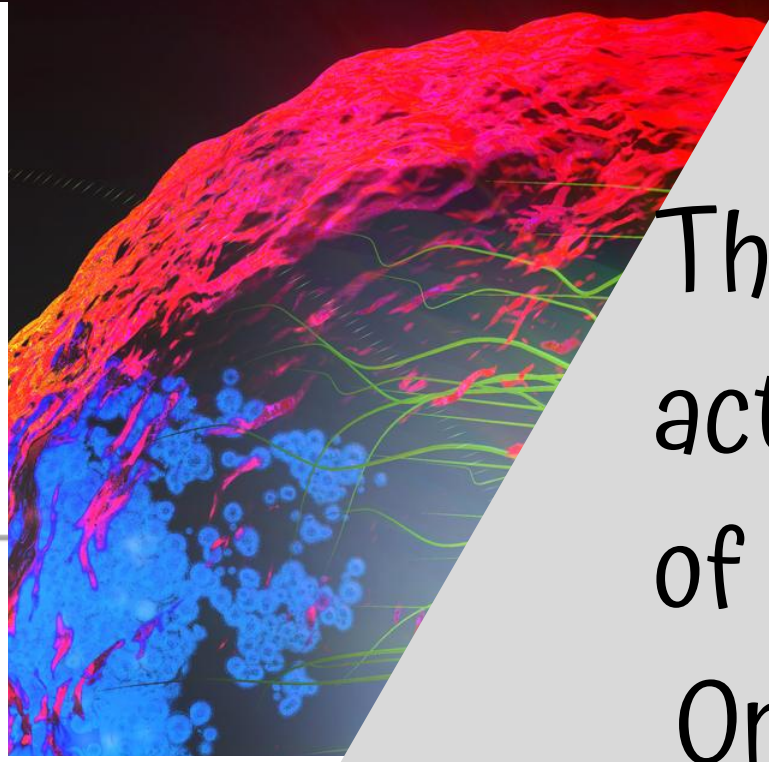
Sequence the following stages of mitosis.



Telophase Anaphase

Metaphase

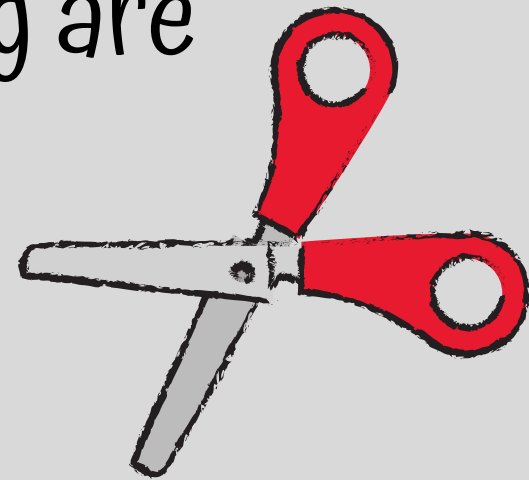
Interphase Prophase



There are 2 sequencing activities (the stages of mitosis) included.

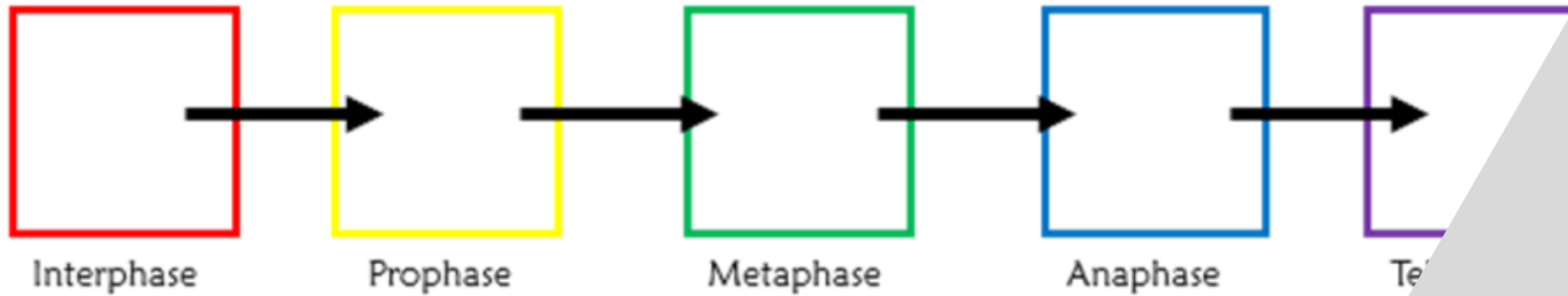
One uses pictures and one uses words.

Directions on adding color coding are included.



Sequence the following stages of mitosis.

Day 7
differentiated



















Place the pictures in the correct order for mitosis.



The digital versions have students drag and drop the pictures or words into the correct sequence.

The differentiated versions use color coding.











Mitosis and Meiosis







| | | | | |
|--|---|--|---|--|
| |  chromosome | |  centriole |  cytokinesis |
|  centriole | | | | |
|  mitosis |  chromosome | | |  chromatin |
|  centriole |  chromatin |  cytokinesis |  chromosome | |
| |  centriole |  chromosome |  cyt | |
| |  diploid |  mitosis | | |

Harder

easier

Mitosis and Meiosis

| | | | |
|---|--|--|--|
| |  cytokinesis | |  haploid |
|  haploid |  mitosis | |  chromatin |
|  mitosis |  chromatin | |  cytokinesis |
| |  haploid | |  mitosis |






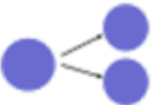




| | | |
|--|--|--|
|  cytokinesis |  cytokinesis |  haploid |
|  mitosis |  chromatin |  chromatin |

There are 2 Sudoku puzzles included. These are to help practice more with the new vocabulary.

The hard version is a 6x6 puzzle. The easy one is 4x4.

Answer key included.



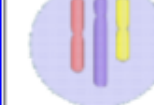

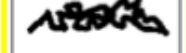

Mitosis and Meiosis

| | | | |
|--|--|--|--|
| |  cytokinesis | |  haploid |
|  haploid |  mitosis | |  chromatin |
|  mitosis |  chromatin | |  cytokinesis |
| |  haploid | |  mitosis |

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Day 10
differentiated

Use the pictures to finish the Sudoku puzzle.

| | | |
|--|--|--|
|  cytokinesis |  cytokinesis |  haploid |
|  mitosis |  chromatin |  chro |

The 4x4 puzzle is included as a digital activity.

The differentiated version uses color coding.

Mitosis

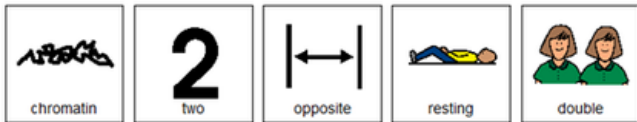
1. When mitosis occurs, you end up with identical cells.

2. Interphase is also the phase.

3. Interphase is also when the chromosomes .

4. In prophase, the comes together to form chromosomes.

5. In prophase, the centrioles move to sides of the cell.



Meiosis

1. Unlike mitosis, there are cell division th

2. At the end, there are 4 cells with the num. chromosomes as the mother cell.

3. Meiosis occurs so the whole or can replicate.

4. The stages are very similar to what occurs in .

5. In meiosis, the chromosomes get so close, there is that happens with the genetic material.



There are 4 close worksheets included for a review. 2 cover mitosis and 2 cover meiosis.

Answer key included.

Mitosis

12

differentiated

1. When mitosis occurs, you end up with identical cells.

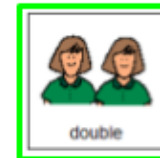
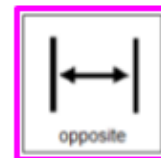
2. Interphase is also the phase.

3. Interphase is also when the chromosomes .

4. In prophase, the comes together to form chromosomes.

5. In prophase, the centrioles move to sides of the cell.

Use the pictures to finish each sentence.

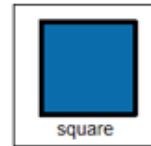


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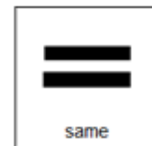
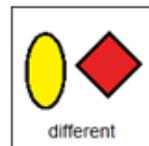
These fill in the blank worksheets also come in digital forms.

The differentiated versions use color coding.

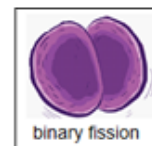
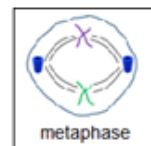
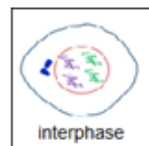
1. Mitosis and meiosis are ways to replace cells that are:



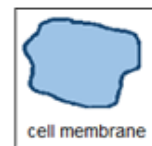
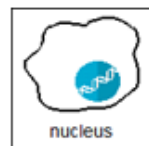
2. The mother cell produces two daughter cells that are:



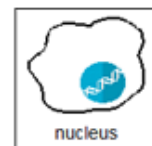
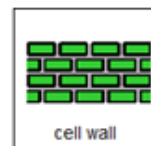
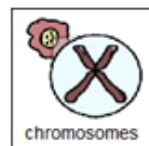
3. In mitosis, the resting stage where the chromosomes are doubled is called:



4. In mitosis and meiosis, the organelles that pull the chromosomes apart are:



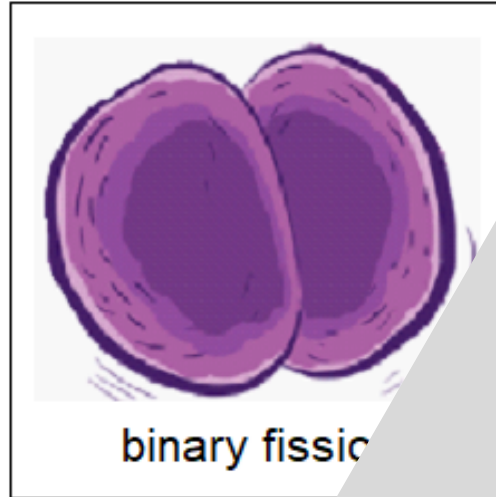
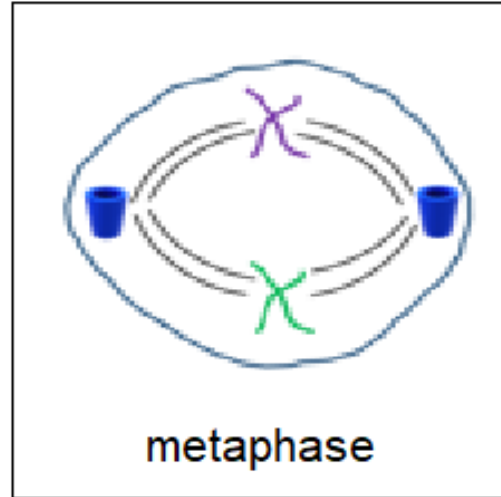
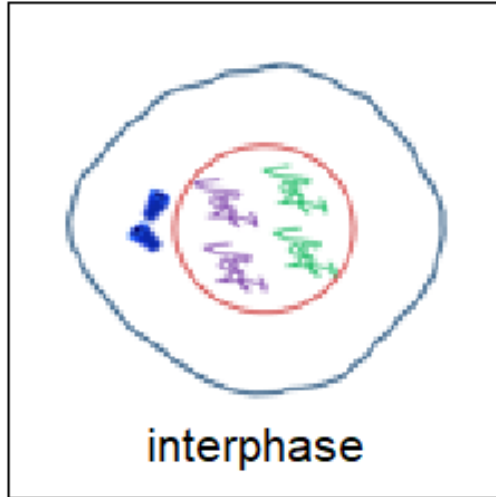
5. In mitosis and meiosis, what dissolves so the chromosomes can move to opposite ends of the cell?



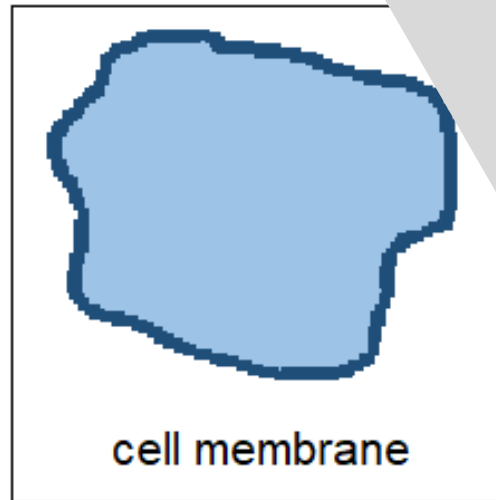
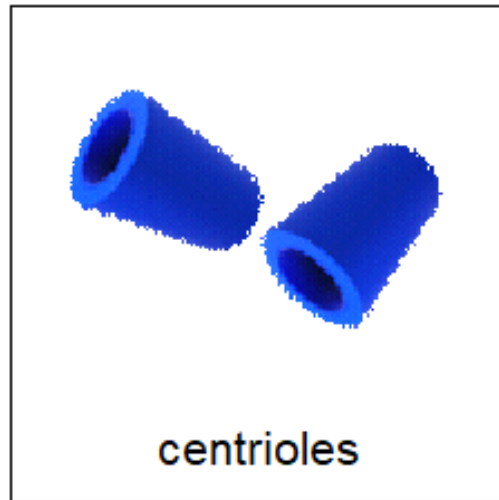
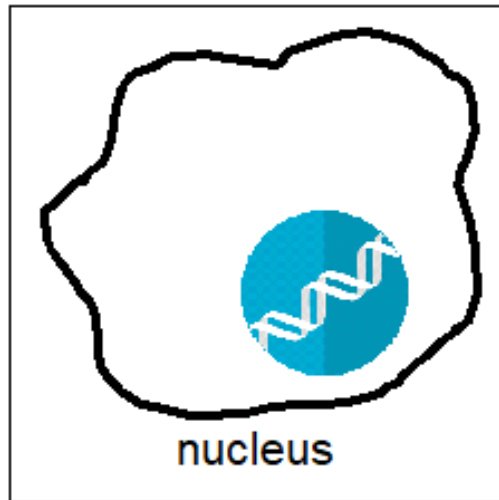
FINALLY the assessment!! There are 3 versions. This version has 10 questions with 3 picture choices for each question.

Answer key included.

Q 3



Q 4



With this version, you cut out the answer choices and glue them on index cards. Ask the student the question, and they point to the correct answer.

1. Mitosis and meiosis are ways to replace cells that are:
 - A. old
 - B. square
 - C. new
2. The mother cell produces two daughter cells that are:
 - A. different
 - B. broken
 - C. same
3. In mitosis, the resting stage where the chromosomes are doubled is called:
 - A. interphase
 - B. metaphase
 - C. binary fission
4. In mitosis and meiosis, the organelles that pulls the chromosomes apart are:
 - A. nucleus
 - B. centrioles
 - C. cell membrane
5. In mitosis and meiosis, what dissolves so the chromosomes can move to opposite ends of the cell?
 - A. chromosomes
 - B. cell wall
 - C. nucleus
6. This is the process of the cell actually splitting into two:
 - A. cytokinesis
 - B. chopping
 - C. cutting

There is also a traditional multiple choice version. You can also use this to record student answers if using the version with index cards.

1. Mitosis and meiosis are ways to replace cells that are:



2. The mother cell produces two daughter cells that are:



3. In mitosis, the resting stage where the chromosomes are doubled is called:



4. In mitosis and meiosis, the organelles that pull the chromosomes apart are:

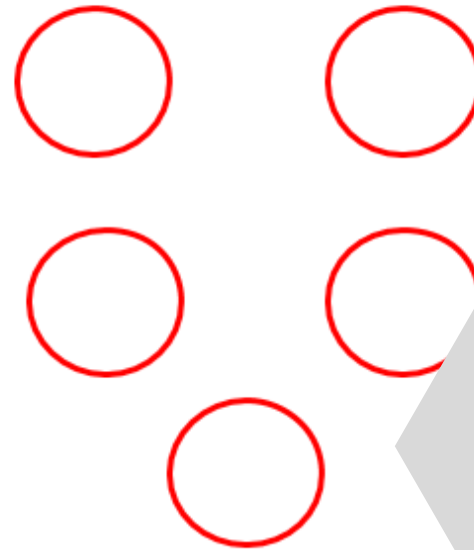


5. In mitosis and meiosis, what dissolves so the chromosomes can move to opposite ends of the cell?



Day 14
differentiated

Place a circle on the correct answer.



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The digital version of the assessment looks like this. There is a differentiated version where the correct answers are already circled with a dashed line.

A 3D anatomical model of a brain, showing internal structures like the cerebellum and brainstem. The model is rendered in vibrant colors: yellow and orange for the outer layers, green for internal structures, and blue for other areas. A large, red prohibition sign (a circle with a diagonal slash) is overlaid on a pair of red scissors, indicating that cutting activities are not recommended or are being discussed in a specific context.

Click Here to read more!!

I realize there will be some students out there unable to do cutting activities. I have a blog post with ways to complete activities without a pair of scissors!!