Asexual Cell division Part 1

SCIENCES

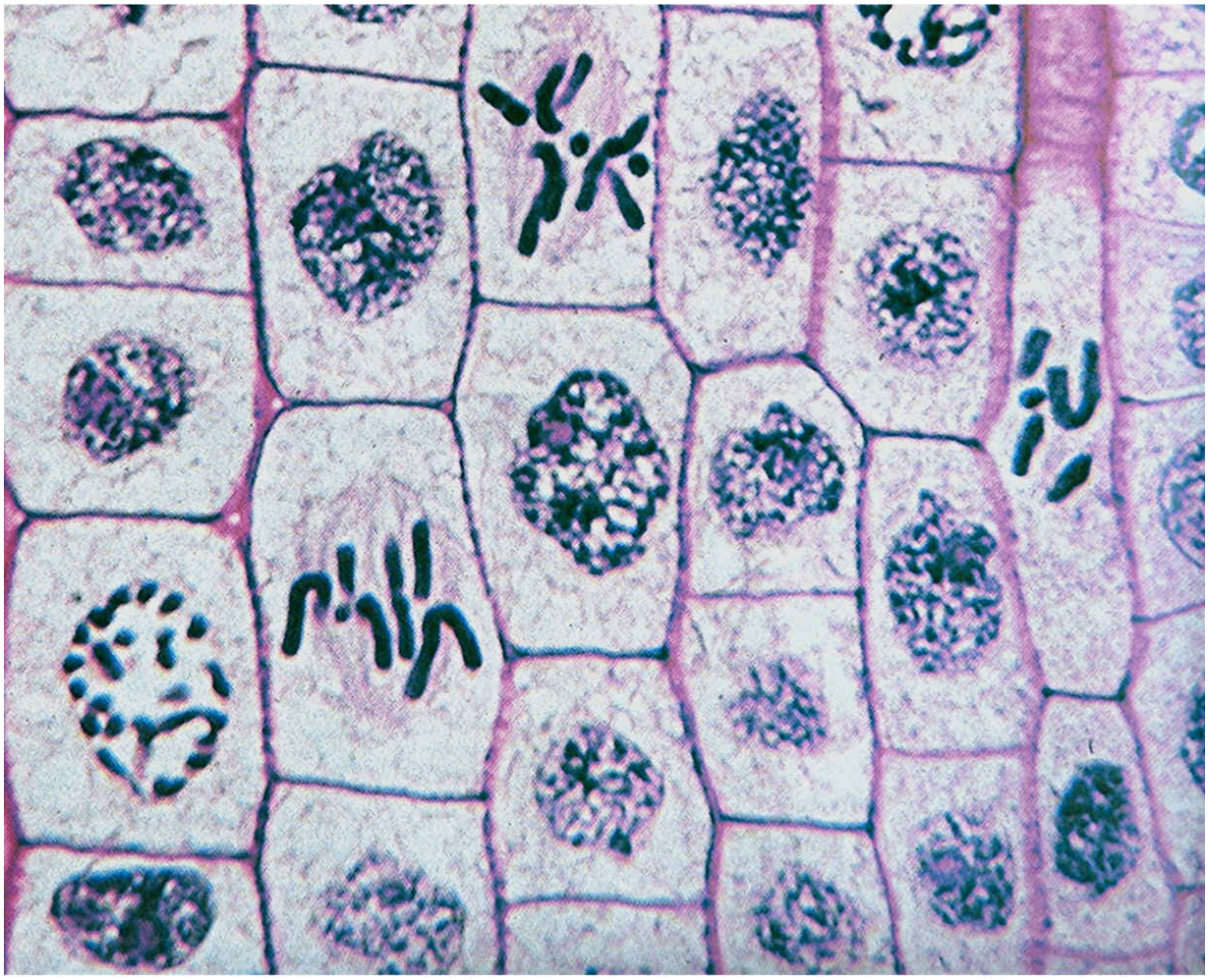
Materials : Microscope, hyacinth's root slides

1- Activity 1 : Observe different stages of mitosis

Use the microscope to observe different stages of mitosis in a root of hyacinth. Draw a stage and caption your drawing.

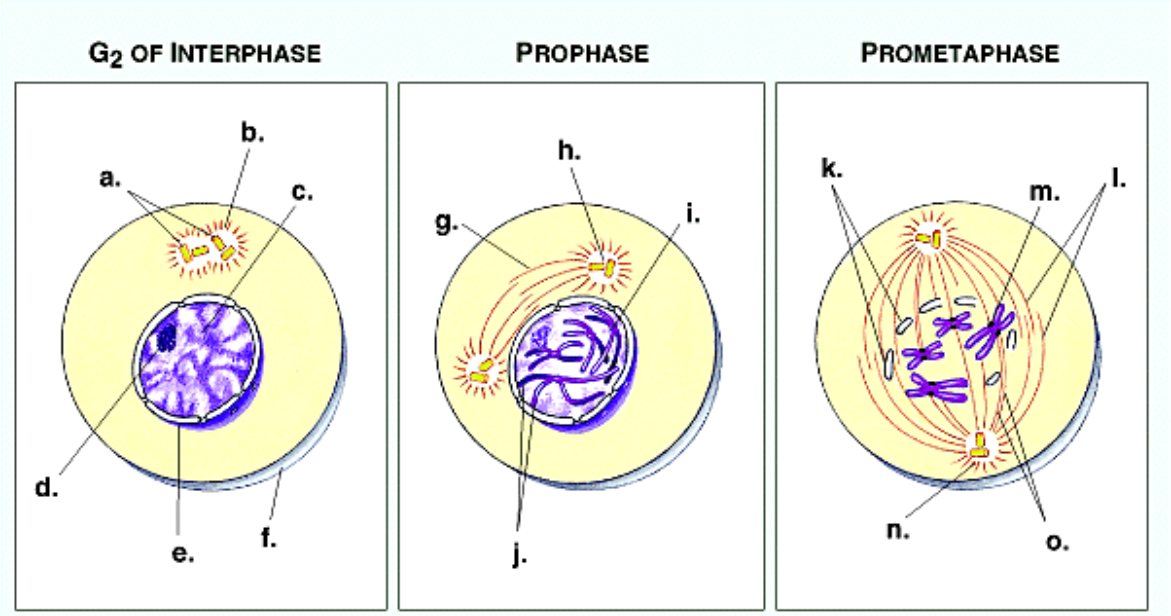
2- Activity 2 : Where are the stages ?

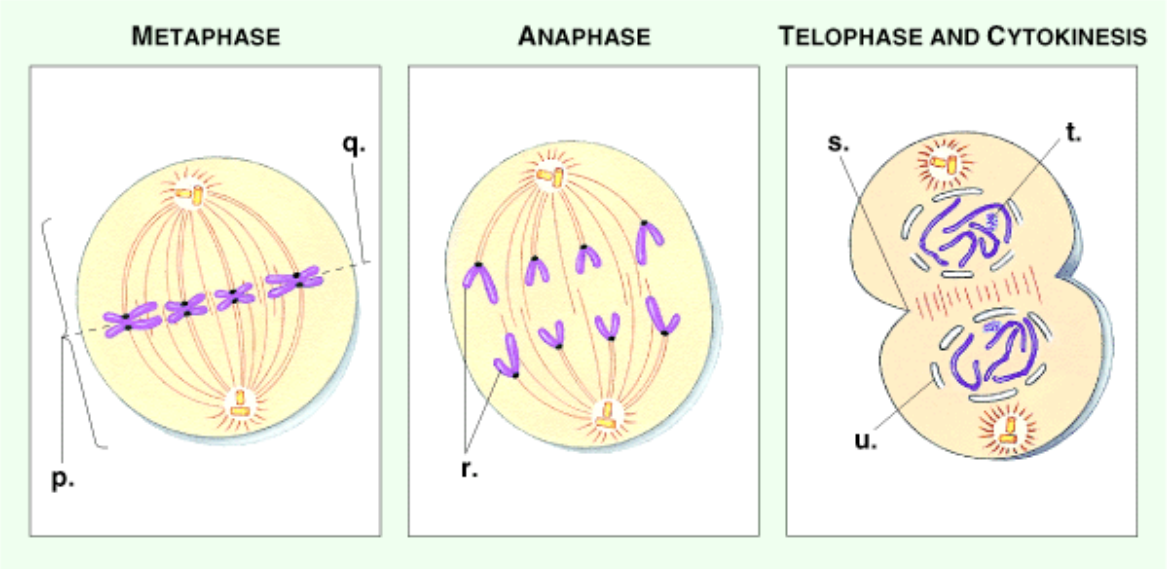
Locate the four mitotic stages and comment each of them.



3- Activity 3 : Label diagrams

Label these mitosis diagrams.





Basic vocabulary

1. DNA – **deoxyribonucleic acid; the unique genetic code for every living thing**
2. INTERPHASE – **a stage before mitosis during which exact copies of chromosomes are made**
3. CENTROMERE – **a single point where two chromatids are held together**
4. CHROMOSOMES – **strands of genetic codes made up of DNA molecules**
5. SOMATIC – **any cell that is not a reproductive cell**
6. HAPLOID – **in humans, a type of cell that contains a total of 23 chromosomes, half of what a diploid cell has**
7. CHROMATIDS – **two identical parts of chromosomes that split and contain the same genetic material**
8. MITOSIS – **division of somatic cells to create new cells**
9. DIPLOID – **a type of cell that contains 23 pairs or a total of 46 chromosomes**
10. EUKARYOTIC – **cells that have a clear, distinct nucleus**
11. CENTRIOLES – **two small parts in animal cells that direct the movement of chromosomes during mitosis**
12. POLES – **opposite ends of a cell**
13. CYTOKINESIS – **when a cell's cytoplasm divides and cuts the cell in half and the result is two cells in place of one**
14. ANAPHASE – **third stage of mitosis; spindle fibers pull chromatids to opposite poles**
15. DUPLICATE – **to make an exact copy of**
16. NUCLEAR MEMBRANE – **envelope around nucleus of a cell**
17. PROPHASE – **first stage of mitosis; chromosomes become visible and centrioles move towards poles**
18. ALIGN – **to line up**
19. METAPHASE – **second stage of mitosis; nuclear membrane dissolves and chromatids align in center of cell**
20. TELOPHASE – **fourth stage of mitosis; chromosomes at opposite poles, spindle fibers break down, and a nuclear envelope forms around both sets of chromosomes**
21. MICROTUBULE – **Microscopic tubular structures which are involved in organizing the spindle during nuclear division.**
22. MITOTIC SPINDLE –**The collective term for all the spindle fibers that form during mitosis.**

4- Activity 4 : How the mitotic spindle work ?

With a computer, follow this link :http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation__mitosis_and_cytokinesis.html

Then Watch the video and answer the following quiz to test your knowledge

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1 Which of the following events do NOT occur in prophase of mitosis?

- ○ **A)** DNA condenses to form chromosomes
- ○ **B)** nuclear membrane breaks down
- ○ **C)** nucleolus breaks down
- ○ **D)** chromosomes are replicated
- ○ **E)** mitotic spindle begins to form

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2 The mitotic spindle fibers attach to chromosomes via special structures termed

- ○ **A)** centrioles.
- ○ **B)** asters.
- ○ **C)** kinetochores.
- ○ **D)** centrosomes.
- ○ **E)** keratins.

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3 Which of the following statements about microtubules during anaphase is TRUE?

- ○ **A)** those attached to chromosomes elongate, while those that are unattached shorten
- ○ **B)** those attached to chromosomes shorten, while those that are unattached elongate
- ○ **C)** both attached and unattached microtubules shorten
- ○ **D)** both attached and unattached microtubules elongate
- ○ **E)** both attached and unattached microtubules elongate at first and then shorten

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4 Centromeres divide during metaphase.

- ○ **A)** True
- ○ **B)** False

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5 Cytokinesis in plant cells occurs by means of a cleavage furrow.

- ○ **A)** True
- ○ **B)** False

Submit Answers