

Name _____

Date _____

Period _____

The Menstrual Cycle

Purpose: In completing this activity, the student will recognize that the levels of four hormones involved in female egg production and menstruation vary dramatically during a single cycle, and that a woman experiences many cycles between puberty and menopause.

Materials: Graph Paper, colored pencils/highlighters, and the data tables below.

The relative hormone levels vary greatly during the menstrual cycle. The table below shows the relative levels of the four major hormones by day.

Day	Luteinizing Hormone (LH)	Follicle Stimulating Hormone (FSH)	Estrogen	Progesterone
1	5	10	10	2
2	7	11	10	2
3	8	12	10	2
4	8	13	10	2
5	8	14	10	2
6	8	13	13	2
7	8	12	16	2
8	8	12	19	2
9	8	12	22	2
10	10	13	28	2
11	12	14	35	2
12	22	16	28	3
13	32	20	22	4
14	20	15	19	5
15	6	10	16	8
16	6	9	15	10
17	6	8	15	12
18	6	8	15	15
19	6	8	15	18
20	6	7	15	24
21	6	6	15	28
22	6	6	15	28
23	6	6	15	28
24	5	6	13	24
25	4	6	10	18
26	3	8	10	12
27	3	10	10	7
28	3	10	10	2

Procedure:

Part One (Graphing)

- Plot the days as the independent variable and the hormone levels as the dependent variable.
- Plot all the values for one hormone, then "connect the dots" (do not do a smooth curve) using a colored pencil.

KEY:

HORMONE	COLOR
ESTROGEN	
PROGESTERONE	
FSH	
LH	

Answer the questions that follow using your knowledge of the menstrual cycle and your information on the graph you will construct. You will also need the information in the chart of endometrium thickness below.

Day of the Menstrual Cycle	Average Thickness of the Uterus Lining (endometrium) in millimeters
1	0.5
5	1.5
10	2.25
15	3.0
20	4.0
25	5.0
27	4.75
1	0.5

Conclusion Questions

1. Why do we call a woman's menstrual cycle "a cycle"?

2. Complete this analogy:

The beginning of a woman's menstrual cycle is to puberty as the end of a woman's menstrual cycle is to _____

3. Why do some woman experience mood swings during the month?

4. What do the terms "regular" and "irregular" mean with respect to menstruation?

5. During which part of her menstrual cycle can a woman become pregnant?

6. Which hormone(s) is at its highest level during that part of the cycle? Why?

7. When is FSH at its highest level and why?

8. What would happen if FSH levels did not increase at the beginning of a woman's cycle?

9. Why is progesterone called the hormone of pregnancy?

10. Estrogen levels are highest on day number?

11. LH levels are highest on day number?

12. How does the increase in the estrogen level correspond the change in thickness of the uterine lining in days 1 through 10 of the menstrual cycle?

13. Compare the change in thickness of the uterine lining with change in progesterone amount for days 10-27.

14. Why is it logical for the level of FSH to fall greatly following ovulation?

15. What happens to the uterine lining between day 27 and day 1? What is this process called?

16. Explain why it makes sense that the levels of estrogen and progesterone are low in the blood of a female during menstruation. (Keep in mind the uterine lining is shed at this time.)

17. - 20. State the role of the following hormones in the menstrual cycle; FSH, LH, estrogen, and progesterone.

21- 22. Complete the following chart.

<u>Menstrual Cycle Stage</u>	<u>Major Event(s) of Stage</u>
1. _____	-- production of ova occurs in tiny cavities in the ovary called _____ -- enlarging follicle produces estrogen which causes the uterus to get ready for embryo implantation (thickens its lining)
2. Ovulation	
3. _____	-- yellow tissue fills the follicle after ovulation -- called the _____ "yellow body" -- secretes the hormone _____ which maintains the thickness of the uterine lining, thus readying the uterus for pregnancy
4. _____	-- periodic shedding of the thickened lining of the uterus which occurs if fertilization does not occur