Before doing this lab, have students read sections 24.3 in the text.

### 24–3 What are the Stages in the Menstrual Cycle?

The human female reproductive system has several different roles to perform. It produces a new egg each month for fertilization. It must prepare the lining of the uterus for a new embryo if fertilization of an egg does occur. This is accomplished by a thickening of the uterus lining.

It must shed the egg and thickened uterus lining if fertilization does not occur. All of these events occur in a cyclic pattern each month in a sexually mature female.

### OBJECTIVES

In this exercise, you will:

- a. review the organs that form the human female reproductive system.
- b. prepare a calendar that shows the changes occurring during the human menstrual cycle if no fertilization occurs.
- c. prepare a calendar that shows the changes occurring during the human menstrual cycle if fertilization occurs.

### KEYWORDS

Define the following keywords:

- fertilization: joining of egg and sperm cell
- menstrual cycle: monthly changes that take place in female reproductive system
- ovary: female sex organ that produces eggs
- oviduct: tubelike organ that connect the ovaries to uterus
- uterus: muscular organ in which fertilized egg develops

### MATERIALS

- scissors: You will need to photocopy Figures 2 and 4 for students.
- tape: You may wish to have students work in groups.

### PROCEDURE

#### Part A. Review of the Female Reproductive System

1. Use the following parts and their description for help in properly labeling Figure 1.

   - a. ovary—two are present, round in shape
   - b. egg—small cells present within ovary
   - c. uterus—large muscle, V-shaped, largest part of reproductive system
   - d. oviduct—thin tube connecting each ovary to uterus
   - e. uterus lining—inner wall or lining of uterus

#### Part B. Changes in the Menstrual Cycle; No Fertilization of Egg

1. Obtain a copy of Figure 2 from your teacher.
2. Use scissors to cut out the square diagrams in Figure 2. These diagrams show the different stages that occur during the menstrual cycle if fertilization does not occur.
3. Look over the calendar marked Figure 3. It describes a series of events that take place in the female reproductive system if fertilization does not take place.
4. Match the diagrams that you cut out with the events being described in the calendar.
5. When all diagrams have been properly matched, tape them onto the calendar in their proper location to the right of the brackets describing the events.

#### Part C. Changes in the Menstrual Cycle; Fertilized Does Occur

1. Obtain a copy of Figure 4 from your teacher.
2. Use scissors to cut out the square diagrams in Figure 4. These diagrams show the different stages that occur during the menstrual cycle if fertilization does occur.
3. Look over the calendar marked Figure 5. It describes a series of events that take place in the female reproductive system if fertilization does take place.
4. Match the diagrams that you cut out with the events being described in the calendar.
5. When all diagrams have been properly matched, tape them onto the calendar in their proper location to the right of the brackets describing the events.

Advise students that Figures 2 and 4 are not drawn in their proper sequence. Students will have to determine the proper order of events based on information provided on the calendars. You may wish to check calendars before students tape models in place to verify that models are positioned in correct sequence.
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<td>Uterus lining and egg are shed during menstruation.</td>
<td>New egg is maturing in ovary.</td>
<td>Uterus lining is thin after blood and tissue have been lost.</td>
<td>Egg within ovary is almost fully mature.</td>
<td>Uterus lining is thickening.</td>
<td>Mature egg is released from ovary</td>
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<td>Egg is in ovary. No sperm cells present. Egg is not fertilized.</td>
<td>Egg within ovary is almost fully mature.</td>
<td>Uterus lining continues to thicken.</td>
<td>Uterus lining is thickening.</td>
<td>Uterus lining is very thick—egg moves lower in uterus.</td>
<td>Mature egg is released from ovary</td>
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<td>Uterus lining continues to thicken.</td>
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<td>Uterus lining is very thick—egg moves lower in uterus.</td>
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<td>Uterus lining is at its thickest.</td>
<td>Lining of uterus and egg are ready to be shed. They are no longer needed.</td>
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<td>Go back to day 1.</td>
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**FIGURE 3.** Day by day changes in the menstrual cycle—no fertilization of egg.
QUESTIONS

1. Describe the role or function of the following:
   a. ovary produces egg cells
   b. uterus lining serves as a surface upon which young embryo can attach
   c. uterus muscle serves as a protective chamber for developing embryo; aids in pushing out fetus at birth
   d. oviduct if sperm are present, allows egg to move from ovary to uterus, site of fertilization

2. An average menstrual cycle with no fertilization takes how many days? 28

3. Describe the changes that take place during the menstrual cycle from day 1-4 to the following:
   a. unfertilized egg lost from body through vagina
   b. uterus lining lost from body through vagina
   c. egg in ovary begins to mature

4. Describe the changes that take place during the menstrual cycle from day 5-13 to the following:
   a. uterus lining thickens
   b. egg in ovary continues to mature

5. Describe what happens to the egg during the menstrual cycle on day 14.
   It is released from ovary into oviduct

6. Describe the changes that take place to an egg
   a. from day 15-28 if no fertilization occurs moves from ovary to uterus
   b. from day 15-21 if fertilization does occur moves from ovary to lining of uterus where it attaches
   c. from day 21-266 if fertilization does occur changes from a fertilized egg to embryo to fetus

7. Explain why the female
   a. needs a thick uterus lining if fertilization occurs the embryo will attach to the lining and remain there during entire pregnancy
   b. no longer needs a thick lining if fertilization does not occur no need for a site for embryo attachment