

25-1 How Does a Human Fetus Change During Development?

Development in a human takes about 38 weeks. Many changes take place with the fetus during that time. Two changes that do occur are increases in size and mass. How much of a change in mass and size takes place each week?

INTERPRETATION

OBJECTIVES

In this activity, you will:

- measure the length of diagrams of the human fetus.
- graph the length and mass of a human fetus.
- determine when during development most changes in mass and size occur.

KEYWORDS

Define the following keywords:

development _____

embryo _____

fetus _____

mass _____

premature _____

MATERIALS

metric ruler

PROCEDURE

Part A. Development of a Human Fetus

- Look at Figure 1. It shows six stages of a developing human fetus. They are shown at 40% of their natural size.
- Follow the steps outlined below to measure the total length of each stage. Use the metric ruler and measure in millimeters. Use the 38-week stage as a guide and record your data in the spaces provided in Table 1.
 - Measure the body length from the rump to the top of the head.
 - Measure the thigh length from the rump to the knee.
 - Measure the length of the leg from the knee to the foot.
- Add all three measurements together and record the total in the space provided in Table 1.
- Multiply the total by 2.5 to give a figure that is close to the actual size of the fetus at each stage.
- Record this actual size in the table.

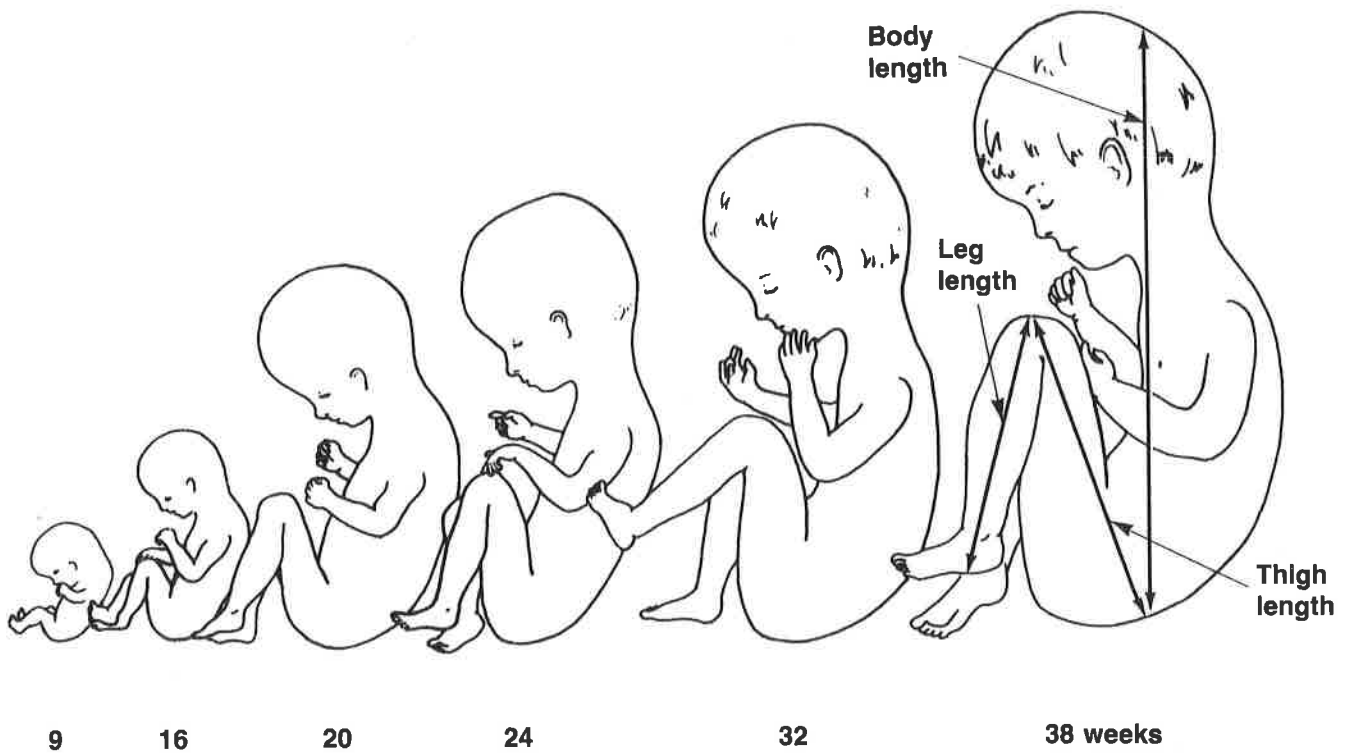


FIGURE 1. Stages in the development of a human fetus

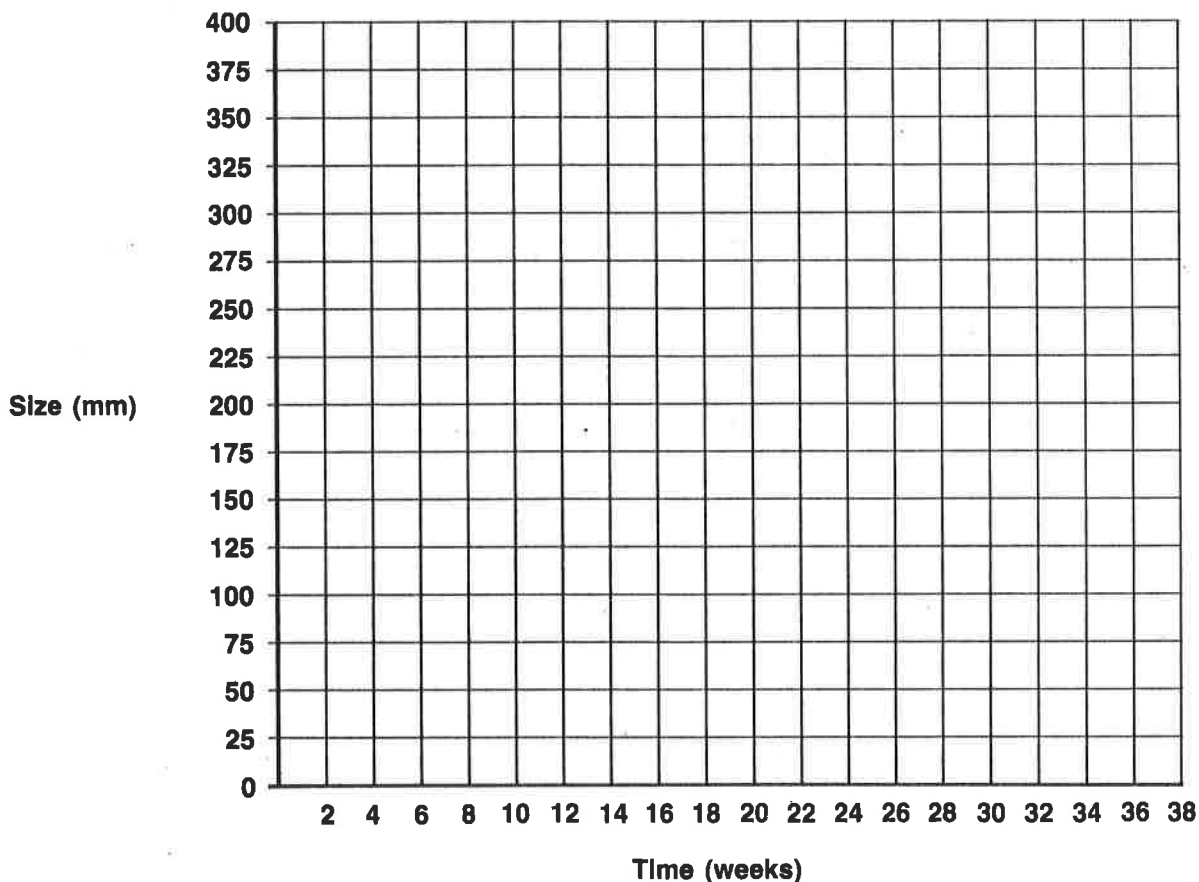
Table 1. Lengths of a Developing Fetus

Age of fetus in weeks	Body length	+	Thigh length	+	Leg length	=	Total length	$\times 2.5 =$	Actual length
2									
9									
16									
20									
24									
32									
38									

Part B. Plotting Length of a Developing Fetus

1. Plot the data from Table 1 onto the graph in Figure 2.
2. Plot the actual fetal length against the age of the fetus. Notice that the length of the fetus at week 2 has already been plotted.

FIGURE 2. Length of a developing fetus



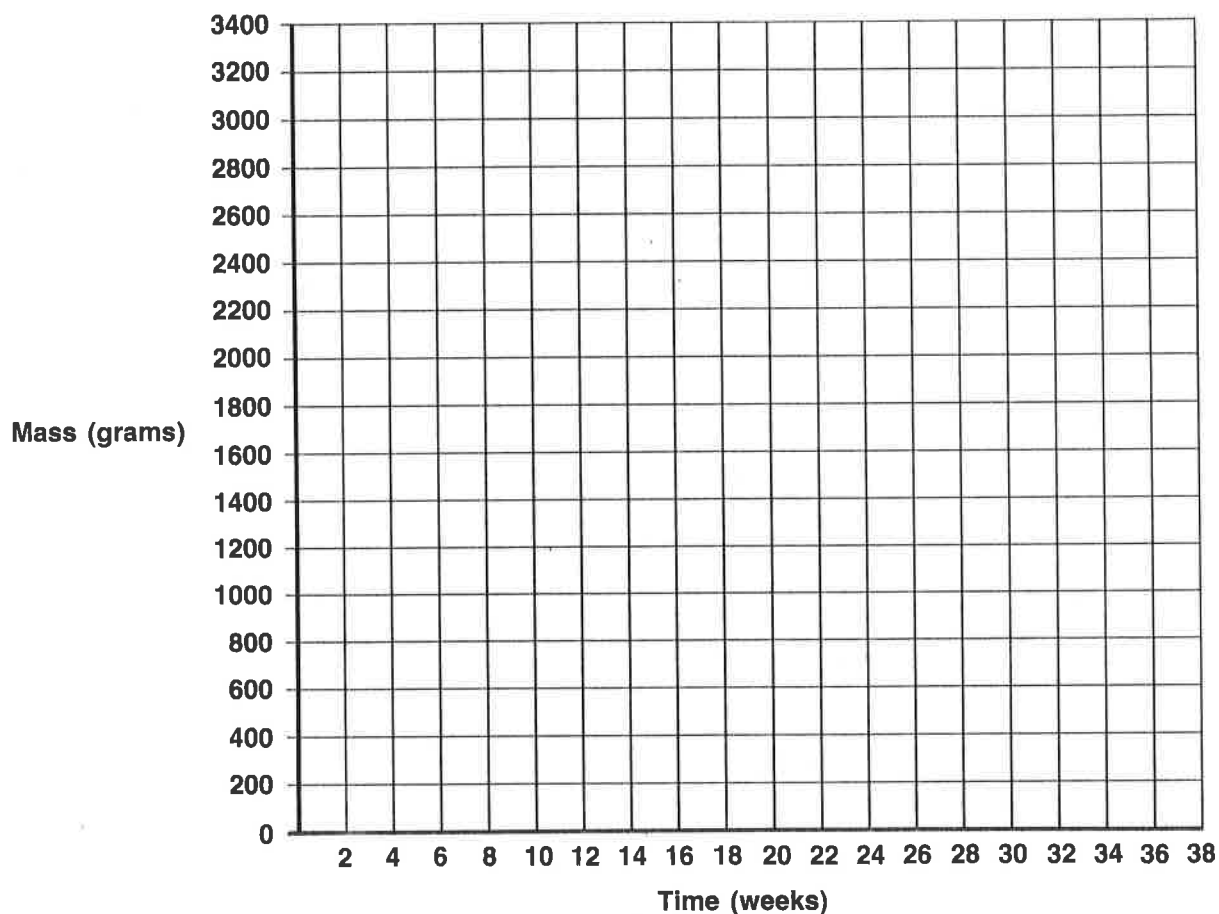
Part C. Plotting Mass of a Developing Fetus

1. Look at the data supplied in Table 2.
2. Plot the data of the developing fetus from Table 2 onto the graph in Figure 3.
3. Plot the mass of the fetus against the age of the fetus.

Table 2. Mass of a Developing Fetus

Time (weeks)	Mass (grams)	Time (weeks)	Mass (grams)
4	0.5	24	650
8	1	28	1100
12	15	32	1700
16	100	36	2400
20	300	38	3300

FIGURE 3. Mass of a developing fetus



QUESTIONS

1. During what weeks of development is the human baby called an embryo?

2. What is the length of an embryo during this time? _____
3. How much mass does an embryo gain during this time? _____
4. During what weeks of development is the human baby called a fetus?

5. Look at Figures 2 and 3 for the halfway point in development at week 19.
 - a. Is the fetus half of its full length at this time? _____
 - b. Is the fetus half of its full mass at this time? _____
6. a. At what week does the fetus reach half its full length? _____
b. At what week does the fetus reach half its full mass? _____
7. If a premature baby is born with a mass of
 - a. 2200 grams, how old is the fetus? _____
 - b. 1800 grams, how old is the fetus? _____