

Name _____ Date of Data Collection _____

Class Period _____ Lab Days/Period _____ Teacher _____

Human Fetal Growth Patterns

(adapted from "Biology: The Dynamics of Life")

Background: Complete development of a human fetus takes about 38 weeks. Increases in size and mass are two of the many changes that the fetus undergoes. The increases do not occur at the same rate. Many factors affect the birth size of a human baby, but there is an average mass and an average length standard for each stage of development. The approximate age of a fetus can be determined from its mass and length.

Purpose: The purpose of this laboratory experience is:

- to further demonstrate your ability to properly make assumptions based on measurement data.
- to properly construct a graph that shows trends in fetal development.
- to understand the differences in structure and function throughout a human pregnancy.
- to understand and use techniques that demonstrate proper measurement, extrapolation, observation, and recording of data.

Materials: The following materials are needed to complete this laboratory experience:

Laboratory papers	Metric ruler
Pen or pencil	Calculator

Procedure: The following procedure is utilized to perform this experience:

Part A: Development of a Human Fetus

1. Examine Figure 1 which is a graphic representation of the fetus at different stages of development. It shows six stages of the developing human fetus. The stages are shown at approximately 40% of the fetus's actual size.
2. Using the guide, measure each length in millimeters. Record your data in the spaces in Table 1.
 - a. Measure the body length from the rump to the top of the head.
 - b. Measure the thigh length from the rump to the knee.
 - c. Measure the leg length from the heel to the knee
3. Add the 3 measurements for each stage together. Record the total length.
4. Multiply the total length by 2.5 to give a figure that is close to the actual length of the fetus at each stage. Remember that the pictures are 40% of the actual size. Record the actual length in Table 1 entitled "Length of Developing Fetus"

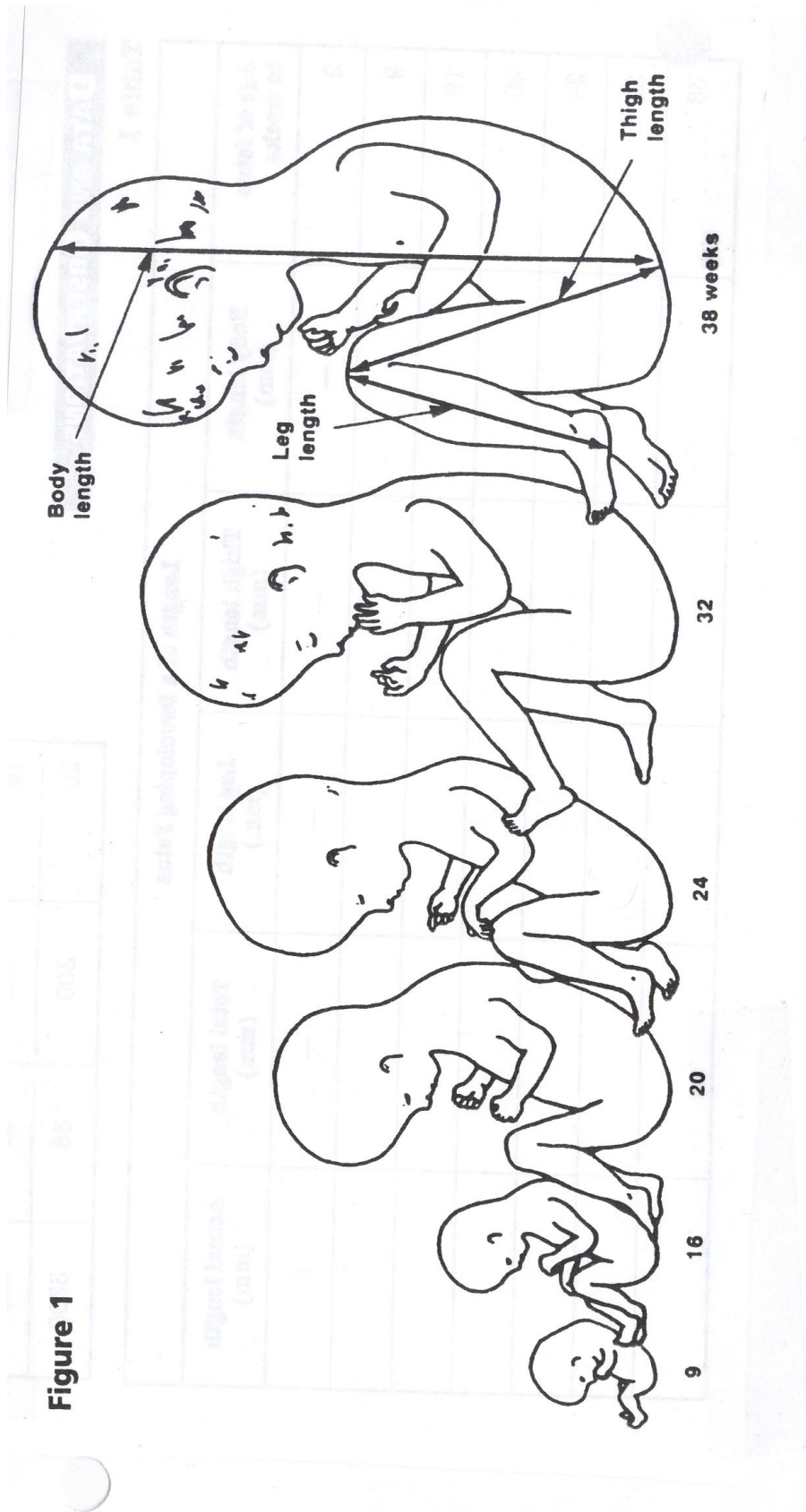
Part B: Graphing

5. The point showing the actual length (2mm) of the 2 week old fetus has been marked on the grid in Figure 2.
6. Using the data in Table 1, mark a point that shows the age and actual length of each fetal stage. Connect the points.
7. Using the data in Table 2, mark points on the grid in Figure 3 to show the age and mass of each fetal stage.
8. Connect the points.

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Figure 1: Graphic representation of the fetus at different stages of development



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Figure 2: Table of measured mass of developing fetus

Age (weeks)	Mass (grams)
4	0.5
8	1.0
12	15
16	100
20	300
24	650
28	1100
32	1700
36	2400
38	3300

Table 1: Length of a developing fetus

Age(weeks)	Body length (mm)	Thigh length (mm)	Leg Length (mm)	Total Length (mm)	Actual Length (mm)
2					
9					
16					
20					
24					
32					
38					

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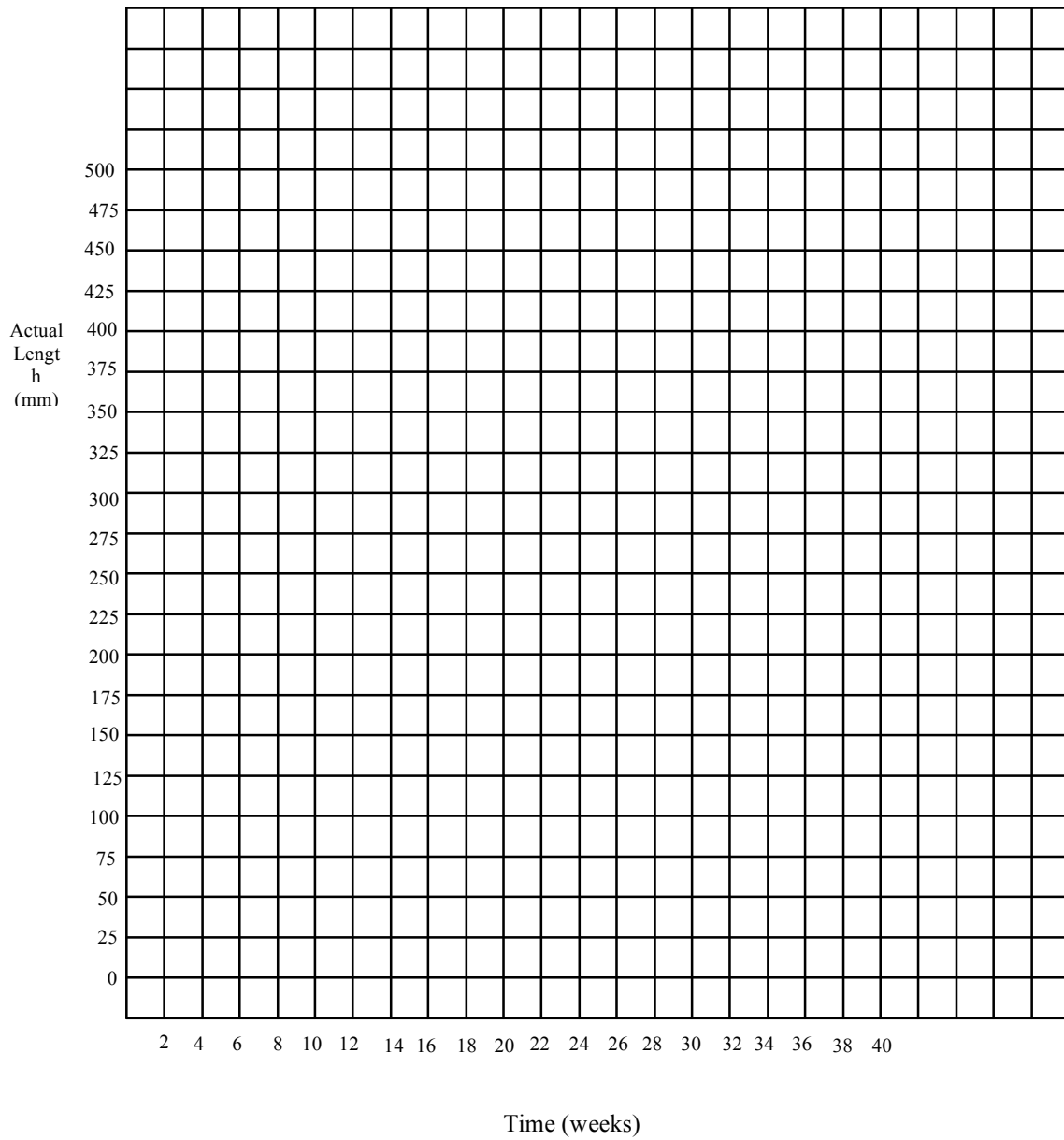


Figure 2: Graph of Length of Developing Fetus

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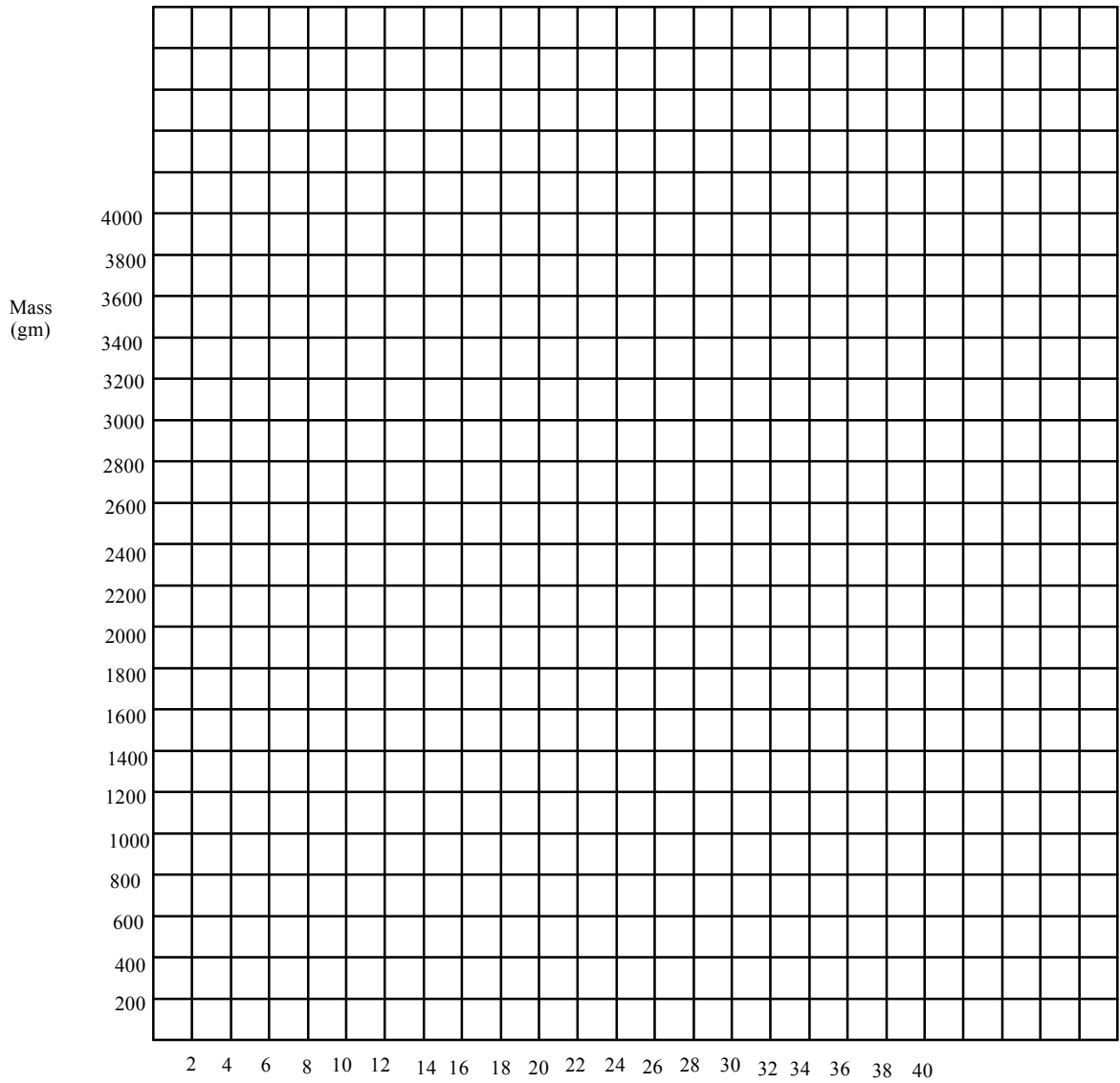


Figure 3: Mass of Developing Fetus

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Conclusion: The following can be concluded from this laboratory experience:

Write your own conclusion based upon the factors that we have looked at in previous labs. Make sure to use proper sentence structure and summarize what you learned while performing this lab.

Analysis Questions: Answer the following questions in the space provided.

1. Why was the total length of the fetus multiplied by 2.5?

2. What is the actual length of the fetus at week 9? _____

3. How much mass does the fetus gain from 0 to 8 weeks of development? _____ (a penny weighs about 2.5 g)

4. How old is the fetus when it is half of its full length? _____

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5. How old is the fetus when it is half of its full mass? _____

6. If a premature baby is born with a mass of 2200 grams, how old is the baby?

7. If a premature baby is born with a mass of 1800 grams, how old is the baby?

8. The fetus shows the greatest increase in length between week _____ and week _____.

9. The fetus shows the greatest increase in mass between week _____ and week _____.

10. Why does the length of the fetus increase more rapidly than the mass of the fetus?