**16.2 Assignment Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Analyzing the Line of Best Fit**

 **1.** The typical gestational period (time from conception to birth) for a human baby is about 40 weeks. Recent developments in ultrasound scanning allow doctors to make measurements of parts of a baby’s body while it is still in the womb. The table contains data about the length of a baby’s femur (thigh bone) during gestation.

|  |  |
| --- | --- |
| **Gestation Time****(in weeks)** | **Femur Length****(in centimeters)** |
|  14 | 1.5 |
| 14.5 | 1.6 |
| 15 | 2.0 |
| 16 | 2.1 |
| 20 | 3.3 |
| 25 | 4.8 |
| 30 | 6.2 |
| 40 | 8.0 |

1. Write unit rates that compare the baby’s change in femur length to the change in gestation time from 14 weeks to 14.5 weeks, from 16 weeks to 20 weeks, and from 30 weeks to 40 weeks. Show your work.

**b.** Write ordered pairs from the table that show the gestation time as the independent variable and the baby’s femur length as the dependent variable.

**c.** Create a scatter plot of the ordered pairs in part (b) to show the relationship between gestation time and femur length. First, label the axes to represent the independent and dependent variables. Next, choose the appropriate intervals for your scatter plot. Finally, name your scatter plot.



**d.** Do all the data points in your scatter plot lie on the same line? What does this tell you about the baby’s femur length change over time? Explain your reasoning.

**e.** Use a ruler to draw the line that best fits your data in your graph in part (c). Then, write the equation of your line. Be sure to define your variables and include the units.

**f.** According to the line you drew in part (e), approximately how many centimeters did the femur grow each week from 14 weeks to 40 weeks? How did you determine your answer?

**g.** According to the line you drew in part (e), approximately how long would the baby’s femur have been when the gestation time is 7 weeks? Show your work.

**h.** According to the line you drew in part (e), approximately how long would the baby’s femur have been when the gestation time is 8 weeks? Show your work.

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