

Question 17 is an open-response question.

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations).**
- **If you do the work in your head, explain in writing how you did the work.**

- 17 Larissa plans to select one of the two mobile phone services described in the chart below. Each of the two companies charges a fixed monthly fee plus an additional charge for each minute in excess of the free time allowance.

Mobile Phone Service

Company	Monthly Fee	Free Minute Allowance per Month	Cost for Each Additional Minute
Cellco	\$35	300	\$0.08
Firstfone	\$22	400	\$0.15

Larissa plans to use her mobile phone as her only phone and predicts that she will use it between 600 and 900 minutes per month. To find t , the total monthly charge for each company based on m minutes of phone use, Larissa wrote the two equations shown below.

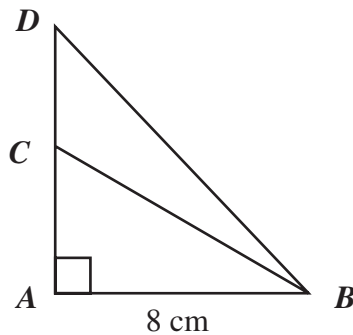
$$\text{Cellco: } t = 35 + (m - 300)(0.08) \quad \text{for } m \geq 300$$

$$\text{Firstfone: } t = 22 + (m - 400)(0.15) \quad \text{for } m \geq 400$$

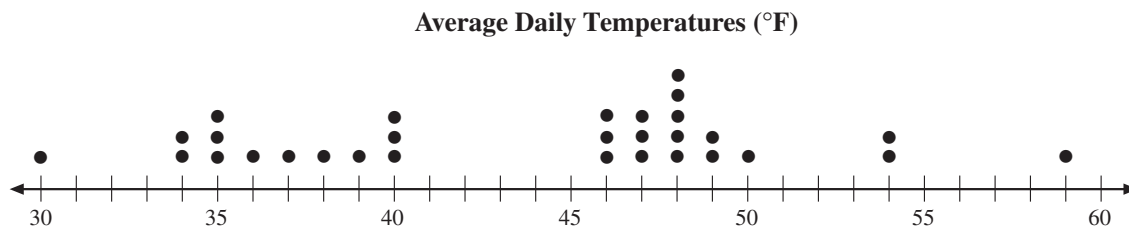
- a. Which is the less expensive plan for 600 minutes of phone use per month? Show or explain how you obtained your answer.
- b. Which is the less expensive plan for 900 minutes of phone use per month? Show or explain how you obtained your answer.
- c. Determine the number of minutes for which the monthly charges for the two companies would be exactly the same amount. Show or explain how you obtained your answer.
- d. How can Larissa use the results for parts a, b, and c to make her selection of a cell phone company? Explain your reasoning.

Questions 18 and 19 are short-answer questions. Write your answers to these questions.

- 18 In the figure below, A , C , and D are collinear, the area of $\triangle ABC$ is 24 square centimeters, and the area of $\triangle ABD$ is 40 square centimeters. If the measure of \overline{AB} is 8 centimeters, what is the length of \overline{DC} ?



- 19 The line plot below shows the average daily temperature in a city for each day during the month of April.



What was the median temperature?

Question 20 is an open-response question.

- BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.
- Show all your work (diagrams, tables, or computations).
- If you do the work in your head, explain in writing how you did the work.

20 Use the following sums to answer question 20.

$$\frac{1}{4} + \frac{3}{4} = 1$$

$$\frac{1}{6} + \frac{3}{6} + \frac{5}{6} = \frac{3}{2}$$

$$\frac{1}{8} + \frac{3}{8} + \frac{5}{8} + \frac{7}{8} = 2$$

$$\frac{1}{10} + \frac{3}{10} + \frac{5}{10} + \frac{7}{10} + \frac{9}{10} = \frac{5}{2}$$

- Write the next series of fractions in the pattern and find its sum. Show or explain how you got your answer.
- What is the denominator of the series of fractions in the pattern that has a sum of 4? Show or explain how you got your answer.
- What is the sum of the series of fractions in the pattern in which the first term is $\frac{1}{36}$? Show or explain how you got your answer.
- If the denominator is an even number, n , what is the sum of the series in terms of n ? Show or explain how you got your answer.