Jonathan and Cindy are both selling hot chocolate at their school fundraiser. Cindy’s data for how much hot chocolate she sold is represented in the graph below. Jonathan’s data is represented in the table. Each sells a cup of hot chocolate for $1 per cup.

|  |  |
| --- | --- |
| **HOURS, h** | **DOLLARS, d** |
| 2 | 10 |
| 3 | 15 |
| 4 | 20 |
| 5 | 25 |
| 6 | 30 |

 **Cindy’s Sales Jonathan’s Sales**

***Part A.*** Determine how many cups of hot chocolate each student sells ***per hour****.*

***Cindy \_\_\_\_\_\_\_\_\_ cups per hour Jonathan \_\_\_\_\_\_\_\_\_\_ cups per hour***

***Part B.*** Write an equation for each student that shows the amount of dollars “**d**” made after “**h**” hours.

***Cindy’s equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Jonathan’s equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***Part C.*** If each student sells hot chocolate for ***10 hours***, who would make more money? How much more?

***Show your work.***

***Answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dollars.***

***Part D***. David, another student in the class, decides to sell hot chocolate for **$ 0**.**75 per cup**. He began to record his earnings below. The table shows how much money David earned in dollars, ***d***, after ***h*** hours. Complete the table, make a graph(be sure to label the axes), and write an equation that represents David’s sales.

 **Table Graph**

|  |  |
| --- | --- |
| ***Hours, h*** | ***Dollars, d*** |
| 3 | ***$9*** |
| ***4*** | ***$12*** |
| ***5*** | ***$15*** |
| ***6*** |  |
| ***8*** |  |
| ***12*** |  |

***Equation:***

d = \_\_\_\_\_\_\_\_\_\_\_

***Part E.*** Are the functions that represent these three students’ sales of hot chocolate ***linear***? How do you know?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Part F.*** Look at the function equations for each of the three students. Explain **how** you would be able to determine which student made more money ***per hour***, *just by comparing the equations*.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Part G.*** The table below shows the temperature of the students’ city and the number of total hot chocolate sales at their school fundraiser.

|  |  |
| --- | --- |
| **Temperature (Degrees, Fahrenheit)**  | **Quantity of Cups of Hot Chocolate Sold** |
| 70 | 2 |
| 65 | 20 |
| 60 | 9 |
| 55 | 13 |
| 50 | 15 |
| 48 | 19 |
| 45 | 20 |
| 40 | 23 |
| 35 | 25 |
| 30 | 28 |

1. Make a *scatter plot* on the grid to represent the data in the table. Title and label the scatter plot. Then ***sketch*** a *line of best fit*.
2. Based on the scatter plot, describe the correlation, if any exists, between the temperature outside and the number of cups of hot chocolate sold.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which ordered pair represents the outlier? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Hypothesize a possible scenario that explains the presence of this outlier.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_