**Activity 2 – Answer Key**

1. Using the table you created relating the price of bus tokens, fries, and total amount spent find the number of tokens and fries Pat can buy with 32 dollars. Fill in the following table to show different numbers of bus tokens and fries he could buy with his allowance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Price/fries | Number of fries | Price/token | Number of tokens | Total Spent |
| $1 | 32 | $2 | 0 | $32 |
| **1** | **28** | **2** | **2** | **32** |
| **1** | **24** | **2** | **4** | **32** |
| **1** | **20** | **2** | **6** | **32** |
| **1** | **16** | **2** | **8** | **32** |
| **1** | **12** | **2** | **10** | **32** |
| **1** | **8** | **2** | **12** | **32** |
| **1** | **4** | **2** | **14** | **32** |
| **1** | **0** | **2** | **16** | **32** |
| **1** | *x* | **2** | *y* | **32** |

1. Create a graph with axes showing the number of fries and the number of bus tokens. Scale the x-axis for the number of fries and the y-axis for the number of bus tokens. Be sure to label each axis. **Student scales may vary, but should enable precision for the plotting of points whose coordinates are divisible by 2.**

1. a. Find the number of fries Pat could buy if he spent all his money on fries. **32 fries**

b. What point could you plot on the graph that represent how Pat spent his money? **(32,0)**

c. What does the point represent in terms of fries and bus tokens? **The point represents the combination 32 fries and 0 bus tokens Pat can buy with 32 dollars.**

1. a. Find the number of bus tokens Pat could buy if he spent all his money on bus tokens. **16 bus tokens**

b. What point could you plot on the graph that represents how Pat spent his money **(0, 16)**

c. What does the point represent in terms of fries and bus tokens? **The point represents the combination 0 fries and 32 bus tokens Pat can buy with 32 dollars.**

1. Create a table and plot any other points that represent combinations of fries and tokens that Pat could buy.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** | **0** | **4** | **8** | **12** | **16** | **20** | **24** | **28** | **32** |
| ***y*** | **16** | **14** | **12** | **10** | **8** | **6** | **4** | **2** | **0** |



1. Draw a line that represents all the combinations of fries and bus tokens Pat can buy with 32 dollars.
2. The line you drew is the limit for the number of fries and bus tokens Pat can purchase to with his allowance of 32 dollars. This line represents Pat’s **budget constraint**.

What is the equation of this line? **1*x*+2*y* = 32**

1. What does 1*x* represent in the equation? **Money spent on fries is represented by 1*x*.**
2. What does 2y represent in the equation? **Money spent on bus tokens is represented by 2*y***.
3. What does the point (6,10) on your graph represent in terms of bus tokens and fries Pat can purchase? **The point represents 6 fries and 10 bus tokens for a total cost of 26 dollars.**
4. Can Pat purchase 10 fries and 10 bus tokens? How do you know? **Yes, since the point (10, 10) is below the budget constraint line.**
5. Can Pat purchase 10 fries and 20 bus tokens? How do you know? **No, since the point (10, 20) is above the budget constraint line.**
6. How would the budget constraint line be transformed if the price of fries went up to $2?

**While the y-intercept that represents the number of bus tokens you can buy with 32 dollars would stay the same (0,16) all of the remaining values would shift. You can purchase fewer tokens now because you must spend more of your income on fries. This will result in lower *y*-values for the *x*-values plotted on the previous graph. The new equation is 2*x*+2*y*=32**. **The higher price for fries further constrains Pat’s budget.**

Show the change on the graph below.

1. How many times can Pat hang out with Sam each month given his new budget constraint? **Pat can only hang out with Sam twice each month now. He still needs six bus tokens for each hang out. Twelve tokens allow him to hang out twice with Sam, unless he finds a different way to get to Sam’s house.**