**Draining a Swimming Pool**

A backyard pool is 40 feet long, 25 feet wide and 5 feet deep.

1. Find the volume of the pool in cubic feet. To find the volume you must use the formula of a rectangular prism: . Make sure to attach at the end of your answer.
2. There are 7.5 gallons in one cubic foot (1 ). Find the volume of the pool in gallons.

The pool is full of water. It is the end of the summer and you need to drain the pool in preparation for winter weather. When the drain is open, **500 gallons flow out every minute**.The amount of gallons of water in the pool is a function of the time (in minutes) it is draining.

1. What is the independent variable?
2. What is the dependent variable?
3. Complete the table. *(Note that time is increasing by 10 minute increments)*.

|  |  |
| --- | --- |
| **Time (in minutes)**  ***x*** | **Water in Pool (in gal.)**  ***y*** |
| 0 |  |
| 10 |  |
| 20 |  |
| 30 |  |
| 40 |  |
| 50 |  |
| 60 |  |
| 70 |  |
| 80 |  |

1. Use the table to answer the following questions.
2. As the time increases, what happens to the amount of water in the pool; does it increase or decrease?
3. Use the table to find how much the amount of water in the pool changes every 10 minutes.
4. How long will it take the pool to drain completely? Explain your reasoning.
5. In this situation does it make sense to have a negative number in the second column? Explain.
6. Which of the following would be a reasonable domain for this function?
7. 0 gallons – 37,500 gallons
8. 0 minutes – 75 minutes
9. {0, 10, 20, 30, 40, 50, 60, 70, 80}
10. Which of the following would be a reasonable range for this function?
11. 0 gallons – 37,500 gallons
12. 0 minutes – 75 minutes
13. {-2500, 2500, 7500, 12500, 17500, 22500, 27500, 32500, 37500}
14. a. Plot the points in the table. Let *x* represent time (in minutes) and *y* the number of gallons of water remaining in the pool. Make sure to label your axes and choose an appropriate scale.



1. Draw a line through the plotted points. As you move along the line from left to right, does the line go up or down?
2. Where does the line intercept *(touch)* the *y*-axis?
3. What does this point tell you about the problem?
4. Where does the line intercept *(touch)* the *x*-axis?
5. What does this point tell you about the problem?
6. We can interpret any point on the graph. For example, the point (0, 37,500) tells us there was 37,500 gallons of water at the start. What does the point (30, 22,500) tell us?