**Our Last Unit!!!! Graphing…..**

**Sang and Leah Work at Loblaws**

****Sang is paid **$15/hour** to work at Loblaws*.*

i) **Complete** the table below.

|  |  |  |
| --- | --- | --- |
| Number of Hours | Pay ($) |  |
| First Differences(What are the numbers jumping by in the Pay column?) |
| 1 |  |
|  |
| 2 |  |
|  |
| 3 |  |
|  |
| 4 |  |
|  |
| 5 |  |
|  |

ii) **Describe** what happens to his pay when the number of hours he works increases by one hour. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

iii) **Graph** his pay vs. the number of hours he works. **Label** your axes.

 **(HINT: Make the vertical axis jump by 15)**

 a) **Describe the relationship** between his pay and the number of hours he works.

 b) **Describe the shape** of the graph.

iv) What do you notice about the **first differences**?

v) **Summarize** your observations.

 a) When the number of hours worked increases by one, the pay increases by $\_\_\_\_\_\_\_\_\_.

 b) Does the graph look **linear or non-linear**?



 c) How can you tell from the first differences if it is linear or non-linear?

Leah also works at Loblaws. She bakes **square-based-prism** shaped cakes in the bakery department with cake **height 3-inches**.

1. **Calculate** the **volume** and **complete the table**.



HINT:

V = lwh

 height = 3 inches

|  |  |  |
| --- | --- | --- |
| Length of sides(length and width are the same) (inch) | Volume (inches3) |  |
| First Differences (how much are we jumping in the volume column?) |
| 1 |  |
|  |
| 2 |  |
|  |
| 3 |  |
|  |
| 4 |  |
|  |

ii)

**Describe** what happens to the volume of each cake when the side length of the cake increases by one inch. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

iii) **Graph** the volume vs. the length of the sides of the cakes. **Label** your axes.

 **(HINT: Have the vertical axes jump by 5!!!)**

 a) **Describe the relationship** between the volume and the side length of the cake.



 b) **Describe the shape** of the graph.

iv) What do you notice about the **first differences**?

Are they the **same or different**?

v) **Summarize** your observations.

 a) When the side length increases by one centimetre,

 the volume increases by \_\_\_\_\_\_\_\_\_\_\_\_\_.

 b) Does the graph look **linear or non-linear**?

 c) How can you tell from the first differences if it is

 linear or non-linear?

Deep Sea Divers

The table below shows data collected as divers descend below sea level. Calculate the first differences. Use the first differences to determine if the relationship is linear or non-linear. Check your solution by graphing. Include labels and titles.

|  |  |  |
| --- | --- | --- |
| Time (min) | Depth (m) |  |
| First Differences |
| 0 | -2 |
|  |
| 1 | -4 |
|  |
| 2 | -6 |
|  |
| 3 | -8 |
|  |
| 4 | -10 |
|  |

Is the relationship **linear or non-linear**?

How do you know even before graphing?

Hot Air Ballooning

The table shows data collected as a hot air balloon leaves the ground. Calculate the first differences. Use the first differences to determine if the relationship is linear or non-linear. Check your solution by graphing. Include labels and titles.

|  |  |  |
| --- | --- | --- |
| Time (sec) | Height (m) |  |
| First Differences |
| 0 | 2 |
|  |
| 1 | 4 |
|  |
| 2 | 6 |
|  |
| 3 | 8 |
|  |
| 4 | 10 |
|  |



Is the relationship **linear/ non-linear**?

How do you know even before graphing?

# sunflowerSunflower Task

|  |
| --- |
| Roxanne, Jamal, Leslie, and Ada did a group project on sunflower growth for their biology class. They investigated how different growing conditions affect plant growth. Each student chose a different growing condition.The students started their experiment with plants that were 10 centimetres tall. They collected data every week for five weeks. At the end of five weeks, they were to write a group report that would include a table, a graph, and a story for each of the four growing conditions.Unfortunately, when the students put their work together, the pages were scattered, and some were lost. This page shows the tables, graphs, and written reports that were left.Find which table, graph, and written report belong to each student.Create the missing tables, graphs, and reports. |
|  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mathematical Process | Criteria | Level 1 | Level 2 | Level 3 | Level 4 |
| **Reasoning and Proving** | Use of critical thinking processes | - uses critical thinking processes with limited effectiveness | - uses critical thinking processes with some effectiveness | - uses critical thinking processes with considerable effectiveness | - uses critical thinking processes with a high degree of effectiveness |

C

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Time(weeks) | 0 | 1 | 2 | 3 | 4 | 5 |
| Height(centimetres) | 10 | 10 | 10 | 10 | 10 | 10 |

G

I treated my sunflower very well. It had sun, good soil, and I even talked to it. Every week it grew more than the week before.

Jamal

D

A

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Time(weeks) | 0 | 1 | 2 | 3 | 4 | 5 |
| Height(centimetres) | 10 | 12.5 | 17.5 | 25 | 35 | 47.5 |

E

I planted my sunflower in a shady place. The plant did grow, but not so fast. The length increased every week by equal amounts.

Roxanne

B

F

I put my plant in poor soil and didn’t give it much water. It did grow a bit, but every week less and less.

Leslie