3.4 Investigation – Working Out with Equations Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_

*Manisha starts her exercise routine by jogging to the gym. Her trainer says this activity burns 215 calories. Her workout at the gym is to pedal a stationary bike. This activity burns 3.8 calories per minute.*

|  |  |
| --- | --- |
| Manisha’s Workout | |
| Pedaling Time (min) x | Total calories burned  y |
| 0 | 215 |
| 1 |  |
| 2 |  |
| 20 |  |
| 30 |  |
| 45 |  |
| 60 |  |

**Step 1:** Write a recursive routine to determine the number of calories Manisha has burned after each minute she pedals the bike.

**Step 2:** Use your recursive routine to complete the rest of the table.

**Step 3:** After 20 minutes of pedaling, how many calories has Manisha burned? How long did it take her to burn 443 total calories?

**Step 4:** With your group, discuss and describe in words the difficulties you have when using a routine to determine x or y.

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*Next you’ll learn to write an equation that gives the same values as the calculator routines.*

**Step 5:** Write an expression to find the total calories Manisha has burned after 20 minutes of pedaling. Check that your expression equals the value in the table.

**Step 6:** Write and evaluate an expression to find the total calories Manisha has burned after pedaling 38 minutes.

**Step 7:** What are the advantages of this expression over a recursive routine?

**Step 8:** Let *x* represent the pedaling time in minutes, and let *y* represent the total number of calories Manisha burns. Write an equation relating the time to total calories burned.

**Step 9:** Check that your equation produces the corresponding values in the table.

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