## Unit 2 Lesson 3: Writing Equations to Model Relationships (Part 2)

### 1 Finding a Relationship (Warm up)

#### Student Task Statement

Here is a table of values. The two quantities, $x$ and $y$, are related.

|  |  |
| --- | --- |
| $x$ | $y$ |
| 1 | 0 |
| 3 | 8 |
| 5 | 24 |
| 7 | 48 |

What are some strategies you could use to find a relationship between $x$ and $y$? Brainstorm as many ways as possible.

#### Activity Synthesis



### 2 Something about 400

#### Student Task Statement

1. Describe in words how the two quantities in each table are related.
	* Table A

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| * + number of laps, $x$
 | * + 0
 | * + 1
 | * + 2.5
 | * + 6
 | * + 9
 |
| * + meters run, $y$
 | * + 0
 | * + 400
 | * + 1,000
 | * + 2,400
 | * + 3,600
 |

* + Table B

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| * + meters from home, $x$
 | * + 0
 | * + 75
 | * + 128
 | * + 319
 | * + 396
 |
| * + meters from school, $y$
 | * + 400
 | * + 325
 | * + 272
 | * + 81
 | * + 4
 |

* + Table C

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * + electricity bills in dollars, $x$
 | * + 85
 | * + 124
 | * + 309
 | * + 816
 |
| * + total expenses in dollars, $y$
 | * + 485
 | * + 524
 | * + 709
 | * + 1,216
 |

* + Table D

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| * + monthly salary in dollars, $x$
 | * + 872
 | * + 998
 | * + 1,015
 | * + 2,110
 |
| * + amount deposited in dollars, $y$
 | * + 472
 | * + 598
 | * + 615
 | * + 1,710
 |

1. Match each table to an equation that represents the relationship.
	* Equation 1: $400+x=y$
	* Equation 2: $x−400=y$
	* Equation 3:  $x+y=400$
	* Equation 4:  $400⋅x=y$

### 3 What are the Relationships?

#### Student Task Statement

1. The table represents the relationship between the base length and the height of some parallelograms. Both measurements are in inches.

|  |  |
| --- | --- |
| * base length (inches)
 | * height (inches)
 |
| * 1
 | * 48
 |
| * 2
 | * 24
 |
| * 3
 | * 16
 |
| * 4
 | * 12
 |
| * 6
 | * 8
 |

* What is the relationship between the base length and the height of these parallelograms?
1. Visitors to a carnival are invited to guess the number of beans in a jar. The person who guesses the correct number wins $300. If multiple people guess correctly, the prize will be divided evenly among them.
* What is the relationship between the number of people who guess correctly and the amount of money each person will receive?
1. A $\frac{1}{2}$-gallon jug of milk can fill 8 cups, while 32 fluid ounces of milk can fill 4 cups.
* What is the relationship between number of gallons and ounces? If you get stuck, try creating a table.



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