I can determine and analyze the domain and range of a function as well as determine its rule

Patterns and Functions

Consider the following relationship between the number of hours (input) and the number of miles (output) if you were driving a car at a constant rate of 60 miles per hour.

Hours (h)	0	1	2	3	4
Miles (m)					

Function Rule

How many miles would you drive in 7 hours and 30 minutes? _____

Function –

Function Rule –

Determine the function rule for the following table of values.

x	y
1	$2.50
2	$5.00
3	$7.50
4	$10.00

x	y
0	5
2	15
4	25
6	35

x	y
3	5
5	9
8	15
10	19

x	y
0	0
1	1
2	4
3	9

In the above tables, the *x-value* is the **input** and the *y-value* is the **output**. Another name for the input is the **domain** and another name for the output is the **range**.

For the following, write the function rule and find reasonable domain and range values.

1. Maria earns $7 per hour babysitting. She works no more than 16 hours per week.

2. Charlie downloads songs at $0.75 each. He has between $3.00 and $6.00 to spend.

Continuous Data –

Discrete Data –

Describe the Data as either Discrete or Continuous

1. Jaime earns \$8 per hour babysitting.	4. Jesse buys tickets at \$19 per ticket
2. Buster pays \$25 per textbook.	5. The water in the bathtub rises as a rate of 3 gallons per minute.
3. The function rule model that describes the temperature over a period of 6 hours.	6. The function rule $P(n) = 18n - 245$ describes your profit as a function of lawns mowed.

Let's work on Writing Some of These Function Rules

1. Billy can type 35 words per minute.

   a. Write a rule to describe how the amount of words w typed is a function of the number of minutes m spent typing.

   b. How many words does Billy type in 4 minutes and 30 seconds?

   c. Does this data represent continuous or discrete data?

   d. Justify your answer

2. Steve pays \$0.29 per donut.

   a. Write a rule to describe how the cost c a function of the number of donuts d bought.

   b. How much money do a dozen donuts cost?

   c. Does this data represent continuous or discrete data?

   d. Justify your answer

I can determine and analyze the domain and range of a function as well as determine its rule

Patterns and Functions

Consider the following relationship between the number of hours (input) and the number of miles (output) if you were driving a car at a constant rate of 60 miles per hour.

Hours (h)	0	1	2	3	4
Miles (m)	0	60	120	180	240

Function Rule

$h \cdot 60 = m$

How many miles would you drive in 7 hours and 30 minutes? $7.5 \cdot 60 = 450$ miles

Function – a relationship that assigns exactly 1 output for every input

Function Rule – an equation that represents the function

Determine the function rule for the following table of values.

input output

x	y
1	\$2.50
2	\$5.00
3	\$7.50
4	\$10.00

$x \cdot 2.50 = y$

input output

x	y
0	5
2	15
4	25
6	35

$x \cdot 5 + 5 = y$

$5x + 5 = y$

domain range

x	y
3	5
5	9
8	15
10	19

$x \cdot 2 - 1 = y$

$2x - 1 = y$

domain range

x	y
0	0
1	1
2	4
3	9

$x^2 = y$

In the above tables, the *x-value* is the **input** and the *y-value* is the **output**. Another name for the input is the **domain** and another name for the output is the **range**.

For the following, write the function rule and find reasonable domain and range values.

1. Maria earns \$7 per hour babysitting. She works no more than 16 hours per week.

Let h = hours worked

Let M = \$ Earned

$7 \cdot h = M$

Domain: Between 0 and 16 hours

Range: Between \$0 and \$112

2. Charlie downloads songs at \$0.75 each. He has between \$3.00 and \$6.00 to spend.

Let m = songs downloaded

Let T = total spent

$0.75 \cdot m = T$

Domain: Between 4 and 8 songs {4, 5, 6, 7, 8}

Range: Between \$3 and \$6

Continuous Data – data where all values within an interval are part of domain or range

Discrete Data – data where only a select group of values are part of the domain or range

Describe the Data as either Discrete or Continuous

1. Jaime earns $8 per hour babysitting.

   Continuous

2. Buster pays $25 per textbook.

   Discrete

3. The function rule model that describes the temperature over a period of 6 hours.

   Continuous

4. Jesse buys tickets at $19 per ticket

   Discrete

5. The water in the bathtub rises as a rate of 3 gallons per minute.

   Continuous

6. The function rule $P(n) = 18n - 245$ describes your profit as a function of lawns mowed.

   Discrete

Let's work on Writing Some of These Function Rules

1. Billy can type 35 words per minute.

   a. Write a rule to describe how the amount of words w typed is a function of the number of minutes m spent typing.

   $35m = w$ w: words typed m: minutes

   b. How many words does Billy type in 4 minutes and 30 seconds?

   $35 \cdot 4.5 = w$

   c. Does this data represent continuous or discrete data?

   Continuous

   d. Justify your answer

   Time is continuous

2. Steve pays $0.29 per donut.

   a. Write a rule to describe how the cost c a function of the number of donuts d bought.

   $C = 0.29d$

   b. How much money do a dozen donuts cost?

   $C = 0.29 \cdot 12$

   $C = \$3.48$

   c. Does this data represent continuous or discrete data?

   Discrete

   d. Justify your answer

   Stores won't sell partial donuts