Lesson 6.2 Representing Functions Day 1

Week 1 Monday Course 3 Warm-up

Jenny purchased 26 magazines for her project research at a total cost of $134. The art related magazines cost $4 each, while the science related magazines cost $7 each. Find the number of art related magazines and science related magazines purchased.

Finding Functions

1) Which table DOES NOT represent a function?

A)

x	y
0	5
1	6
2	7
-1	4

C)

x	y
0	0
1	2
2	4
-1	2

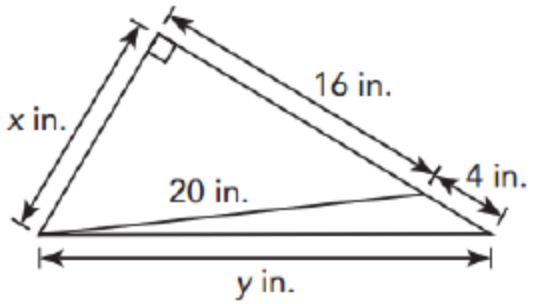
B)

x	y
0	5
1	6
2	7
2	4

D)

x	y
0	0
1	3
2	6
-1	0

Calculate the missing length X. Round to nearest tenth



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Jenny purchased 26 magazines for her project research at a total cost of $134. The art related magazines cost $4 each, while the science related magazines cost $7 each. Find the number of art related magazines and science related magazines purchased.

Let the number of art magazines be x and the number of science magazines be y.

$x + y = 26$ — Eq. 1

$4x + 7y = 134$ — Eq. 2

Use Eq. 1 to express x in terms of y:

$x = 26 - y$ — Eq. 3

Substitute Eq. 3 into Eq. 2:

$4(26 - y) + 7y = 134$

$104 - 4y + 7y = 134$

$104 + 3y = 134$

$104 + 3y - 104 = 134 - 104$

$3y = 30$

$\frac{3y}{3} = \frac{30}{3}$

$y = 10$

Substitute 10 for y into Eq. 3:

$x = 26 - 10$

$x = 16$

Jenny purchased 16 art magazines and 10 science magazines.

Finding Functions

Which table DOES NOT represent a function?

A)

x	y
0	5
1	6
2	7
-1	4

C)

x	y
0	0
1	2
2	4
-1	2

✔ B)

x	y
0	5
1	6
2	7
2	4

D)

x	y
0	0
1	3
2	6
-1	0

Calculate the missing length X. Round to nearest tenth

$20^2 = 16^2 + x^2$

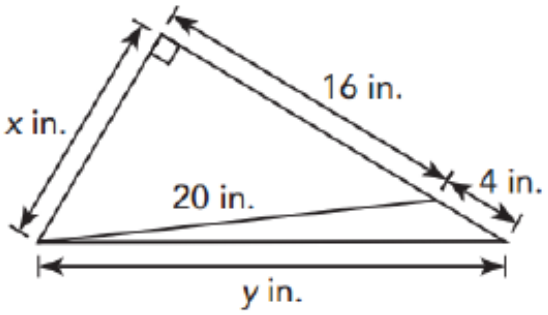
$400 = 256 + x^2$

$400 - 256 = 256 + x^2 - 256$

$144 = x^2$

$x = \sqrt{144}$

$x = 12$



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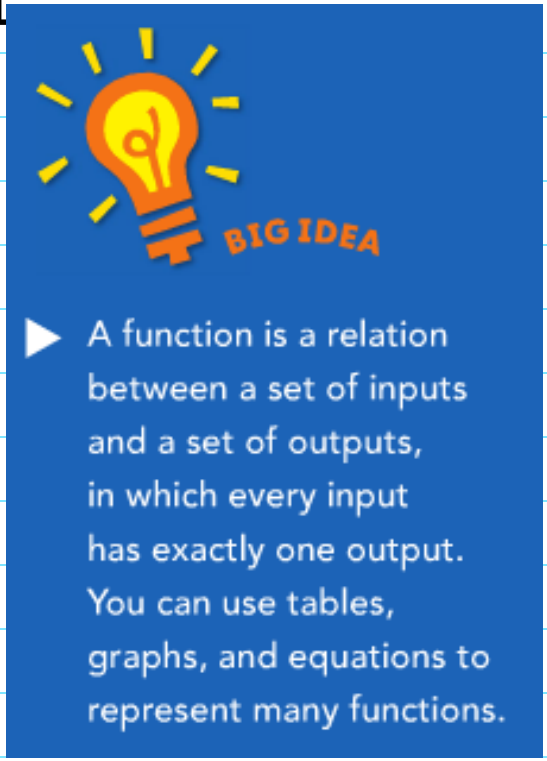
Objective

TSW represent a function in different forms including…

*Tables

***Algebraic Equation**

***Graphs**



Common Core State Standards

8F1 Understand that a function is a rule that assigns to each input exactly one output. 8F4 Construct a function to model a linear relationship between two quantities 8F5 Describe qualitatively the functional relationship between two quantities by analyzing a graph…

Mathematical Practices *MP1 Solve problems/persevere MP2 Reason MP 4 Model Mathematics*

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Janice plans to enroll in a Spanish class at a language school. She has to pay a registration fee of $100 plus $20 for each hour-long lesson she takes. The relation between the total amount she pays and the number of hours of lessons she takes is a function.

Equation	Table

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Janice plans to enroll in a Spanish class at a language school. She has to pay a registration fee of $100 plus $20 for each hour-long lesson she takes. The relation between the total amount she pays and the number of hours of lessons she takes is a function.

Equation

Total amount she pays equals
$100 registration fee plus $20 times the **number of hours** she takes lessons.

You can translate this verbal description of a function into an algebraic equation.
Let x be the number of hours.
Let y be the total amount of fees.

$y = 100 + (20 \cdot x)$ Write an equation.
$y = 100 + 20x$ Simplify.

Table

x	0	1	2	3
y	100	120	140	160

$y = 100 + 20(0)$
$= 100$

$y = 100 + 20(1)$
$= 120$

$y = 100 + 20(2)$
$= 140$

$y = 100 + 20(3)$
$= 160$

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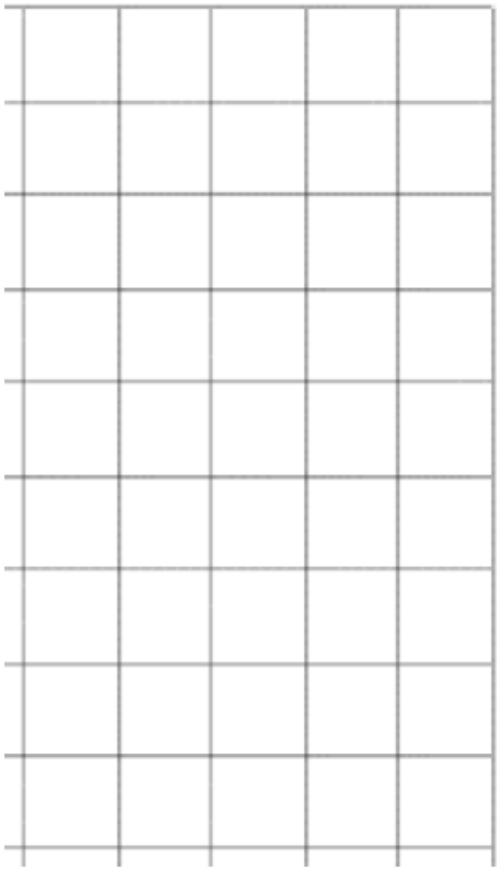
Ordered Pairs	Graph
	

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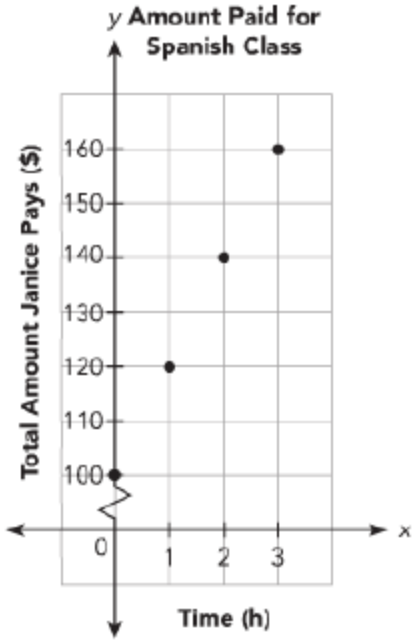
Ordered Pairs

The table of values can be used to write ordered pairs: (0, 100), (1, 120), (2, 140), and (3, 160).

Graph



Guided Practice

Complete.

1 A game shop rents out video games at a rate of $6 per game. The total amount of money the shop collects, y dollars, is a function of the number of games, x, that the shop rents out.

a) Write a verbal description of the function. Then write an algebraic equation for the function.

Total amount of money the shop collects equals product of the rental rate and the ___?___.

___?___ = 6 · ___?___ Write an equation.

___?___ = ___?___ Simplify.

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b) Construct a table of *x*- and *y*-values for the function.

x	1	2	3
y	6	?	?

c) Use the table of values in **b)** to graph the function. Use 1 unit on the horizontal axis to represent 1 game for the *x* interval, and 1 unit on the vertical axis to represent $6 for the *y* interval.

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Guided Practice

Complete.

1 A game shop rents out video games at a rate of $6 per game. The total amount of money the shop collects, y dollars, is a function of the number of games, x, that the shop rents out.

a) Write a verbal description of the function. Then write an algebraic equation for the function.

Total amount of money the shop collects equals
product of the rental rate and the ___?___. number of games rented

___?___ = 6 · ___?___ Write an equation. y; x

___?___ = ___?___ Simplify. y; $6x$

b) Construct a table of x- and y-values for the function.

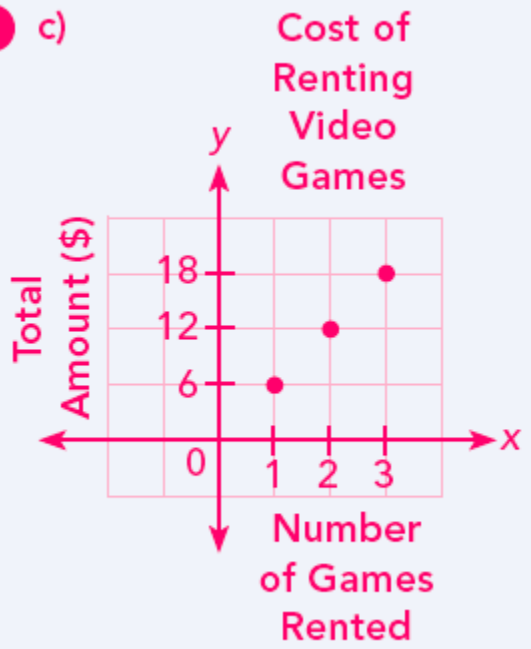
x	1	2	3
y	6	?	?

12; 18

In this situation, only whole numbe make sense for th input and output the function.

c) Use the table of values in **b)** to graph the function. Use 1 unit on the horizontal axis to represent 1 game for the x interval, and 1 unit on the vertical axis to represent $6 for the y interval. See margin.

1 c)



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2 A fire sprinkler sprays water at a rate of 8 gallons per minute. The total amount of water being sprayed, y gallons, is a function of the number of minutes, x, that the sprinkler sprays water.

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2 A fire sprinkler sprays water at a rate of 8 gallons per minute. The total amount of water being sprayed, y gallons, is a function of the number of minutes, x, that the sprinkler sprays water.

a) Write a verbal description of the function. Then write an algebraic equation for the function.

Total amount of water being sprayed equals
product of the rate of water flow and the ? . number of minutes

? = ? · ? Write an equation. y; 8; x

? = ? Simplify. y; $8x$

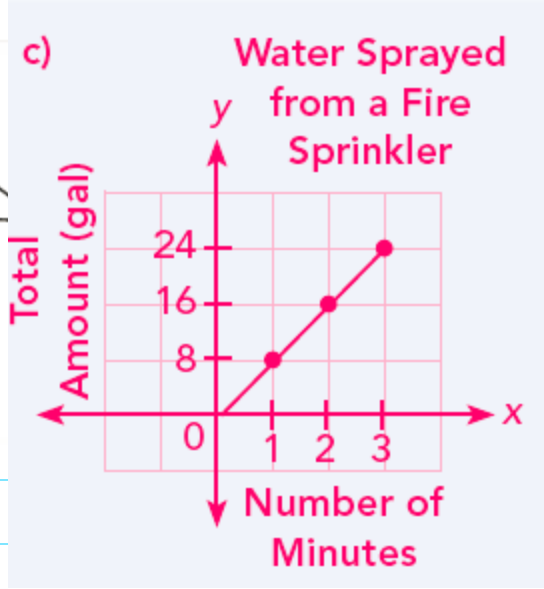
b) Construct a table of x- and y-values for the function.

x	1	2	3
y	?	?	?

8; 16; 24

The quantities in this situation, time and volume, are continuous.

c) Use the table of values in **b)** to graph the function. Use 1 unit on the horizontal axis to represent 1 minute for the x interval, and 1 unit on the vertical axis to represent 8 gallons for the y interval. See margin.



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Practice 6.2 #1-7

Name:_____ Date:_____

Practice 6.2

Write a verbal description of each function. Then write an algebraic equation for the function.

1. Gordon is traveling at a constant speed of 80 kilometers per hour. The distance he travels, d kilometers, is a function of the amount of time he takes to travel, t hours.

2. Mr. Henderson pays a monthly charge of $40 for a family cell phone plan. Each additional family member pays $10 every month. The total amount Mr. Henderson and his family members pay each month, y dollars, is a function of the number of the additional family members who use the plan, x.

3. *Math Journal* In questions 1 and 2, tell whether all values for the input and output are meaningful for the functions. Explain.

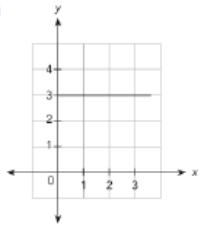
Write an algebraic equation for each function. Then construct a table of x- and y-values for the function.

4. The students from the Robotics Club are making model windmills for a workshop. Each windmill has three blades. The total number of blades needed, y, is a function of the number of windmills they make, x.

5. A newly made glass vase has a temperature of 580°C. Its temperature then decreases at an average rate of 56°C per minute. The temperature of the glass vase, y°C, is a function of the number of minutes its temperature has been decreasing, x.

Each of the following graphs represents a function. Write an algebraic equation to represent the function.

6.



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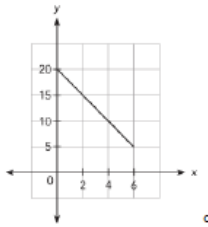

Challenge-

*Solve created equations

"Pick a Snowflake"

*Real World Problem (website)

*BuzzMath

Lesson Check #1 & 7- can represent a function as an algebraic equations

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Ticket Out the Door- Connect, Extend, Challenge

1. How are the ideas and information presented CONNECTED to what you already knew?

2. What new ideas did you get that EXTENDED or pushed your thinking in new directions?

3. What is still CHALLENGING or confusing for you to get your mind around? What questions, wonderings or puzzles do you now have?