

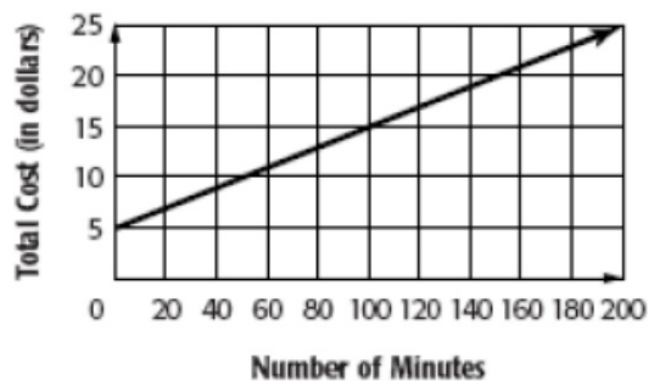
Agenda: Algebra 1 Honors

- 1. Warm-up: 1.7*
- 2. Check HW: Pg 7 #1-13 ali*
- 3. Note 1.7: Represent Functions as Graphs*
- 4. HW: Pg 8/9 #1-16 ali*
- 5. Quiz: 1.4-1.6 on Tuesday*

Warm-up: 1.7

- _____ 11. Enrique has 200 grapefruits. He uses the function $g = 200 - 30x$ to calculate the number of remaining grapefruits, g , he will have left if he gives away x crates of grapefruits. Which statement is consistent with his function equation?
- A. Each grapefruit weighs 30 ounces.
 - B. Enrique can give away up to 30 crates.
 - C. If he gives away as many crates as he can, he'll have 30 grapefruits left.
 - D. There are 30 grapefruits in each crate.
- _____ 13. Some friends are all saving money. They each make a graph to show the total amount they have saved at the end of each year for 5 years. Which situation will be represented by the graph of a linear function?
- A. Mark puts \$100 in his drawer and adds \$10 to that amount each year.
 - B. Mandy puts \$100 in a bank account and earns 10% interest per year. She leaves the interest in the bank account, so the interest earns interest as well.
 - C. Pablo puts \$10 in a locked box. Each year he adds twice as much as he added the year before.
 - D. Donna puts \$10 in a bank account. Each year she adds money so the total amount in the account is twice as much as the year before.
- _____ 14. Jan is adding water to her pool. She uses the continuous function $f(x) = 25 + 5x$ to represent the gallons of water in the pool after x minutes. If Jan's pool holds 5,025 gallons of water, which of the following sets could be the domain of the function?
- A. {all natural numbers less than 1,000}
 - B. {all whole numbers}
 - C. {all integers between 0 and 1,000}
 - D. {all real numbers between 0 and 1,000}

- _____ 15. Carlos bought a new cell phone. The graph below represents the relationship between the number of minutes he uses and the total cost.



If c is total cost and m is the number of minutes, which equation can be used to find the total cost for any number of minutes?

- A. $c = 0.1 + 5m$ C. $c = 5 + 0.5m$
B. $c = 5 + 0.1m$ D. $c = 5 + 5m$

Lesson 1.4, continued

5. $4 < m - 4 < 10$ 6. yes 7. no 8. yes 9. yes
 10. no 11. no 12. 18 13. 14 14. 99 15. 15
 16. 2 17. 28 18. 9; no; Answers will vary.
 19. a. $0.15(12 - t) + 0.08t \leq 1.5$ b. Answers will vary.
 20. You: 120 cards; Your friend: 40 cards

Review for Mastery

1. $73 - x = 17$ 2. $8(y + 6) < 21$ 3. $\frac{w}{5} \leq 4$
 4. $15 < z + 2 < 23$ 5. yes 6. no 7. yes
 8. yes 9. no 10. yes 11. 125 miles; Miles traveled + Miles left = Total miles; 2.5 hours

Problem Solving Workshop:

Mixed Problem Solving

1. a. 72 points b. 115 points 2. a. \$34.90
 b. \$10.10 c. yes 3. $\frac{600}{x}$; Sample answer: words typed = rate \times time, so time = words typed \div rate; 20 min 4. \$84
 5. a. $180w + 260(8 - w) \geq 1800$ b. No, you will be 40 calories short of reaching your goal.
 6. a. $c + d$ b. Student A: 65 points; Student B: 75 points; Student C: 55 points c. 41 points; The highest score is 75 points. If you score 35 points for content, you will need 41 points for delivery to get a score of 76 points. 7. Answers will vary.
 8. $50 + 12n$; \$86

Challenge Practice

1. 4 2. 0 or 5 3. 2 4. 3 5. 4 6. 45 years old
 7. 3 quarters 8. 18 muffins

Lesson 1.5

Practice Level A

1. Know: Growths of plants A and B; Need to find out: Quotient of growth of plant A divided by growth of plant B 2. Know: Length and width of 1 tile, length and width of mural; Need to find out: How many tiles will fit in mural 3. Know: Total amount raised, cost of one T-shirt and hat, and number of players on team; Need to find out: How much money each player will have to pay
 4. $F = \frac{9}{5}C + 32$ 5. $d = rt$ 6. B 7. \$10.40
 8. 10°C ; 5°C 9. $A = (10 - 2)(10 - 2)$

Practice Level B

1. Know: Number of boxes and number of cookies in one box; Need to find out: How many dozen cookies need made

2. Know: Charge for 400 minutes of service, charge per minute over 400 minutes, and amount you can spend; Need to find out: How many minutes over 400 you can talk

3. $I = Prt$ 4. $d = rt$ 5. C 6. 18 7. 12; \$59.40

8. Neither; they both earn the same amount.

Practice Level C

1. C 2. $400 + 15x = 41.5(15)$
 3. $x + 3x = 500$ 4. $d = rt$; $d = 250$; $t = 5$
 5. $I = Prt$; $P = 250$; $I = 30$; $t = 5$ 6. 5; \$39.95
 7. 0°C ; 35.6°C 8. a. 50 min b. you: 87.5 ft; your friend: 62.5 ft

Review for Mastery

1. Know: the amount reimbursed per day, amount received per mile driven, and the total amount of traveling expenses; Need to find out: How many days was the trip

2. $15d + 165 = 300$; 9 weeks

Problem Solving Workshop:

Worked Out Example

1. 15 hours 2. 64 trips 3. 12.5 hours
 4. 8 ounces

Challenge Practice

1. 7 P.M. 2. 40 minutes 3. 8 minutes
 4. 12 miles 5. 10 miles 6. 20 minutes

Lesson 1.6

Practice Level A

1. range 2. domain 3. domain: 1, 3, 5, 7; range: 8, 7, 6, 5 4. domain: 7, 2, 5, 3; range: 4, 2, 1, 5 5. domain: 0.4, 0.5, 0.6, 0.7; range: 15, 13, 11, 9 6. function 7. not a function 8. function

9.

Domain	0	1	2	3
Range	0	4	8	12

10.

Domain	11	15	22	27
Range	13	17	24	29

11.

Domain	5	9	14	19
Range	2	6	11	16

12. a. the number of plants left; the number of plants planted b. $y = 12 - x$

c.

x	0	1	2	3	4	5
y	12	11	10	9	8	7

x	6	7	8	9	10	11	12
y	6	5	4	3	2	1	0

Range: 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0

13. $y = 9x$ 14. $y = 5x + 25$; \$65

Practice Level B

1. independent 2. dependent 3. function
4. function 5. not a function

6.

Domain	1	2	3	4
Range	2	6	10	14

7.

Domain	10	20	30	40
Range	4	5	6	7

8.

Domain	6	7	8	9
Range	5	5.5	6	6.5

9. $y = 5x$ 10. $y = x - 7$ 11. $y = x - 2$

12. $y = 8x$; independent: number of balloon bunches; dependent: number of balloons; 80 balloons

13. $y = 10 + 3x$; independent: number of hours left in shift; dependent: number of loaves baked; 22 loaves

Practice Level C

1. function 2. function 3. not a function

4.

Domain	12	15	18	21
Range	0	1	2	3

5.

Domain	1	3	5	7
Range	1	1.5	2	2.5

6.

Domain	10	20	30	40
Range	1	$\frac{4}{3}$	$\frac{5}{3}$	2

7. $y = 2x + 3$ 8. $y = \frac{1}{2}x - 1$ 9. $y = x + 31.5$;

42.5 10. $y = 18 + 6x$; 72 novelty items

11. $y = 8 + 4x$; 32 sandwich rings

Review for Mastery

1. domain: 2, 5, 7, 8; range: 5, 11, 15, 17

2. domain: 1, 3, 4, 7; range: 2, 8, 11, 20

3.

Input	0	3	5	7
Output	0	12	20	28

range: 0, 12, 20, 28

4.

Input	1	2	3	4
Output	1	4	7	10

range: 1, 4, 7, 10

5. $y = x + 11$ 6. $y = \frac{1}{2}x$

Challenge Practice

1. 0, 1, 2, 3 2. 1, 2, 3, 5 3. 2 4. 5, 2

5. any value except -2 , 1 , 2 , or 3

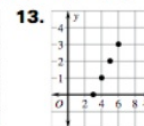
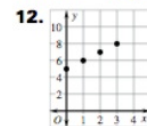
Lesson 1.7

Practice Level A

1. horizontal 2. vertical 3. (0, 2), (1, 4), (2, 6), (3, 8) 4. (3, 2), (6, 2), (9, 2), (12, 2) 5. (10, 4), (9, 8), (8, 12), (7, 16) 6. (1, 3), (2, 4), (3, 5), (4, 6); domain: 1, 2, 3, 4; range: 3, 4, 5, 6

7. (2, 1), (4, 3), (6, 5), (8, 7); domain: 2, 4, 6, 8; range: 1, 3, 5, 7 8. (0, 9), (1, 8), (2, 7), (3, 6); domain: 0, 1, 2, 3; range: 9, 8, 7, 6

9. (1, 5), (2, 7), (3, 9), (4, 11); domain: 1, 2, 3, 4; range: 5, 7, 9, 11 10. $(-3, -7)$, $(-2, -3)$, $(-1, 1)$, (0, 5); domain: -3 , -2 , -1 , 0 ; range: -7 , -3 , 1 , 5 11. $(-1, 3)$, (0, 0), (1, -3), (2, -6); domain: -1 , 0 , 1 , 2 ; range: 3 , 0 , -3 , -6



LESSON
1.5**Practice B**

For use with pages 28–33

In Exercises 1 and 2, identify what you know and what you need to find out. You do *not* need to solve the problem.

1. You are making cookies for a bake sale and need to make enough cookies to fill 24 boxes containing 6 cookies each. How many dozen cookies do you need to make?
2. The cellular phone plan you signed up for gives you 400 minutes a month for \$35 and charges \$.15 for each additional minute over 400 minutes. How long can you talk on the phone each month and stay within a budget of \$45?

In Exercises 3 and 4, state the formula that is needed to solve the problem. You do *not* need to solve the problem.

3. You invest \$200 into a savings account that earns 2% simple interest. How long will it take to earn \$50 in interest?
4. It takes you half an hour to travel 26 miles to work. What is your average speed?
5. **Sticker Collection** Your sticker collection consists of 175 stickers. Each sticker is either an animated cartoon character or an animal. There are 43 less stickers that are animated characters than stickers that are animals. Let x be the number of stickers that are animals. Which equation correctly models this situation?
 - A. $x - 43 = 175$
 - B. $x + (x + 43) = 175$
 - C. $x + (x - 43) = 175$
6. **Bookshelf** You installed a bookshelf on the wall to organize some of your books. The books that you absolutely want on the shelf weigh a total of $6\frac{3}{4}$ pounds. The bookshelf can handle no more than 9 pounds. You plan on filling the rest of the shelf with your paperbacks that each weigh about $\frac{1}{8}$ pound. Assuming you won't run out of room, how many paperback books can you add to the shelf?
7. **Camping** You are responsible for buying supplies for an upcoming camping trip. You can buy packages of stew that just need water added and then are heated. Each package costs \$4.95 and contains enough stew for 2 people. You need to buy enough packages so that you can have stew for 3 days of the trip. There will be 8 people on the trip. How many packages do you need? What is the total cost?
8. **Banking** You are going to open a certificate of deposit (CD) that earns simple interest. One bank offers a CD in which you must deposit \$500 for 3 years with 2% interest. Another bank offers a CD in which you must deposit \$250 for 4 years with 3% interest. Which CD will earn more interest?

LESSON 1.6 Practice B
For use with pages 35–41

Complete the sentence.

- The input variable is called the ? variable.
- The output variable is called the ? variable.

Tell whether the pairing is a function.

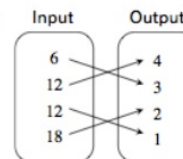
3.

Input	Output
1	15
3	20
5	15
7	20

4.

Input	Output
5	5
6	5
7	5
8	5

5.



Make a table for the function. Identify the range of the function.

6. $y = 4x - 2$

Domain: 1, 2, 3, 4

7. $y = 0.1x + 3$

Domain: 10, 20, 30, 40

8. $y = \frac{1}{2}x + 2$

Domain: 6, 7, 8, 9

Write a rule for the function.

9.

Input, x	1	2	3	4
Output, y	5	10	15	20

10.

Input, x	10	11	12	13
Output, y	3	4	5	6

11. **Shoe Sizes** The table shows men's shoe sizes in the United States and Australia. Write a rule for the Australian size as a function of the United States' size.

U.S. size	5	6	7	8	9	10
Australian size	3	4	5	6	7	8

12. **Balloon Bunches** You are making balloon bunches to attach to tables for a charity event. You plan on using 8 balloons in each bunch. Write a rule for the total number of balloons used as a function of the number of bunches created. Identify the independent and dependent variables. How many balloons will you use if you make 10 bunches?
13. **Baking** A baker has baked 10 loaves of bread so far today and plans on baking 3 loaves more each hour for the rest of his shift. Write a rule for the total number of loaves baked as a function of the number of hours left in the baker's shift. Identify the independent and dependent variables. How many loaves will the baker make if he has 4 hours left in his shift?

LESSON 1.6

1.7

Represent Functions as Graphs

Goal • Represent functions as graphs.

Your Notes

GRAPHING A FUNCTION

- You can use a graph to represent a function.
- In a given table, each corresponding pair of input and output values forms an ordered pair.
- An ordered pair of numbers can be plotted as a point.
- The x-coordinate is the input.
- The y-coordinate is the output.
- The horizontal axis of the graph is labeled with the input variable.
- The vertical axis is labeled with the the output variable.

Example 1 Graph a function

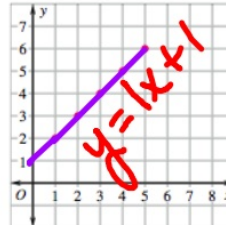
Graph the function $y = x + 1$ with domain 1, 2, 3, 4, and 5.

Solution

Step 1 Make an input-output table.

x	1	2	3	4	5
y	2	3	4	5	6

Step 2 Plot a point for each ordered pair (x, y) .



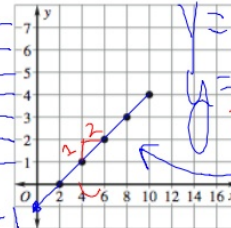
slope = 1
y-intercept 1
 $y = mx + b$
y-int

Handwritten notes: *Sub. domain range graphs*

Handwritten notes: $(2, 0)$, $(4, 1)$, $(6, 2)$, $(8, 3)$, $(10, 4)$

Example 2 Write a function rule for a graph

Write a function rule for the function represented by the graph. Identify the domain and the range of the function.



Handwritten notes: $y = mx + b$
 $y = \frac{1}{2}x - 1$

Handwritten notes: $8 + -1 = 7$

Solution

Step 1 Make a table for the graph.

x	2	4	6	8	10
y	0	1	2	3	4

Step 2 Find a relationship between the input and output values.

From the table, each output value is 1 less than half the corresponding input value.

Step 3 Write a function rule that describes the relationship.

$$y = \frac{1}{2}x - 1$$

A rule for the function is $y = \frac{1}{2}x - 1$. The

domain of the function is 2, 4, 6, 8, and 10.

The range is 0, 1, 2, 3, and 4.

Your Notes

✔ **Checkpoint** Complete the following exercise.

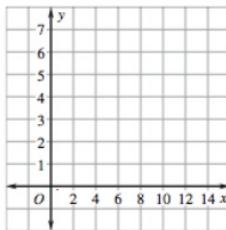
1. Graph the function $y = \frac{1}{3}x + 1$ with domain 0, 3, 6, 9, and 12.

x	0	3	6	9	12
y	1	2	3	4	5

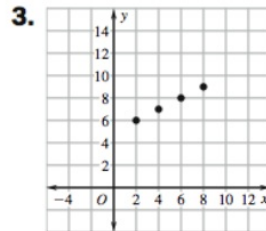
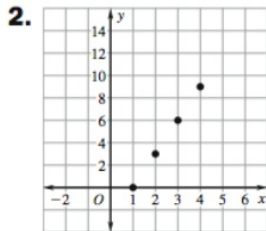
$\frac{1}{3}x$

$\frac{1}{3} \times \frac{3}{1} = \frac{3}{3} = 1$

$\frac{1}{3} \times \frac{6}{1} = \frac{6}{3} = 2$



✔ **Checkpoint** Write a rule for the function represented by the graph. Identify the domain and the range of the function.



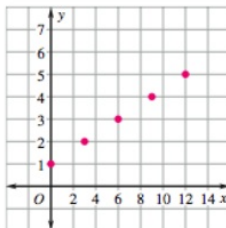
Homework

Your Notes

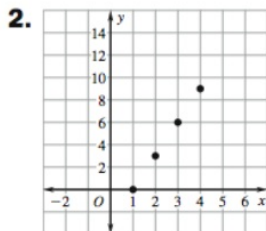
✔ **Checkpoint** Complete the following exercise.

1. Graph the function $y = \frac{1}{3}x + 1$ with domain 0, 3, 6, 9, and 12.

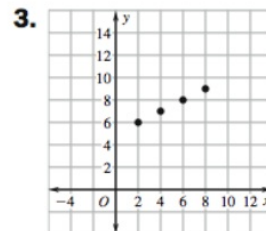
x	0	3	6	9	12
y	1	2	3	4	5



✔ **Checkpoint** Write a rule for the function represented by the graph. Identify the domain and the range of the function.



$y = 3x - 3$
Domain: 1, 2, 3, 4
Range: 0, 3, 6, 9



$y = \frac{1}{2}x + 5$
Domain: 2, 4, 6, 8
Range: 6, 7, 8, 9

Homework

Focus On Functions

Use after Lesson 1.7

Determine Whether a Relation Is a Function

- Goal** • Determine whether a relation is a function when the relation is represented by a table or a graph.

Your Notes

VOCABULARY

Relation Any pairing of a set of inputs with a set of outputs.

Example 1 Determine whether a relation is a function

Determine whether the relation is a function. Explain your reasoning.

a.

Input	3	4	2	0
Output	4	4	5	5

b.

Input	1	2	1	3	4
Output	4	7	5	0	3

Solution

- a. Every input has one output. The relation is a function.
- b. The input 1 has two different outputs. So, the relation is not a function.

- ✓ **Checkpoint** Determine whether the relation is a function.

1.

Input	4	3	5	4
Output	6	5	7	2

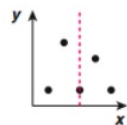
2.

Input	1	2	5	7
Output	4	5	7	6

Your Notes

VERTICAL LINE TEST

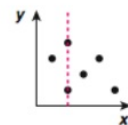
A graph of a relation is a function if no vertical line passes through more than one point on the graph.



Function



Not a function

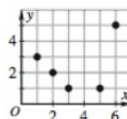


Not a function

Example 2 Use the vertical line test

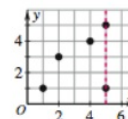
Determine whether the graph represents a function.

a.



A vertical line cannot be drawn through more than one point. The graph represents a function.

b.

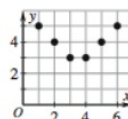


A vertical line can be drawn through more than one point. The graph does not represent a function.

Checkpoint Determine whether the graph represents a function.

Homework

3.



4.

