

Put your poster neatly into the inbox. Complete:

Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

← See Problem 1.

8. $\{(3, 7), (3, 8), (3, -2), (3, 4), (3, 1)\}$

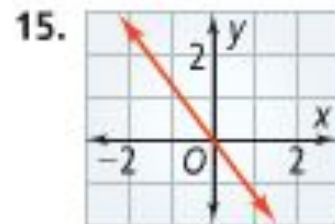
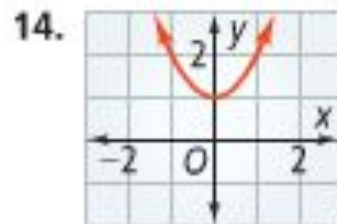
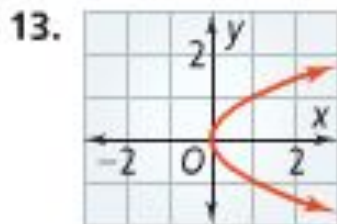
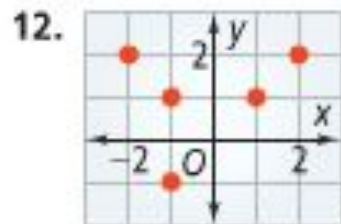
9. $\{(6, -7), (5, -8), (1, 4), (7, 5)\}$

10. $\{(0.04, 0.2), (0.2, 1), (1, 5), (5, 25)\}$

11. $\{(4, 2), (1, 1), (0, 0), (1, -1), (4, -2)\}$

Use the vertical line test to determine whether the relation is a function.

← See Problem 2.



16. **Physics** Light travels about 186,000 mi/s. The function $d(t) = 186,000t$ gives the distance $d(t)$, in miles, that light travels in t seconds. How far does light travel in 30 s?

← See Problem 3.

Announcements

1. Your Unit 4 Test is on Monday
2. Last day of Q1 is Tuesday! Teacher workday on Wednesday.
3. Unit 3 Test Corrections are due Tuesday
4. Ms. Barger's Math I tutoring is always on Tuesday morning

Today's lesson is going to be challenging...

My promise to you - I will explain to the best of my ability, I will answer your questions, I will support you.

Your promise to me - You will stay positive, you will ask questions, you will give today your ALL!

Sequences and Functions

10/25/2018

Extending Sequences

Describe a pattern in each sequence. What are the next two terms of each sequence?

1. 5, 8, 11, 14

2. 2.5, 5, 10, 20

Identifying an Arithmetic Sequence

In an **arithmetic sequence**, the difference between consecutive terms is constant. This difference is called the **common difference**.

Tell whether the sequence is arithmetic. If it is, what is the common difference?

1. 3, 8, 13, 18,...

2. 6, 9, 13, 17,...

A sequence is a function that relates the term number to the value of the term. Consider the sequence 7, 11, 15, 19, . . . Think of each term as the output of a function. Think of the term number as the input.

A sequence is a function that relates the term number to the value of the term. Consider the sequence 7, 11, 15, 19, . . . Think of each term as the output of a function. Think of the term number as the input.

term number	1	2	3	4	← input
term	7	11	15	19	← output

A sequence is a function that relates the term number to the value of the term. Consider the sequence 7, 11, 15, 19, . . . Think of each term as the output of a function. Think of the term number as the input.

term number	1	2	3	4	← input
term	7	11	15	19	← output

You can use the common difference of the terms of an arithmetic sequence to write a function rule for the sequence. For the sequence 7, 11, 15, 19, . . . , the common difference is 4.

A sequence is a function that relates the term number to the value of the term. Consider the sequence 7, 11, 15, 19, . . . Think of each term as the output of a function. Think of the term number as the input.

term number	1	2	3	4	← input
term	7	11	15	19	← output

You can use the common difference of the terms of an arithmetic sequence to write a function rule for the sequence. For the sequence 7, 11, 15, 19, . . . , the common difference is 4.

Let n = the term number in the sequence.

Let $A(n)$ = the value of the n th term of the sequence.

$$\text{value of term 1} = A(1) = 7$$

$$\text{value of term 2} = A(2) = 7 + 4$$

$$\text{value of term 3} = A(3) = 7 + 4 + 4$$

$$\text{value of term 4} = A(4) = 7 + 4 + 4 + 4$$

$$\text{value of term } n = A(n) = 7 + 4 + 4 + \dots + 4 = 7 + (n - 1)4$$

The common difference is 4.

The number of 4's added is 1 less than the term number.

A sequence is a function that relates the term number to the value of the term. Consider the sequence 7, 11, 15, 19, . . . Think of each term as the output of a function. Think of the term number as the input.

term number	1	2	3	4	← input
term	7	11	15	19	← output

You can use the common difference of the terms of an arithmetic sequence to write a function rule for the sequence. For the sequence 7, 11, 15, 19, . . . , the common difference is 4.

Let n = the term number in the sequence.

Let $A(n)$ = the value of the n th term of the sequence.

$$\text{value of term 1} = A(1) = 7$$

$$\text{value of term 2} = A(2) = 7 + 4$$

$$\text{value of term 3} = A(3) = 7 + 4 + 4$$

$$\text{value of term 4} = A(4) = 7 + 4 + 4 + 4$$

$$\text{value of term } n = A(n) = 7 + 4 + 4 + \dots + 4 = 7 + (n - 1)4$$

The common difference is 4.

The number of 4's added is 1 less than the term number.

The function rule for the sequence above is $A(n) = 7 + (n - 1)4$.

You can find the tenth term by finding $A(10)$. So the tenth term is

$$A(10) = 7 + (10 - 1)4 = 7 + 36 = 43.$$

You can find any term of an arithmetic sequence if you know the first term and the common difference.

take note

Key Concept Rule For an Arithmetic Sequence

The n th term of an arithmetic sequence with first term $A(1)$ and common difference d is given by

$$A(n) = A(1) + (n - 1)d$$

\uparrow \uparrow \uparrow \swarrow
nth term first term term number common difference

Let n = the term number in the sequence.

Let $A(n)$ = the value of the n th term of the sequence.

$$\text{value of term 1} = A(1) = 7$$

$$\text{value of term 2} = A(2) = 7 + 4$$

$$\text{value of term 3} = A(3) = 7 + 4 + 4$$

$$\text{value of term 4} = A(4) = 7 + 4 + 4 + 4$$

$$\text{value of term } n = A(n) = 7 + 4 + 4 + \dots + 4 = 7 + (n - 1)4$$

The common difference is 4.

The number of 4's added is 1 less than the term number.

The function rule for the sequence above is $A(n) = 7 + (n - 1)4$.

You can find the tenth term by finding $A(10)$. So the tenth term is

$$A(10) = 7 + (10 - 1)4 = 7 + 36 = 43.$$

You can find any term of an arithmetic sequence if you know the first term and the common difference.

take note

Key Concept Rule For an Arithmetic Sequence

The n th term of an arithmetic sequence with first term $A(1)$ and common difference d is given by

$$A(n) = A(1) + (n - 1)d$$

n th term first term term number common difference

Writing a Rule for an Arithmetic Sequence



Problem 3 Writing a Rule for an Arithmetic Sequence

Online Auction An online auction works as shown below. Write a rule to represent the bids as an arithmetic sequence. What is the twelfth bid?

Bass Guitar Minimum Price: \$200

Bid 1: \$200
Bid 2: \$210
Bid 3: \$220
Bid 4: \$230

First Bid: The seller sets a minimum price, which must be met by the first bid.

Following Bids: Bids increase in regular increments.

Make a table of the bids. Identify the first term and common difference.

Practice

1. Complete the Reteaching Worksheet [HERE](#)
2. Complete the Additional Problems Worksheet [HERE](#)

Homework

1. Page 277 # 16-17, 27-29, 36, 38-39
2. Work on Test Corrections
3. Begin studying for your Unit 4 Test (Hint: look at Chapter 4 in your textbook!)