

2017 ALGEBRA 2 2018
WEEKLY ASSIGNMENT SHEET FOR
MAY. 14 TO MAY. 18
FOURTH QUARTER (Q4). WEEK 7 OF 9. (Q4-7)

INSTRUCTOR: MR. ANDRUS.

ROOM: 514

CONTINUING OBJECTIVES:

1. *Improve organization skills.*
2. *Move from memorizing and repeating to applying and thinking.*
3. *Read, write and interpret math statements.*
4. *Use mistakes as opportunities to learn.*
5. *Expand successes and build up weaknesses. Continue to move forward.*

SCCCR STANDARDS:

- Sequences and Series. Identify geometric and arithmetic sequences. Find common difference and common ratios
1. A2.FBF.1*, A2.FBF.2*, A2.FIF.3*, A2.FIF.9*, A2.FLQE.2*, A2.FLQE.5*
 2. *Review.*

MONDAY (IF YOU DID NOT ATTEND LAST FRIDAY'S CLASS.)→ →

1. After this week, what % of Q4 is complete? What % of S2 grade is complete?
2. Read & study section 9-3. Record 3 key words. Starting on p. 648 do 1 – 13, 22 – 24.
3. Read & study worksheet Q4-7 Monday. Record 3 key words.
4. Complete all problems on worksheet Q4-7 Monday.
5. Re-try District Written Exam problems from problem solving q4-6, without notes. Then use notes to correct and update the problems.

Check your last week's assignment sheet for Friday's work. Complete this work to prepare for this week's assessment. ☹☹☹

TUESDAY (IF YOU DID NOT ATTEND CLASS ON MONDAY)→ →

1. Grade/UPDATE/discuss Monday's work.
2. Read & Study section 9-4. Record 3 key words. Starting on p. 659 do 1 – 15.
3. Read & study worksheet Q4-7 Tuesday. Record 3 key words.
4. Complete all problems on worksheet Q4-7 Tuesday.
5. Re-try District Written Exam problems from problem solving q4-6, without notes. Then use notes to correct and update the problems.

Please complete Monday's assignments. Use them to prepare for the assessment. ☺☺☺

WEDNESDAY (IF YOU DID NOT ATTEND CLASS ON TUESDAY)→ →

1. Grade/UPDATE/discuss Tuesday's work.
2. Complete DISTRICT WRITTEN EXAM.
3. Complete test review sheet.
4. Journal: Explain how to determine if a sequence is arithmetic.
Hint: first page of worksheet q4-7 Monday.

Please complete Tuesday's assignments and use them to prepare for the assessment. ☹☹☹

THURSDAY (IF YOU DID NOT ATTEND CLASS ON WEDNESDAY)→ →

1. Grade/UPDATE/discuss Wednesday's work. Review.
2. **Complete Weekly Test in Aleks.**
3. **You may use all note pages on this assessment.**
4. **If you did not attend class yesterday, your first take will count as your new test problems. Your 2nd take will count as your test score. Additional takes will be updates.**

Please complete Wednesday's assignments and use them to prepare for the weekly assessment. ☹☹☹

FRIDAY (IF YOU DID NOT ATTEND CLASS ON THURSDAY)→ →

1. Update yesterday's test in Aleks.
2. Problem solving Q4-7. Turn in before leaving class.

Please complete the weekly assessment today. ☹☹☹

Worksheet Q4-7 Monday

9-3

Arithmetic Sequences and Series

To determine whether a sequence is an **arithmetic sequence**, check for a **common difference**, d , $d \neq 0$.

Find the first differences of the terms.

$-7, -3, 1, 5, 9, \dots$ Differences: $-3 - (-7) = 4$ $1 - (-3) = 4$ $5 - 1 = 4$ $9 - 5 = 4$ The common difference is 4. The sequence is arithmetic.	$2, 6, 18, 54, 162, \dots$ Differences: $6 - 2 = 4$ $18 - 6 = 12$ $54 - 18 = 36$ $162 - 54 = 108$ There is no common difference. The sequence is not arithmetic.
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If you know the first term of an arithmetic sequence, a_1 , and the common difference, d , then you can find the n th term, a_n , using the following rule.

$$a_n = a_1 + (n - 1)d$$

Find the 15th term of the arithmetic sequence 10, 4, -2, -8, -14, ...

Step 1 Find the common difference, d .

$$d = 4 - 10 = -6$$

Step 2 Identify the first term, a_1 .

$$a_1 = 10$$

Step 3 Use the formula with $n = 15$ to find the 15th term, a_{15} .

$$a_n = a_1 + (n - 1)d \quad \text{Write the rule.}$$

$$a_{15} = a_1 + (15 - 1)d \quad \text{Substitute } n = 15.$$

$$a_{15} = 10 + (14)(-6) \quad \text{Substitute } a_1 = 10 \text{ and } d = -6.$$

$$a_{15} = -74 \quad \text{Simplify.}$$

The 15th term of the sequence is -74.

Determine whether each sequence could be arithmetic. If so, find the common difference.

1. 3, 15, 27, 39, 51, ...

2. 3, 9, 27, 81, 243, ...

3. 10, 2, -6, -14, -22, ...

Find the 10th term of each arithmetic sequence.

4. 5, 13, 21, 29, 37, ...

5. 7, 4, 1, -2, -5, ...

$d =$ _____

$d =$ _____

$a_1 =$ _____, $n =$ _____

$a_1 =$ _____, $n =$ _____

Worksheet Q4-7 Monday cont.

9-3

Arithmetic Sequences and Series (continued)

If you know any two terms in an arithmetic sequence, you can find any other term in the sequence.

- Find the common difference by using the two terms and the formula for the n th term.
- Then use the formula for the n th term to find the first term and the n th term.

Find the 12th term of the arithmetic sequence with $a_3 = 33$ and $a_9 = 117$.

Step 1 Use the known terms and the formula for the n th term to find the common difference.

$$a_n = a_1 + (n - 1)d$$

Write the formula.

$$a_9 = a_3 + (9 - 3)d$$

Let $a_n = a_9$ and $a_1 = a_3$.

$$a_9 = a_3 + 6d$$

Simplify.

$$117 = 33 + 6d$$

Substitute $a_9 = 117$ and $a_3 = 33$.

$$14 = d$$

Solve for d .

Since $a_n = a_9$,
 $n = 9$ in
the formula.
Replace 1 with
3 since $a_1 = a_3$.

Step 2 Use one of the known terms and the common difference, $d = 14$, to find a_1 . Use $a_3 = 33$ and the formula for the n th term.

$$a_n = a_1 + (n - 1)d$$

Write the formula.

$$a_3 = a_1 + (3 - 1)(14)$$

Let $a_n = a_3$, so $n = 3$ and $d = 14$.

$$a_3 = a_1 + (2)(14)$$

Simplify.

$$33 = a_1 + 28$$

Substitute $a_3 = 33$.

$$5 = a_1$$

Solve for a_1 .

Step 3 Use $a_1 = 5$, $d = 14$, and $n = 12$ in the formula for the n th term to find a_{12} .

$$a_n = a_1 + (n - 1)d$$

Write the formula.

$$a_{12} = 5 + (12 - 1)(14)$$

Substitute $a_1 = 5$, $d = 14$, and $n = 12$.

$$a_{12} = 5 + (11)(14)$$

Simplify.

$$a_{12} = 159$$

Solve for a_{12} .

Find the 10th term of the arithmetic sequence with $a_4 = 34$ and $a_6 = 52$.

6. Find d .

$$\text{Let } a_n = a_6 \text{ and } a_1 = a_4.$$

$$a_6 = a_4 + (6 - 4)d$$

7. Find a_1 .

$$\text{Let } a_n = a_4.$$

$$a_4 = a_1 + (4 - 1)(\quad)$$

8. Find a_{10} .

$$n = \quad$$

1. Yes; $d = 12$
2. No
3. Yes; $d = -8$
4. 8; 5; 10; $a_{10} = 77$
5. -3; 7; 10; $a_{10} = -20$
6. $52 = 34 + 2d$; $d = 9$
7. 9; $34 = a_1 + 27$; $a_1 = 7$
8. 10; $a_{10} = a_1 + (10 - 1)d$; $a_{10} = 7 + 81$;
 $a_{10} = 88$

Worksheet Q4-7 Tuesday

9-4

Geometric Sequences and Series

To determine whether a sequence is a **geometric sequence**, check for a **common ratio**, r ($r \neq 1$).

$-2, 6, -18, 54, -162, \dots$

Find the ratios of pairs of terms to decide whether the sequence is geometric.

$$\text{Ratios: } \frac{6}{-2} = -3$$

$$\frac{-18}{6} = -3$$

$$\frac{54}{-18} = -3$$

$$\frac{-162}{54} = -3$$

The common ratio is -3 . The sequence is geometric.

If you know the first term of a geometric sequence, a_1 , and the common ratio, r , then you can find the n th term, a_n , using the following rule.

$$a_n = a_1 r^{n-1}$$

Find the 10th term of the geometric sequence $3, 12, 48, 192, 768, \dots$

Step 1 Find the common ratio, r .

$$r = \frac{12}{3} = 4$$

Step 2 Identify the first term, a_1 .

$$a_1 = 3$$

Step 3 Use the formula with $r = 4$ to find the 10th term, a_{10} .

$$a_n = a_1 r^{n-1}$$

Write the rule.

$$a_{10} = a_1 r^{10-1}$$

Substitute $n = 10$.

$$a_{10} = 3(4)^9$$

Substitute $a_1 = 3$ and $r = 4$.

$$a_{10} = 3(262,144) = 786,432$$

Simplify.

The 10th term of the sequence is 786,432.

Determine whether each sequence could be geometric. If so, find the common ratio.

1. $-6, 12, -24, 48, -96, \dots$

2. $3, 9, 27, 81, 243, \dots$

3. $10, 60, 110, 160, 210, \dots$

Find the 8th term of each geometric sequence.

4. $-7, 14, -28, 56, -112, \dots$

5. $8, 24, 72, 216, 648, \dots$

$r =$ _____

$r =$ _____

$a_1 =$ _____, $n =$ _____

$a_1 =$ _____, $n =$ _____

Worksheet Q4-7 Tuesday cont.

9-4

Geometric Sequences and Series (continued)

If you know any two terms in a geometric sequence, you can find any other term in the sequence.

- Find the common ratio by using the two terms and the formula for the n th term.
- Then use the formula for the n th term to find the first term and the n th term.

Find the 8th term of the geometric sequence with $a_4 = 162$ and $a_6 = 1458$.

Step 1 Use the known terms and the formula for the n th term to find the common ratio.

$$a_n = a_1 r^{n-1}$$

Write the formula.

$$a_6 = a_4 r^{6-4}$$

Let $a_n = a_6$ and $a_1 = a_4$.

$$1458 = 162r^2$$

Simplify and substitute $a_6 = 1458$ and $a_4 = 162$.

$$\pm 3 = r$$

Solve for r .

Step 2 Use one of the known terms and the common ratio, $r = \pm 3$, to find a_1 . Use $a_4 = 162$ and the formula for the n th term.

$$a_n = a_1 r^{n-1}$$

Write the formula.

$$a_4 = a_1 (3)^{4-1}$$

OR $a_4 = a_1 (-3)^{4-1}$

$a_n = a_4$, so $n = 4$; $r = 3$ or -3

$$162 = 27a_1$$

OR $162 = -27a_1$

Simplify and substitute $a_4 = 162$.

$$6 = a_1$$

OR $-6 = a_1$

Solve for a_1 .

Step 3 Use both cases in the formula for the n th term to find a_8 .

When $r = 3$, $a_1 = 6$.

When $r = -3$, $a_1 = -6$.

$$a_n = a_1 r^{n-1}$$

$$a_n = a_1 r^{n-1}$$

$$a_n = 6(3)^{n-1}$$

$$a_n = -6(-3)^{n-1}$$

$$a_8 = 6(3)^{8-1}$$

$$a_8 = -6(-3)^{8-1}$$

$$a_8 = 6(3)^7$$

$$a_8 = -6(-3)^7$$

$$a_8 = 13,122$$

$$a_8 = 13,122$$

In both cases, the 8th term is 13,122.

Find the 7th term of the geometric sequence with $a_4 = 80$ and $a_5 = 160$.

6. Find r .

Let $a_n = a_5$ and $a_1 = a_4$.

$$a_n = a_1 r^{n-1}$$

$$a_5 = a_4 r^{5-4}$$

7. Find a_1 .

Let $a_n = a_4$.

$$a_n = a_1 r^{n-1}$$

$$a_4 = a_1 (\text{_____})^{4-1}$$

8. Find a_7 .

$n = \text{_____}$

$$a_n = a_1 r^{n-1}$$

1. Yes; $r = -2$
2. Yes; $r = 3$
3. No
4. $-2; -7; 8; a_8 = 896$
5. $3; 8; 8; a_8 = 17,496$
6. $160 = 80(r)^1; r = 2$
7. $2; 80 = a_1(2^3); a_1 = 10$
8. $7; a_7 = 10(2^6); a_7 = 640$