

Accelerated Algebra/Geometry A

Unit 2: Reasoning with Linear Equations and Inequalities

Unit 2B: Function Notation, Arithmetic Sequences and Radicals

Sept. 13 Solving Inequalities in One Variable

Classwork/Homework:

Sept. 14 Function Notation (Function VS Relation)

Classwork/Homework: pages 1-4

Sept. 15 Function Notation and Rate of Change

Classwork/Homework: pages 5-8

Sept. 16 Arithmetic Sequences

Classwork/Homework: Pages 9-11

Sept. 19 Arithmetic Sequences

Classwork/Homework: Pages 12-13

Sept. 20 Arithmetic Mixed Review

Classwork/Homework: Page 14

Sept. 21 **QUIZ**

Simplifying Radicals

Classwork/Homework: Pages 15-18

Sept. 22 Adding and Subtracting Radicals

Classwork/Homework: Pages 19-20

Sept. 23 Simplifying, Adding and Subtracting Radicals

Classwork/Homework: Pages 21-22

Fall Break!!!! Sept. 25-Sept. 30

Oct. 3 Multiplying Radicals

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Oct. 4 More Multiplying Radicals

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Oct. 5 Dividing Radicals

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Oct. 6 Dividing Radicals with Conjugate

Classwork/Homework: Pages 28

Oct. 7 Radical Mixed Review

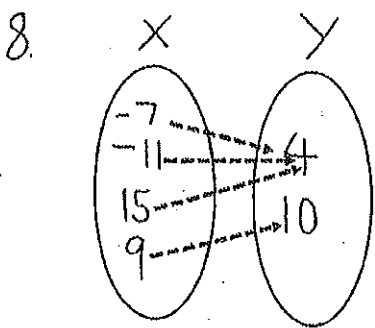
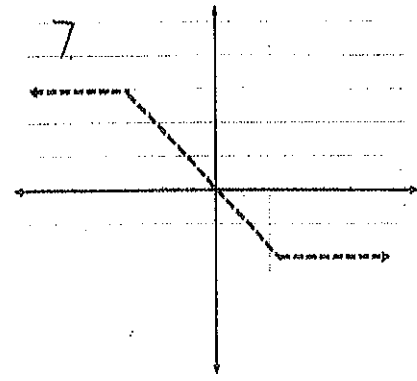
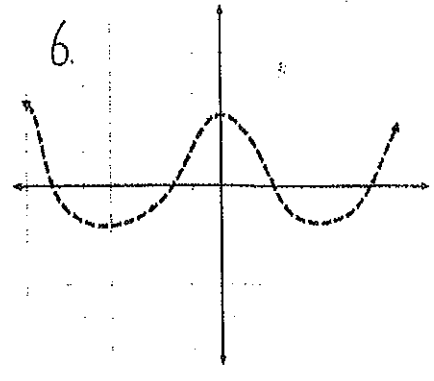
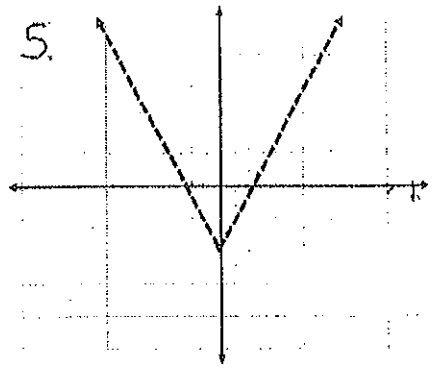
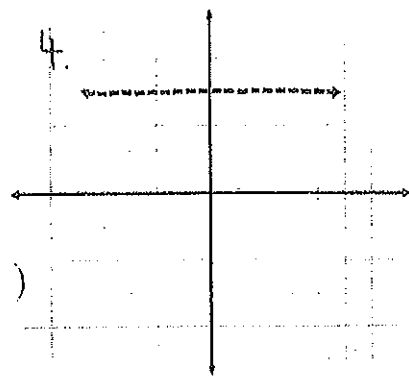
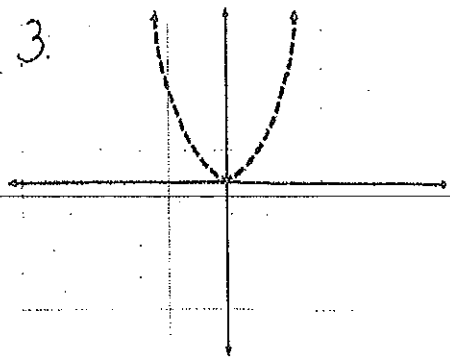
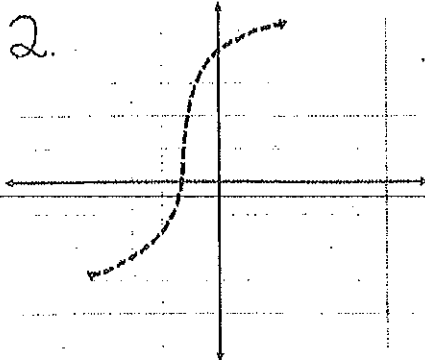
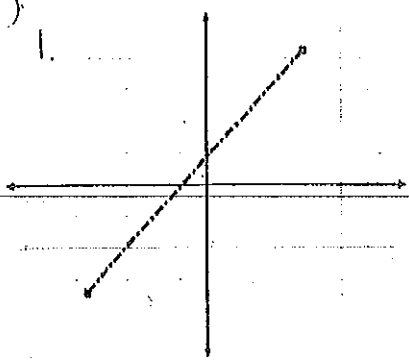
QUIZ

Classwork/Homework: Page 29

Oct. 10 Review TBA

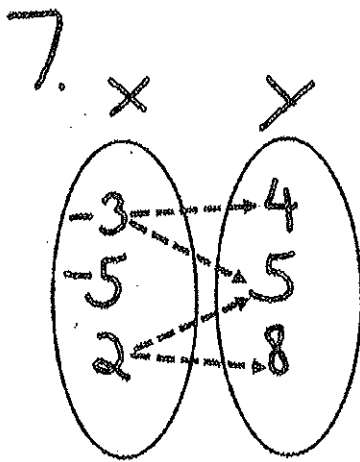
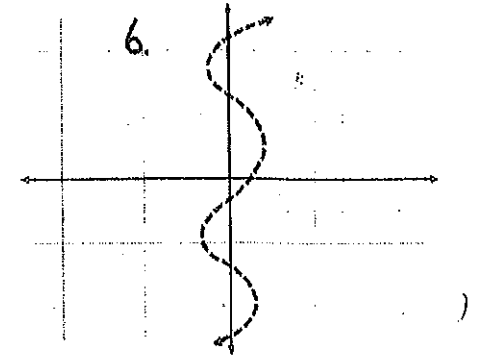
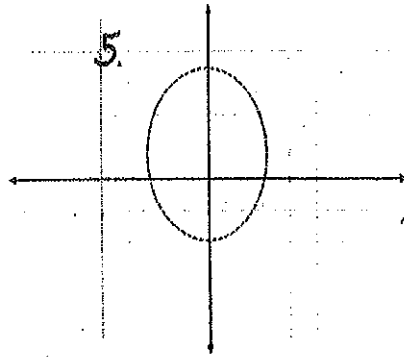
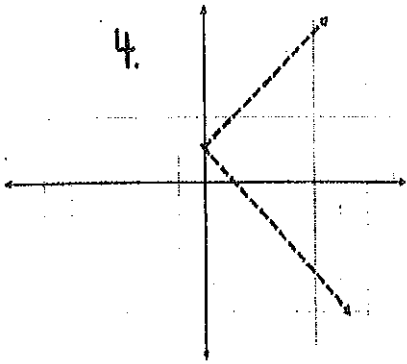
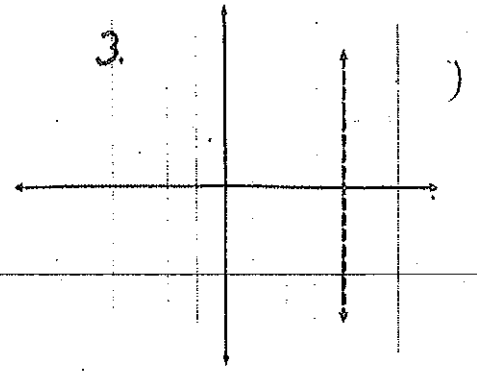
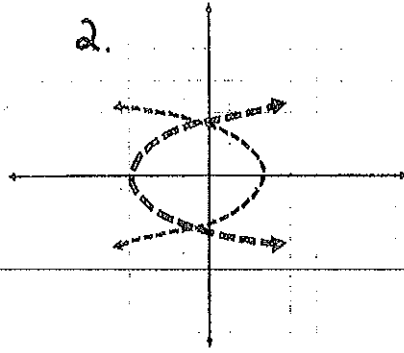
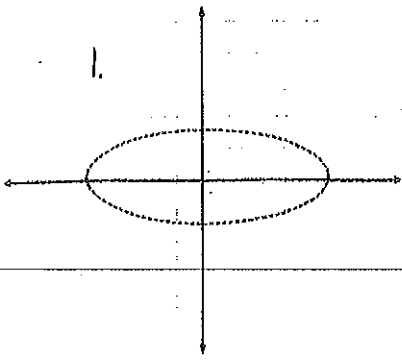
Oct. 11 TEST

Am I a function?



9.

X	Y
1	5
2	6
0	7
-1	8
4	9



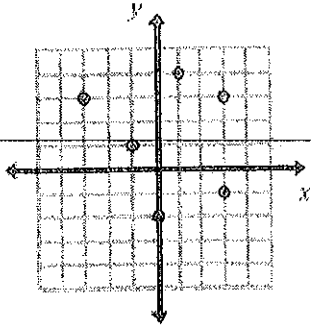
8.

x	y
-1	7
-1	3
4	6
-2	-10

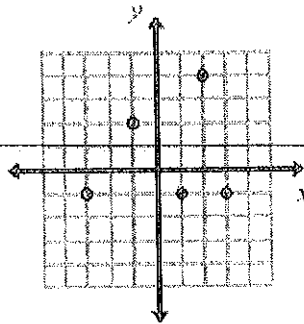
Name: _____ Date: _____

Decide whether the graph is a function or relation. If it is a function, give the domain and range.

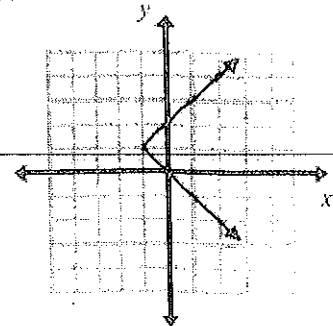
1.



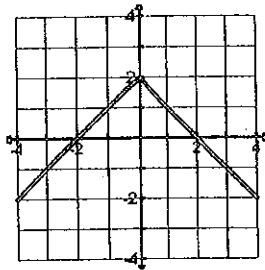
2.



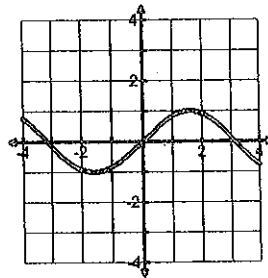
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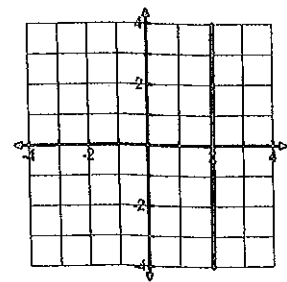
4.



5.



6.



Decide whether the relation is a function. If it is a function, give the domain and the range.

7.

Input	Output
1	7
1	-7
2	8
2	-8

8.

Input	Output
3	2
5	4
7	6

9.

Input	Output
0	-6
2	-4
4	-2
6	0

Evaluate the function when $x = 3$, $x = 0$, and $x = -2$. (3 answers for each problem)

10. $f(x) = 2x - 5$

11. $h(x) = 6x + 2$

12. $g(x) = 2.4x$

Evaluate the function when $x = 3$, $x = 0$, and $x = -2$. (3 answers for each problem)

13. $f(x) = 0.5x + 12$

14. $h(x) = \frac{2}{3}x - 1$

15. $f(x) = \frac{3}{5}x + 2$

If $f(x) = 2x - 3$, $g(x) = \sqrt{x+5}$, and $h(x) = x^2 - 3x + 5$, find each of the following:

16. $f(4) =$

17. $h(-3) =$

18. $g(7) =$

Extension: $h(g(4)) =$

Name: _____ Date: _____ Period: _____

Essential Question: How do I use function notation?

I. What is a function?

So far we have seen some relations. A **relation** is an ordered pairing of numbers, such as number of children in a family paired with the number of pets owned by the family. When each input value of a relation is paired with exactly one output value, then the relation is called a **function**.

Example 1: Determine whether the given relation is a function. Explain.

a. $\{(2, 0), (5, 1), (3, 9), (2, 7)\}$

b. $\{(4, 2), (5, 2), (6, 2), (7, 1)\}$

c. Number of children in a family paired with the number of pets owned by the family.

d. Day of the school year paired with the number of students enrolled in a given class.

e. $y = 2x$

f.

x	1	1	2	2	3	3
y	6	9	12	15	18	21

II. What is function notation?

Often, functions are written with an output variable of y . There is another way to denote the output value of a function called **function notation**. This notation replaces "y" with " $f(x)$ ". This notation, $f(x)$, is read "f at x" or "f of x". It stands for the output value for a given input, or x , value.

Example 2: Evaluate using the given function in the table.

x	-2	-1	0	1	2	3
$f(x)$	-12	-7	-2	3	8	13

a. $f(1)$

b. $f(-2)$

c. $f(0)$

d. Find x for $f(x) = 13$

Name: _____ Date: _____ Period: _____

Some functions come in a "y =" format, such as $y = 6x - 1$. Function notation can also be used for equations. Examples of equations in function notation:

$$f(x) = 6x - 1 \quad g(x) = -3x^2 \quad h(x) = \left(\frac{1}{2}\right)x \quad j(x) = \sqrt{x}$$

To use function notation, substitute the desired input value in for every x . For instance, to evaluate function f with an input value of 2 means find $f(2)$.

$$f(2) = 6(2) - 1 = 12 - 1 = 11$$

$$f(2) = 11 \quad \text{This is read, "f at 2 is 11."}$$

Example 3: Evaluate using the above functions.

a. $f(5)$

b. $g(2)$

c. $h(-10)$

d. $j(36)$

Example 4: Find the x needed.

a. Find x so that $j(x) = 9$.

b. Find x so that $h(x) = 14$.

c. Find x so that $g(x) = 0$.

d. Find x so that $f(x) = 19$.

Coordinate Algebra
Practice Function Notation

Name _____ Date _____

Answer each question.

MCC9-12.A.REI.10 1. Would $(3, 3)$ be a solution to the equation $y = -x + 6$ and $y = 2^x - 5$? Justify your answer.

MCC9-12.F.IF.2 2. For the function $f(x) = 3x^2 - 7x + 2$, find $f(2)$.

MCC9-12.F.BF.1b 3. For the functions $f(x) = 4x - 12$ and $g(x) = 10x + 7$, find $f(x) - g(x)$.

MCC9-12.F.IF.1 4. If $f(x) = 14$, what is x ?

X	Y
1	56
2	28
3	14
4	7

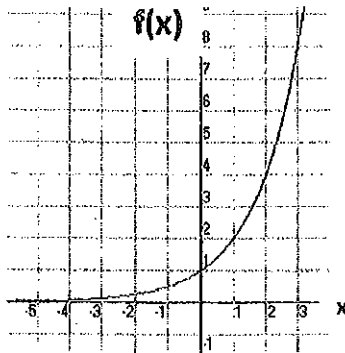
MCC9-12.A.REI.11 5. Where does $y = f(x)$ and $y = g(x)$? Justify.

$f(x) = 2x + 6$

x	g(x)
2	2
3	4
6	32

MCC9-12.F.BF.1 6. Best Print prints tickets for a \$10 set-up fee and \$1 for 25 tickets. If x represents the number of tickets, write a function, $f(x)$, for the cost of printing.

MCC9-12.F.IF.9 7. Using the graph and table below, which comparison is not true?



x	g(x)
-3	-5
-1	-1
1	3
2	5

- a) $g(2) - g(-1) > f(2) - f(-1)$ b) in $(0, f(x))$ and $(0, g(x))$, $f(x) = g(x)$ c) $f(3) < g(3)$ d) $\frac{f(5) - f(1)}{5 - 1} > \frac{g(5) - g(1)}{5 - 1}$

MCC9-12.F.IF.1

8. Identify the function(s) for which $f(2) = 4$.

i. $f(x) = 3x - 8$

ii. $f(x) = 2^x$

iii. $f(x) = 4^x - 12$

a) I and II only

b) I and III only

c) I, II, and III

d) none of these

MCC9-12.F.IF.5

9. Find the range of $f(x) = 2x - 3$ when the domain is $\{-5, -2, -1\}$

a) all integers

b) $\{-13, -7, -5\}$

c) $\{5, 7, 13\}$

d) $\{1, 4, 7\}$

MCC9-12.F.IF.5

10. Write the function that satisfies $f(-2) = -3$ and $f(0) = 1$.

a) $f(x) = -2x - 1$

b) $f(x) = 3x + 3$

c) $f(x) = 3x + 1$

d) $f(x) = 2x + 1$

MCC9-12.F.IF.9

11. If $f(x) = 3x + 5$ and $g(x) = 2^x$, which comparison is not true?

a) $f(4) > g(4)$

b) $g(0) - g(3) > f(0) - f(3)$

c) $f(x)$ will increase at a greater rate than $g(x)$

d) $\frac{f(2)}{g(2)} > \frac{g(2)}{f(2)}$

MCC9-12.A.REI.11

12. Which point lies on the graph of both functions $f(x) = -x + 6$ and $g(x) = x + 2$?

a) $(-3, -1)$

b) $(2, 4)$

c) $(-1, 7)$

d) $(0, 2)$

MCC9-12.F.IF.1

13. If 5 is the solution to $f(x) = 8$, what is the coordinate found on the graph of the function?

a) $(8, 5)$

b) $(-5, -8)$

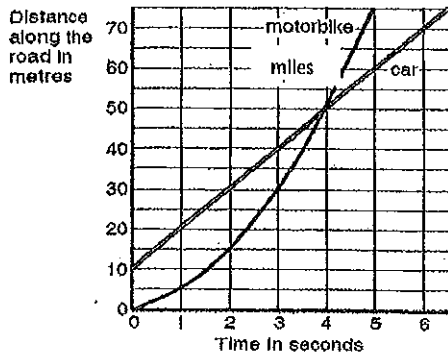
c) $(-8, 5)$

d) $(5, 8)$

Constructed Responses

MCC9-12.F.IF.1

14. What does $f(4) = 50$ represent in the graph below? How do you know?

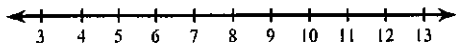


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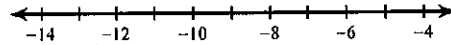
Two-Step Inequalities

Solve each inequality and graph its solution.

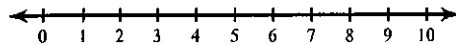
1) $2x + 4 \geq 24$



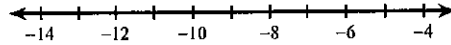
2) $\frac{m}{3} - 3 \leq -6$



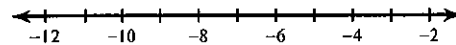
3) $-3(p + 1) \leq -18$



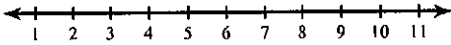
4) $-4(-4 + x) > 56$



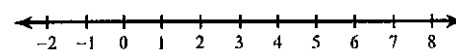
5) $-b - 2 > 8$



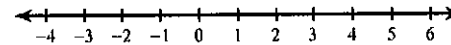
6) $-4(3 + n) > -32$



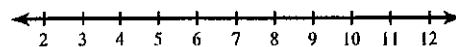
7) $4 + \frac{n}{3} < 6$



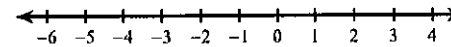
8) $-3(r - 4) \geq 0$



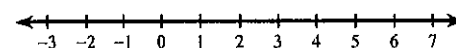
9) $-7x + 7 \leq -56$



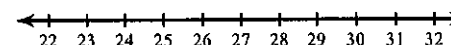
10) $-3(p - 7) \geq 21$



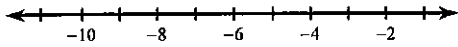
11) $-11x - 4 > -15$



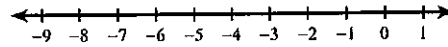
12) $\frac{-9 + a}{15} > 1$



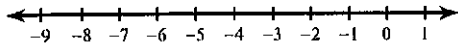
$$13) a - 6 \leq 15 + 8a$$



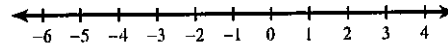
$$14) 13 + 2v - 8 + 6 > -7 - v$$



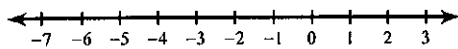
$$15) -5n - 6n \leq 8 - 8n - n$$



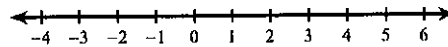
$$16) -x < -x + 7(x - 2)$$



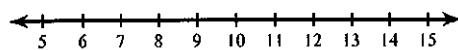
$$17) -5n + 6 \geq -7(5n - 6) - 6n$$



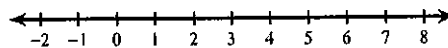
$$18) 3(p - 3) - 5p > -3p - 6$$



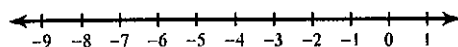
$$19) 28 - k \geq 7(k - 4)$$



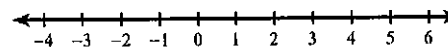
$$20) 28 - 7x \leq -4(-7x - 7)$$



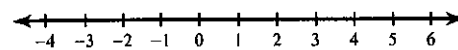
$$21) -6(1 + 7k) + 7(1 + 6k) \leq -2$$



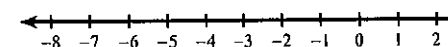
$$22) -2(2 - 2x) - 4(x + 5) \leq -24$$



$$23) 3(1 - 2x) > 3 - 6x$$



$$24) -2(5 + 6n) < 6(8 - 2n)$$



Arithmetic Sequences NOTES

Definition: Arithmetic Sequence

Definition: Explicit Formula

Definition: Recursive Formula

Example 1: Fill in the next 3 terms. What is the common difference?

2, 5, 8, 11, 14, 17, _____, _____, _____

Example 2: Fill in the next 3 terms. What is the common difference?

55, 49, 43, _____, _____, _____

Formula for writing an EXPLICIT equation of an arithmetic sequence:

The n th term of a_n of an arithmetic sequence with first term a_1 and common difference d is given by...

Where n is any positive integer. (** n stands for the number of terms in the sequence)

Example3: Write an equation for the arithmetic sequence 8, 17, 26, 35.....

Recursive:

Explicit:

Example 4: Find the equation for the n th term of arithmetic sequence $-8, -6, -4, \dots$

Find a_{13}

Find the 120th term

Find the recursive formula for the sequence above:

Example 5: Find the 4 arithmetic means between 16 and 91. This means find the 4 missing terms between 16 and 91.

Example 6: Given $a_1 = 21$ and $a_5 = 45$, find the equation of the arithmetic sequence and find the 3 arithmetic means between them.

Example 7: The table below shows typical costs for a construction company to rent a crane for one, two, three or four months. Assuming that the arithmetic sequence continues, how much would it cost to rent a crane for 1 year?

<u>Months</u>	<u>Cost</u>
1	\$75,000
2	\$90,000
3	\$105,000
4	\$120,000

2. Find the common difference. If there is no common difference, write "no common difference."

- a) 2, -1, -4, -7, ... _____
d) -13, -7, -1, 5, ... _____
- b) 4, 8, 16, 32 _____
e) -1, 2, -4, 8, ... _____
- c) 4, 8, 12, 16, ... _____
f) -3, -11, -19, -27, ... _____

3. Write the recursive formula for the following sequences. Remember to write the 1st term in the sequence.

- a) 12, 6, 0, -6 _____
c) -6, -3, 0, 3, 6, 9 _____
- b) -7, -3, 1, 5, 9 _____
d) 2, 6, 10, 14, ... _____

4. Write an explicit rule for the sequence. Then, use the formula to find the 10th term in each sequence.

- a) 5, 8, 11, 14, 17, ... _____, _____, _____
c) 26, 31, 36, 41, 46, ... _____, _____
- b) 20, 18, 16, 14, 12, ... _____, _____, _____
d) 4, 7, 10, 13, ... _____, _____

5. Find the sum of the first 10 terms of the sequence.

- a) 5, 8, 11, 14, 17, ... _____, _____
c) 26, 31, 36, 41, 46, ... _____, _____
- b) 20, 18, 16, 14, 12, ... _____, _____
d) 4, 7, 10, 13, ... _____, _____

6. Write a recursive rule and a closed rule for the sequence. *Remember to write the 1st term in the sequence for recursive rule.

Recursive Rule*

Explicit Rule

a) 1, -3, -7, -11, ...

b) 10, 8, 6, 4, ...

c) -7, -2, 3, 8, ...

d) -9, -5, -1, 3, ...

e) 12, 5, -2, -9, ...

7. a) Find the 20th term of the sequence in 5a.

b) Find the 30th term of the sequence in 5b.

c) Find the 50th term of the sequence in 5c.

d) Find the 74th term of the sequence in 5d.

e) Find the 38th term of the sequence in 5e.

1. Is the sequence below arithmetic?

1, -2, 4, -8, ...

2. What is the 105th term of the following sequence?

24, 44, 64, 84, ...

3. If the explicit formula for an arithmetic sequence is $a(n) = -3n + 6$, what is the recursive formula for the same sequence?
4. If the recursive formula for an arithmetic sequence is $a(n) = a(n-1) - 12$; $a(1) = 3$, then what is the explicit formula for the same sequence?

Use the following sequence for the next 4 problems.

40, 31, 22, 13, ...

5. Write the recursive formula for the given sequence.
6. Write the explicit formula for the given sequence.
7. Find the 39th term for the given sequence.
8. Find the sum of the first 81 terms of the given sequence.

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Explicit and Recursive Equations From Arithmetic Sequences

Find the next three terms of each arithmetic sequence, write the explicit and recursive formula:

1. 9, 16, 23, 30, _____, _____, _____ **Explicit:**

Recursive:

2. 31, 24, 17, 10, _____, _____, _____ **Explicit:**

Recursive:

3. -6, -2, 2, 6, _____, _____, _____ **Explicit:**

Recursive:

4. -8, -5, -2, 1, _____, _____, _____ **Explicit:**

Recursive:

5. 12, 16, 20, 24, _____, _____, _____ **Explicit:**

Recursive:

6. 3, 1, -1, -3, _____, _____, _____ **Explicit:**

Recursive:

7. 14, 12, 10, 8, _____, _____, _____ **Explicit:**

Recursive:

8. 17, 14, 11, 8, _____, _____, _____ **Explicit:**

Recursive:

Simplifying Radicals

Simplify.

1) $\sqrt{24}$

2) $\sqrt{12}$

3) $\sqrt{294}$

4) $\sqrt{150}$

5) $\sqrt{128}$

6) $\sqrt{28}$

7) $\sqrt{245}$

8) $\sqrt{27}$

9) $\sqrt{64}$

10) $\sqrt{392}$

$$11) \sqrt{147n^2}$$

$$12) \sqrt{50n^4}$$

$$13) \sqrt{16n^3}$$

$$14) \sqrt{28b}$$

$$15) \sqrt{36r}$$

$$16) \sqrt{28m^2}$$

$$17) \sqrt{100a}$$

$$18) \sqrt{175v^2}$$

$$19) \sqrt{320v^3}$$

$$20) \sqrt{75m^3}$$

Simplifying Radicals

Simplify.

1) $\sqrt{147xy^4}$

2) $\sqrt{216m^3n^3}$

3) $\sqrt{28x^4y^2}$

4) $\sqrt{252x^2y}$

5) $\sqrt{50u^4v}$

6) $\sqrt{392x^4y^2}$

7) $\sqrt{245x^3y}$

8) $\sqrt{384a^2b^4}$

9) $\sqrt{28m^3n^3}$

10) $\sqrt{294a^3b^3}$

$$11) -2\sqrt{8n^2}$$

$$12) -2\sqrt{45n^2}$$

$$13) -2\sqrt{320k^4}$$

$$14) 6\sqrt{80n^4}$$

$$15) -7\sqrt{20r^2}$$

$$16) -8\sqrt{75x^3y^2}$$

$$17) -3\sqrt{36a^3b^4}$$

$$18) 5\sqrt{72x^3y^2}$$

$$19) 4\sqrt{128x^2y^2}$$

$$20) -6\sqrt{72m^4n}$$

Combining Radicals 2

Simplify.

1) $\sqrt{18} + \sqrt{45} + \sqrt{18}$

2) $\sqrt{6} + \sqrt{3} + \sqrt{27}$

3) $\sqrt{20} + \sqrt{80} + \sqrt{20}$

4) $\sqrt{27} + \sqrt{3} + \sqrt{12}$

5) $\sqrt{48} + \sqrt{3} + \sqrt{27}$

6) $\sqrt{6} + \sqrt{45} + \sqrt{5}$

7) $\sqrt{63} + \sqrt{5} + \sqrt{63}$

8) $-4\sqrt{6} + 3\sqrt{90} - 4\sqrt{10}$

9) $-3\sqrt{112} - 2\sqrt{6} + 2\sqrt{7}$

10) $-3\sqrt{7} - 5\sqrt{3} + 3\sqrt{12}$

$$11) -4\sqrt{3} - 2\sqrt{3} - 4\sqrt{8}$$

$$12) -2\sqrt{20} - 5\sqrt{8} - \sqrt{128}$$

$$13) -3\sqrt{24} - 3\sqrt{24} + 2\sqrt{6}$$

$$14) -\sqrt{2} + 4\sqrt{18} - \sqrt{2}$$

$$15) \sqrt{6} + \sqrt{24} + \sqrt{24} + \sqrt{20}$$

$$16) \sqrt{18} + \sqrt{6} + \sqrt{18} + \sqrt{2}$$

$$17) \sqrt{3} + \sqrt{2} + \sqrt{12} + \sqrt{18}$$

$$18) \sqrt{54} + \sqrt{6} + \sqrt{6} + \sqrt{6}$$

$$19) -4\sqrt{72} - \sqrt{2} - 3\sqrt{128} - 2\sqrt{3}$$

$$20) 3\sqrt{2} - 2\sqrt{7} + 3\sqrt{24} - 4\sqrt{2}$$

$$21) 3\sqrt{8} - 3\sqrt{54} + 3\sqrt{2} - \sqrt{28}$$

Name _____

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Combining & Simplifying Practice

Simplify.

1) $2\sqrt{2} - 3\sqrt{2} - 3\sqrt{5}$

2) $-2\sqrt{6} - \sqrt{6} - 3\sqrt{6}$

3) $2\sqrt{6} + 2\sqrt{3} - 3\sqrt{6}$

4) $-2\sqrt{2} + 2\sqrt{3} - 3\sqrt{3}$

5) $3\sqrt{2} - 3\sqrt{2} - 3\sqrt{2}$

6) $3\sqrt{45} - 3\sqrt{8} - 3\sqrt{18}$

7) $-\sqrt{8} + 3\sqrt{6} - 2\sqrt{54}$

8) $-2\sqrt{8} - 2\sqrt{2} + 2\sqrt{8}$

9) $-2\sqrt{5} + 3\sqrt{5} - 3\sqrt{45}$

10) $3\sqrt{27} + 3\sqrt{12} - \sqrt{27}$

$$11) \sqrt{80r^3}$$

$$12) \sqrt{72x^3}$$

$$13) \sqrt{45n^4}$$

$$14) 7\sqrt{32b^4}$$

$$15) 4\sqrt{20v^4}$$

$$16) \sqrt{8xy^2}$$

$$17) \sqrt{128x^2y^4}$$

$$18) \sqrt{20mn}$$

$$19) 8\sqrt{294x^2y^2}$$

$$20) 4\sqrt{98x^3y}$$

Multiplying Radicals

Simplify.

1) $\sqrt{5} \cdot \sqrt{10}$

2) $\sqrt{10} \cdot \sqrt{5}$

3) $\sqrt{10} \cdot \sqrt{2}$

4) $\sqrt{20} \cdot \sqrt{5}$

5) $\sqrt{15} \cdot \sqrt{12}$

6) $\sqrt{5} \cdot \sqrt{3}$

7) $\sqrt{6} \cdot \sqrt{6}$

8) $-3\sqrt{12} \cdot 3\sqrt{12}$

9) $\sqrt{10} \cdot \sqrt{15}$

10) $\sqrt{6} \cdot \sqrt{5}$

$$11) 5\sqrt{10} \cdot -3\sqrt{6}$$

$$12) -3\sqrt{12} \cdot -5\sqrt{15}$$

$$13) -3\sqrt{5} \cdot -2\sqrt{2}$$

$$14) 3\sqrt{10} \cdot -\sqrt{15}$$

$$15) -2\sqrt{15} \cdot -2\sqrt{12}$$

$$16) \sqrt{15}(\sqrt{10} + \sqrt{3})$$

$$17) \sqrt{10}(2 + \sqrt{2})$$

$$18) \sqrt{3}(\sqrt{10} + \sqrt{6})$$

$$19) \sqrt{3}(\sqrt{2} + \sqrt{3})$$

$$20) \sqrt{2}(2 + \sqrt{2})$$

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Multiplying Radicals.

Simplify.

1) $\sqrt{10} \cdot -\sqrt{20}$

2) $\sqrt{2} \cdot -\sqrt{2}$

3) $\sqrt{3} \cdot \sqrt{3}$

4) $-2\sqrt{6} \cdot \sqrt{3}$

5) $-4\sqrt{4} \cdot -2\sqrt{2}$

6) $\sqrt{10} \cdot \sqrt{6}$

7) $-3\sqrt{15} \cdot \sqrt{3}$

8) $\sqrt{12} \cdot \sqrt{3}$

9) $2\sqrt{10} \cdot 3\sqrt{8}$

10) $4\sqrt{3} \cdot \sqrt{3}$

11) $4\sqrt{15} \cdot 3\sqrt{12}$

12) $\sqrt{4} \cdot -3\sqrt{4}$

13) $3\sqrt{10} \cdot \sqrt{6}$

14) $\sqrt{10} \cdot \sqrt{5}$

15) $\sqrt{5} \cdot \sqrt{5}$

16) $-2\sqrt{12} \cdot 5\sqrt{6}$

17) $\sqrt{20} \cdot -5\sqrt{15}$

18) $4\sqrt{2} \cdot \sqrt{2}$

19) $\sqrt{9} \cdot 3\sqrt{3}$

20) $\sqrt{10} \cdot \sqrt{10}$

15) $-2\sqrt{15}(-3\sqrt{3} + 3\sqrt{5})$

16) $5\sqrt{42x}(4 + 4\sqrt{7x})$

17) $\sqrt{14x}(3 - \sqrt{2x})$

18) $\sqrt{6n}(7n^3 + \sqrt{12})$

19) $\sqrt{3v}(\sqrt{6} + \sqrt{10})$

20) $\sqrt{21r}(5 + \sqrt{7})$

21) $(-2\sqrt{3} + 2)(\sqrt{3} - 5)$

22) $(5 - 4\sqrt{5})(-2 + \sqrt{5})$

23) $(-2 - 3\sqrt{5})(5 - \sqrt{5})$

24) $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$

25) $(5\sqrt{2x} + \sqrt{5})(-4\sqrt{2x} + \sqrt{5x})$

26) $(-3\sqrt{3k} + 4)(\sqrt{3k} - 5)$

27) $(5 + 4\sqrt{3})(3 + \sqrt{3})$

28) $(3\sqrt{2} + \sqrt{5})(\sqrt{2} - 3\sqrt{5r})$

Extra Practice - Dividing Radical Binomials (Conjugate)

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Simplify.

1) $\frac{5}{-7+5\sqrt{5}}$

2) $\frac{4}{3-\sqrt{6}}$

3) $\frac{5}{7+\sqrt{5}}$

4) $-\frac{3}{6+7\sqrt{6}}$

5) $\frac{6}{-5-2\sqrt{5}}$

6) $-\frac{2}{5-\sqrt{5}}$

7) $\frac{4}{-2-5\sqrt{5}}$

8) $\frac{5}{7-3\sqrt{6}}$

9) $\frac{6}{-1+\sqrt{7}}$

10) $\frac{5}{-6-\sqrt{6}}$

11) $\frac{-2+\sqrt{3}}{-3+\sqrt{7}}$

12) $\frac{-6-\sqrt{3}}{5-3\sqrt{2}}$

13) $\frac{2+4\sqrt{5}}{\sqrt{5}-\sqrt{3}}$

14) $\frac{5+\sqrt{6}}{4-\sqrt{2}}$

15) $\frac{-5+6\sqrt{3}}{\sqrt{2}+5}$

16) $\frac{5+7\sqrt{2}}{7+\sqrt{7}}$

17) $\frac{7-\sqrt{5}}{2-\sqrt{7}}$

18) $\frac{-5+3\sqrt{5}}{3-\sqrt{3}}$

19) $\frac{-7+6\sqrt{7}}{5-2\sqrt{5}}$

20) $\frac{6+7\sqrt{6}}{4+3\sqrt{6}}$

Radicals: Mixed Operations

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Simplify.

1) $\sqrt{252}$

2) $\sqrt{24}$

3) $-8\sqrt{384}$

4) $7\sqrt{175}$

5) $-\sqrt{3} + 3\sqrt{3}$

6) $-3\sqrt{2} - 3\sqrt{2}$

7) $3\sqrt{3} - \sqrt{3} - 2\sqrt{2}$

8) $2\sqrt{5} - 2\sqrt{6} + 3\sqrt{5}$

9) $\sqrt{6} + \sqrt{24}$

10) $\sqrt{5} + \sqrt{5}$

11) $-2\sqrt{12} - \sqrt{12}$

12) $3\sqrt{54} + 2\sqrt{24}$

13) $-\sqrt{6} + 2\sqrt{6} - \sqrt{18}$

14) $3\sqrt{12} - 2\sqrt{12} - \sqrt{54}$

15) $\sqrt{3} \cdot \sqrt{3}$

16) $\sqrt{5} \cdot \sqrt{5}$

17) $-3\sqrt{15}(5 + \sqrt{3})$

18) $3\sqrt{5}(\sqrt{5} + 3)$

19) $(4\sqrt{5} - 3)(\sqrt{5} - 2)$

20) $(3\sqrt{5} + \sqrt{3})(\sqrt{5} + \sqrt{3})$

21) $\frac{\sqrt{3}}{\sqrt{5}}$

22) $\frac{\sqrt{2}}{\sqrt{5}}$

23) $\frac{4\sqrt{3}}{5\sqrt{5}}$

24) $\frac{2\sqrt{2}}{4\sqrt{3}}$

25) $-\frac{2}{5 + \sqrt{3}}$

26) $\frac{2}{-2 - 5\sqrt{2}}$