PATTERNS

Agenda

Warm-Up

Grades

Notes

Homework

Have out your HoCo ticket if you are dressed up!

warm-up

1. Review your progress report. This is the grade that will appear on your report card. Please circle or highlight any discrepancies or issues you have with your grade.

2. On the back of your progress report, reflect on your first six weeks in algebra 1. Are you proud of your performance? What will you change next six weeks? Write at least 3 sentences.

Turn in your progress report to the bin

Test Averages

2nd ~ 81

3rd ~ 75

4th ~ 68

5th ~ 76

7th ~ 69

I ♥ HIP HOP

If you did not turn in a notebook, it is now LATE and will only be accepted until 4:30 TODAY. Please make sure it is in the bin on Ms. K's desk before then.

On page 23 & 24, set up unit 2 in your notebook.
Put your "2" tab on page 23 (fold along the dotted line)

UNIT 2

TITLE:

Foundations for Functions 23 24

Page #	Page Title
24	Words Worth Knowing
25	Patterns

Unit 2 Words Worth Knowing

- ☐ Pattern
- ☐ Term (Position)
- ☐ Sequence
- ☐ Pattern Rule
- ☐ Scatterplot
- ☐ Function Rule
- ☐ Domain
- ☐ Range
- ☐ Ordered Pair
- ☐ Continuous Graph
- ☐ Discrete Graph
- ☐ Linear Parent Function
- ☐ Quadratic Parent Function
- ☐ Parabola
- ☐ CBR
- ☐ Distance vs. Time Graph
- ☐ Speed vs. Time Graph
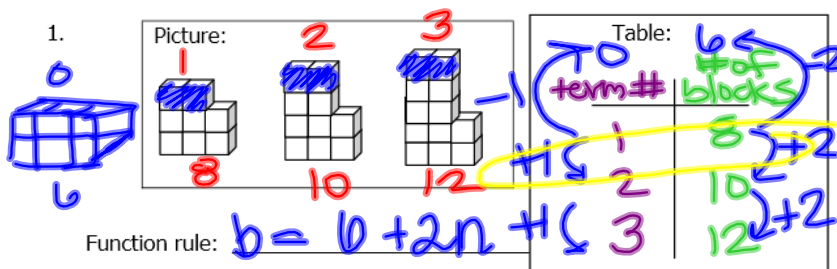
Algebra I - Unit 2: Topic 1 – Patterns   *10/2*   *p 25*

Student Notes - Patterns   **No Textbook Correlation**

Develop a table and a pattern rule for the representation:

1. Picture: *2*   *3*   Table: **How to write a Function Rule:**

8   10   12

term #	# of blocks
1	8 $+2$
2	10 $+2$
3	12 $+2$

Function rule: $b = 6 + 2n$

Determine the total number of blocks when:
A. The term number is 8:   B. The term number is 15:

$b = 6 + 2(8)$ *36 blocks*

22 blocks

C. What will the term number be when there are 52 blocks?

$52 = 6 + 2n$ $52 = 6 + 2n$
solve for n. $-6 \quad -6$
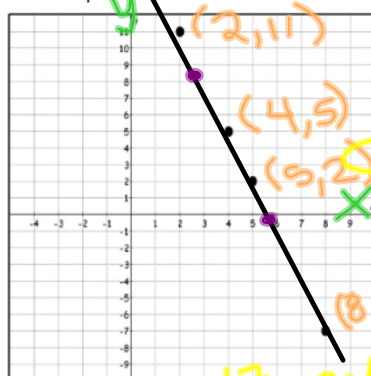 $46 = 2n$
              $n = 23$

2. Scatterplot: Table:

(2,11)
(4,5)
(5,2)

x	y
2	11 -6
4	5 -3
5	2 -9
8	-7

$+2$ ... $+1$ ... $+36$

(8, -7)   **Determine the y-value when:**

$y = 17 + -3x$ A. The x-value is 12: $y = 17 + (-3)(12)$

Function rule: _____ -19

           B. The x-value is 20: $-61 = 17 + -3x$

C. What will the x-value be when the y-value is -61? $-78 = -3x$

$x = 26$ CALCULATOR

Write a function rule for the following sequence.   If *n* represents a number's position in a sequence, write the first 5 terms described by each expression.

3. Sequence: $n=1, n=2, n=3$
18, 23, 28, 33 $n=4, n=5$

                 $3x + 4$ 4. $3n + 4$ $7, 10, 13, 16, 19$

A. $y = 13 + 53 = 28$ $x(x-1.5) + 2$

B. $y = 5 + 133 = 44$ 5. $n(n-1.5) + 2$

Function Rule: _____

1) $y =$ expression (w/ x)

2) 2nd   GRAPH

$$\text{total blocks} = \left(\begin{array}{c} \text{\# of blocks} \\ \text{@ term } 0 \end{array} \right) + \left(\begin{array}{c} \text{\# of blocks} \\ \text{added each} \\ \text{time} \end{array} \right) * \left(\begin{array}{c} \text{term} \\ \text{\#} \end{array} \right)$$

b

Where did I start?

rate of change

variable

Algebra I - Unit 2: Topic 1
_____

Practice – Patterns (2 pages)   No Textbook Correlation

Name _____ Date _____ Per _____

If n represents a number's position in a sequence, write the first 5 terms described by each expression.

1. $2n + 7$

2. $n(n - 6) + 2$

Find the term number when it takes 103 blocks to build.

Match each sequence with its rule on the right.

3. -4, -3, -2, -1, 0   A $x + 5$

4. 6, 9, 14, 21, 30   B $x - 5$

5. 6, 7, 8, 9, 10   C $x^2 + 5$

Answer the following questions.

6. A special sequence is called the Fibonacci sequence. It is named after Leonardo Fibonacci from Italy who presented it in 1201. This sequence is very intriguing because the numbers in the sequence are often found in nature. The first six terms of the sequences are listed below. Give the next six terms of the sequence.

    1, 1, 2, 3, 5, 8 ...

7. Pam needs to make a tower of soup cans as a display in a supermarket. Each layer of the tower will be in the shape of a rectangle as shown. The length and width of each layer will be one less than the layer below it.

    A. How many cans will be needed for the fourth layer?

    B. What is the total number of cans needed for an 8-layer tower?
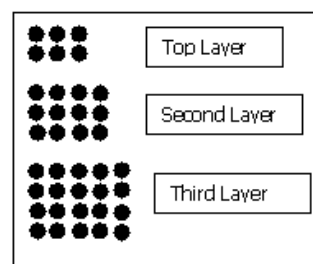
8. Sara planted rows of tulips in her garden, as shown in the table. Which expression best shows the number of tulips per row, r.

Row Number	Number of Tulips
1	3
2	6
3	9
4	12

A. $3 - r$

B. $r + 3$

**C.** 3

D. $3r$

Algebra I - Unit 2: Topic 1

9. A geometry class was exploring the sum of the interior angles, S, of polygons as compared to the number of sides, n, that the polygon has. They recorded their data in the table below. Complete the table, and state the function rule.

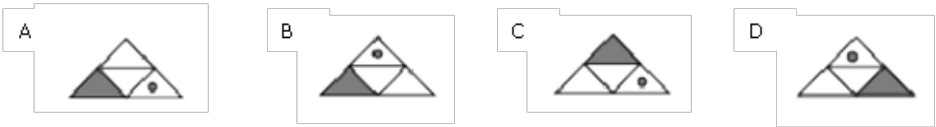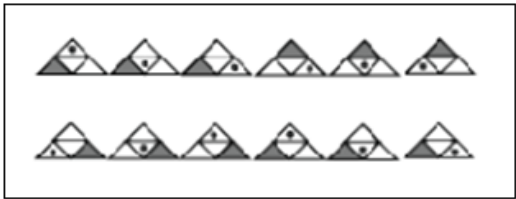| n	S
3	180
4	360
5	540
6	720
7	
8	
9	
10	

Function Rule: _____

10. The top-count views of a block pattern are shown below. How many blocks does it take to build figure 10?

A   4
B   5
C   19
D   23

Fig. 1   Fig. 2   Fig. 3
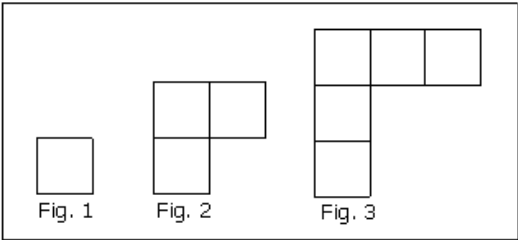
11. The figures to the right have a repeating pattern. Which shows the 57th figure in this pattern?

A   B   C   D

12. The figure below shows a partial view of Pascal's triangle. Which row of numbers best represents the seventh row in Pascal's triangle?

A   1 5 10 10 5 1

B   1 6 15 20 15 6 1

C   1 7 21 35 35 21 7 1

D   1 8 28 56 70 56 28 9 1

Pascal's Triangle

Row 1:   1
Row 2:   1   1
Row 3:   1   2   1
Row 4:   1   3   3   1
Row 5: 1   4   6   4   1