Chapter 6 Notes Day 1

May 24, 2019 1:49 PM

Linear Relations Notes 1

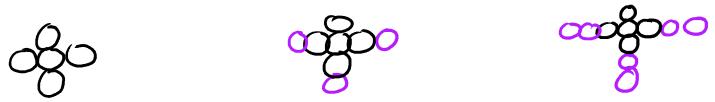
Name: _____

Date: _____ Block: _____

Mrs. van der Vossen *Math 9*

Example 1

Figure 1 Figure 2 Figure 3



a. Complete the table of values to show the figure number in relation to the number of circles.

Fig Num	Number of Circles
1	5
2	8
3	11
4	14
5	17

+1 +1 +1 +1

+3 +3 +3 +3

Pattern is consistant on BOTH sides means Linear Relationship

Test Fig circ

3(2) = 8

6 +2

b. Describe the relationship between the number of circles and the figure number.

Every new figure adds 3 circles

figure Num determines amt of circles.

c. Develop an equation that can be used to determine the number of circles in each figure.

$\frac{3}{1}$ Figure +2 = circles

Rewrite as $\frac{3}{1}f + 2 = C$

d. How many circles would be found in figure 17? 22? 100?

BEDMAS

$3f + 2 = C$

$3(17) + 2$

$51 + 2$

53

$C = 53$ when $f = 17$

$3f + 2 = C$

$3(22) + 2$

$66 + 2$

68

$C = 68$ when $f = 22$

$3f + 2 = C$

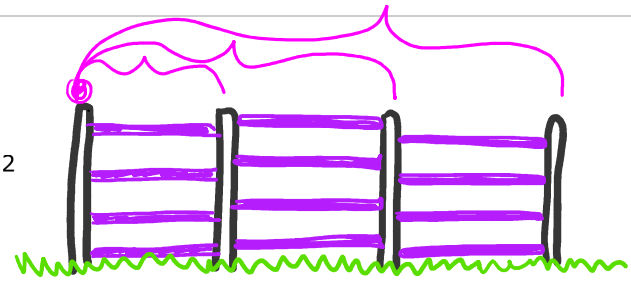
$3(100) + 2$

$300 + 2$

302

$C = 302$ when $f = 100$

Example 2



horizontal axis (sides) x — Independent

Dependent! (Rely on Posts) y — Vertical axis on a graph (up/down)

a. Complete the table of values to show the number of posts in relation to the number of rails.

★START AT 2 POSTS★

Posts	Rails
1	0
2	4
3	
4	TEST
5	

$+1$ Bottom Coef.

$+4$ Top coeff

b. Describe the relationship between the number of rails and the number of posts.

Every POST (indep) adds 4 RAILS (depen)

c. Develop an equation that can be used to determine the number of rails in each figure.

$\frac{4}{1}$ Post -4 = Rails

$4(3) = (8)$

① Pattern as Coeff
② Pick a value and test
③ Rewrite.

d. How many rails would be found with 16 *posts*? 50 *posts*?

Solve same side Bedmas!

$4p - 4 = R$

$4(16) - 4$

$64 - 4$

$60 = R$

$4p - 4 = R$

$4(5) - 4$

$200 - 4$

$196 = R$

e. How many rails with 20 *rails*?

$4p - 4 = R$

$4p - 4 = 20$

$+4 \quad +4$

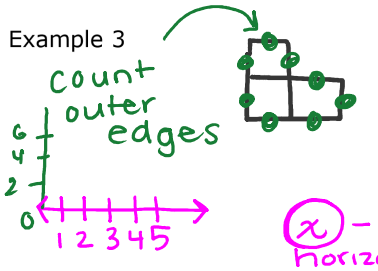
$4p = 24 \div 4$

Solve with algebra!

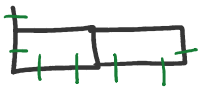
$p = 6$

Example 3

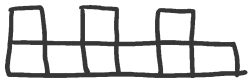
count outer edges



F - 2



F - 3



x - Independent horizontal

y - Dependent vertical

a. Complete the table of values to show the figure number in relation to its perimeter.

Pattern +1 Bottom of fraction

Figure	Perimeter
1	8
2	14
3	20
4	26
5	32

+6 Pattern top of fraction

b. Describe the relationship between every new figure adds 6 to the perimeter.

pattern

c. Develop an equation that can be used to

$6F + 2 = P$

$\frac{6}{1}(3) = 20$

$18 + 2 = 20$

(F , P)

(3 , 20)

test

$\square F \square = P$

$\frac{6}{1}$

$6F + 2 = P$

$6(3) = 20$

$18 = 20$

d. What is the perimeter found on figure 22? 34?

F - 22

$6F + 2 = P$

$6(22) + 2$

$132 + 2 = 134$

F - 34

$6F + 2 = P$

$6(34) + 2$

$204 + 2 = 206$

e. What figure has a perimeter of 272?

$6F + 2 = P$

$6F + 2 = 272$ use Algebra!

$-2 \quad -2$

$6F = 270$

$\div 6 \quad \div 6$

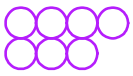
$F = 45$

Example 4

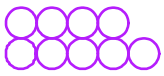
F - 1

F - 2

F - 3



F - 4



a. Complete the table of values to show the figure number in relation

FIG.	#Circles

a. Complete the table of values to show the figure number in relation to the number of circles.

FIG.	#Circles
1	3
2	5
3	7
4	9
5	11

+1

+2

b. Describe the relationship between _____

$\frac{2}{1}F + 1 = C$

$2(2) = 5$

$4 + 1 = 5$

test (F, C) (2, 5)

c. Develop an equation that can be used to _____

$2F + 1 = C$

d. What is the amount of circles found on figure 12? 55?

$2(12) + 1 = C$

$24 + 1$

$C = 25$

$2(55) + 1 = C$

$110 + 1$

$C = 111$

e. What figure has a 149 circles?

$2F + 1 = 149$

$-1 \quad -1$

$2F = 148$

$F = 74$