March 13, 2017

Unit 4
Linear Relations

Warm-Up

What you already know....

Find the value of P when n=1

A. P= 2n

P = 2(1)

P = 2

B. P=2n-2

P = 2(1)-2

P = 2-2

P = 0

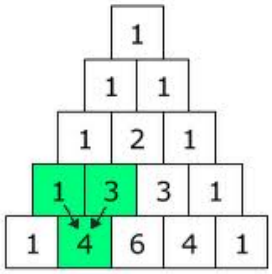
C. P= 4n +6

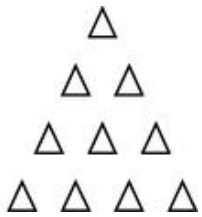
P = 4(1)+6

P = 4+6

P = 10

Let's Explore Patterns...





DRAW!!!

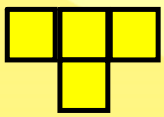


Figure 1

[4 blocks]

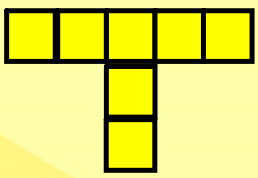


Figure 2

[7 blocks]

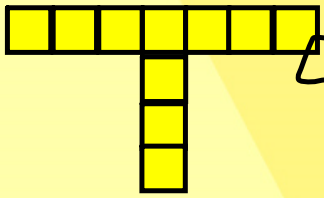


Figure 3

[10 blocks]

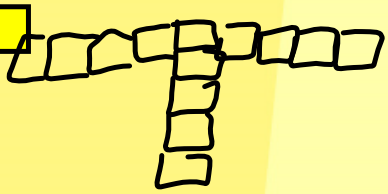


Figure 4????

[13 blocks]

Figure #(f)	# of Blocks(b)
1	4
2	7
3	10
4	13
100	301

+3 +3 +3

Write an equation that relates the number of blocks, b, to the figure number, f.

$b = 3f + 1$

$f = 100$

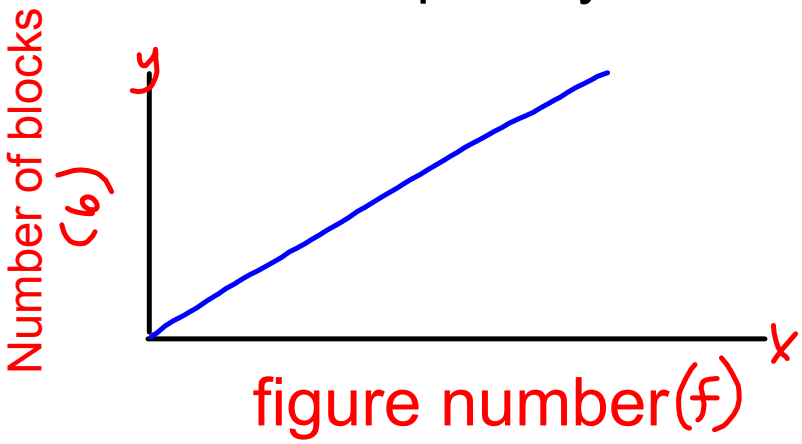
$b = 3f + 1$

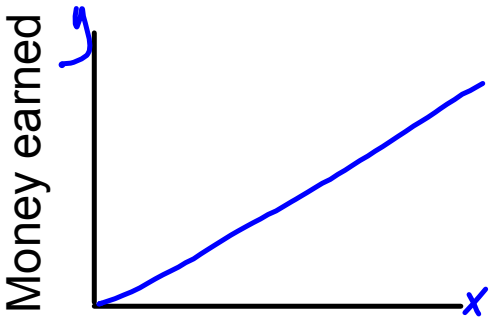
$b = 3(100) + 1$

$b = 301$

Linear relation

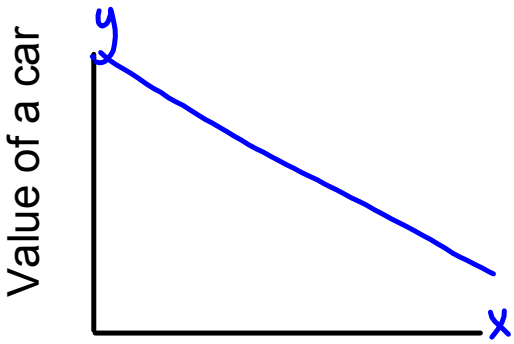
- When graphed will be a straight line.
- A constant change in one quantity produces a constant change in the related quantity.





As hours worked increases the money earned increases

Positive Relationship



As the age of the car increases the value of the car decreases

Negative Relationship

Patterns in a Table of Values

In a table of values, suppose the numbers in the first column increase by the same amount.

- If the differences between consecutive numbers in the second column are constant, the relationship is LINEAR.

x	y	
0	5	+5
1	10	+5
2	15	+5
3	20	

1) Write the equation

$y = 5x + 5$

2) Describe the relationship.

As x increases by 1, y increases by 5.

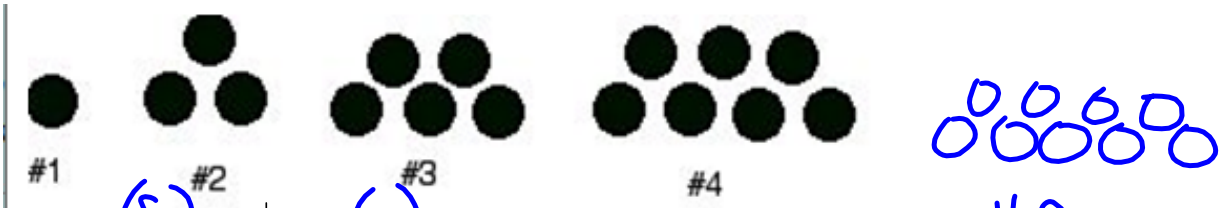


Figure # (f)	# Circles (c)
1	1
2	3 (+2)
3	5 (+2)
4	7 (+2)
5	9 (+2)
10	19
f	

1. **Write an equation that relates the number of circles, c, to the figure number, f.**

$c = 2f - 1$

2. Describe the relationship.

As "f" increases by 1, c increases by 2.

3. How many circles in figure #10

$c = 2f - 1$
$c = 2(10) - 1$
$c = 20 - 1$
$c = 19$

4. If you have 51 circles what figure number are you at.

$c = 2f - 1$
$51 = 2f - 1$

$2f - 1 = 51$
$2f - 1 + 1 = 51 + 1$
$\frac{2f}{2} = \frac{52}{2}$
$f = 26$

Page 159

#4. Show work

a) $P = 2n$

$P = 2(1)$

$P = 2$

#5. Show work

a) $A = 3n + 1$

$A = 3(2) + 1$

$A = 6 + 1$

$A = 7$

#7. Copy table

Write equation

#9. Copy table

Write the equation