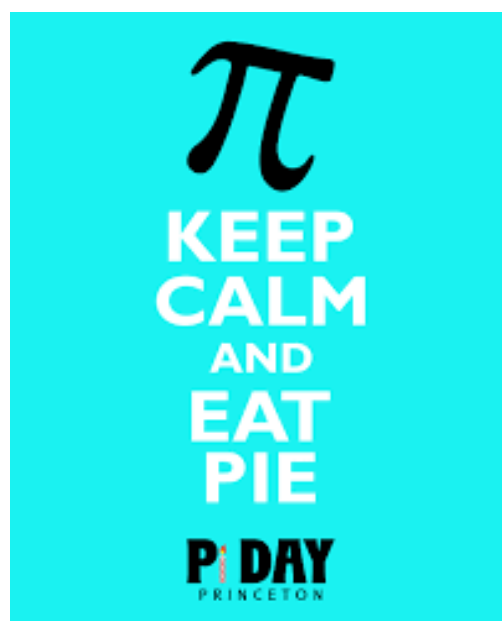


Happy Pi Day!!!

March 14

3.14



March 14, 2016

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** = $2n-2$

$$P = 2(1) - 2$$

$$P = 2 - 2$$

$$P = 0$$

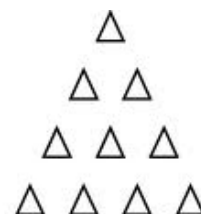
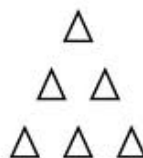
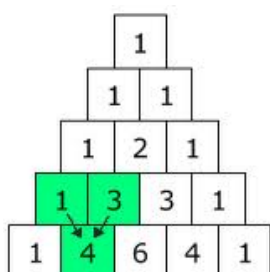
C. **P** = $4n + 6$

$$P = 4(1) + 6$$

$$P = 4 + 6$$

$$P = 10$$

Let's Explore Patterns...



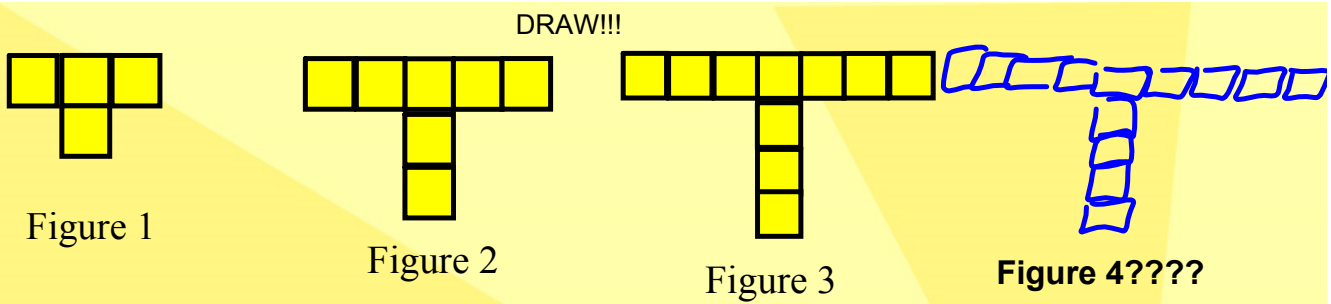


Figure # (f)	# of Blocks (b)
1	4
2	7
3	10
4	13
100	

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

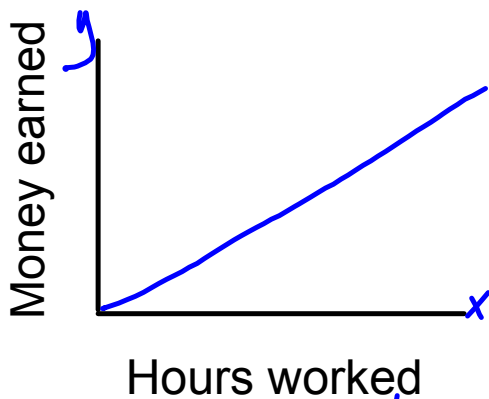
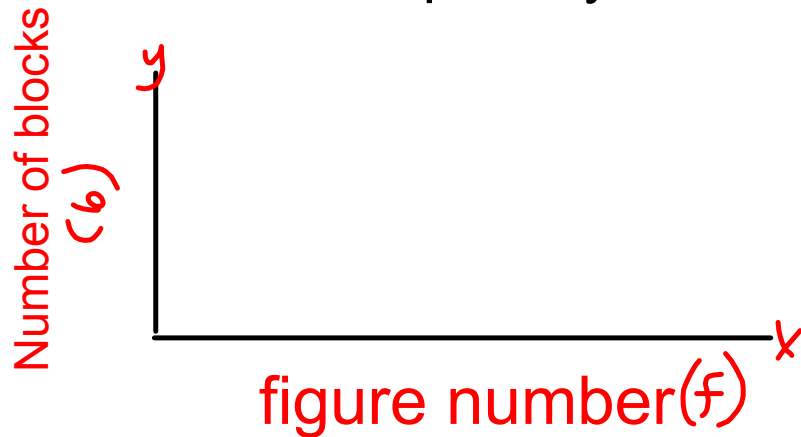
$$b = 3f + 1$$

$$f = 100$$

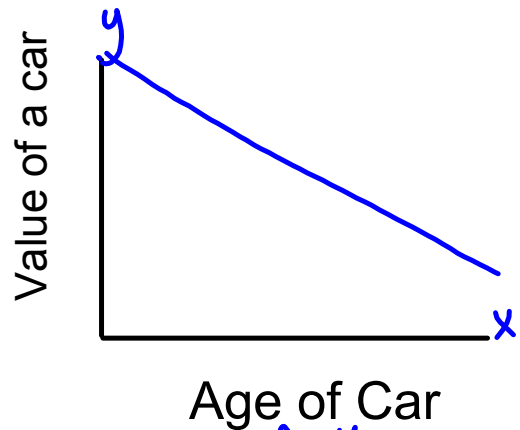
$$\begin{aligned}
 b &= 3f + 1 \\
 &= 3(100) + 1 \\
 &= 300 + 1 \\
 &= 301 \leftarrow
 \end{aligned}$$

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



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

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
1	10
2	15
3	20

$\begin{matrix} > +5 \\ > +5 \\ > +5 \end{matrix}$

1) Write the equation

$$y = 5x + 5$$

2) Describe the relationship.

As "x" increases by 1, "y" increases by 5.



Draw!!!

Figure # (f)	# Circles (c)
<u>1</u>	<u>1</u> } +2
<u>2</u>	<u>3</u> } +2
<u>3</u>	<u>5</u> } +2
<u>4</u>	<u>7</u>
10	_____
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 the figure # goes up by the number of circles increases by 2

3. How many circles in figure #10

$$c = 2f - 1$$

$$c = 2(10) - 1$$

$$c = 19$$

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

$$2f - 1 = 51$$

$$c = 2f - 1$$

$$\textcircled{51} = 2f - 1$$

$$51 + 1 = 2f \quad \boxed{-1 + 1}$$

$$\frac{52}{2} = \frac{2f}{2}$$

$$f = 26$$

Homework...

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5,6 all, show work

When $n=1$ which equation(s) have an answer of 3.

A. $3n + 1$

$3(2) + 1$
 $6 + 1$
 7

7 → draw table of values

8 → make table of values

9 → draw table of values

(s) size	(n) # Squares
1	
2	
3	