Chapter 4
Linear Relations

Warm-Up

What you already know....

Find the value of P when n=1

BEDMAS

A. P= 2n

$= 2(1)$

$P = 2$

B. P=2n-2

$P = 2(1) - 2$

$= 2 - 2$

$P = 0$

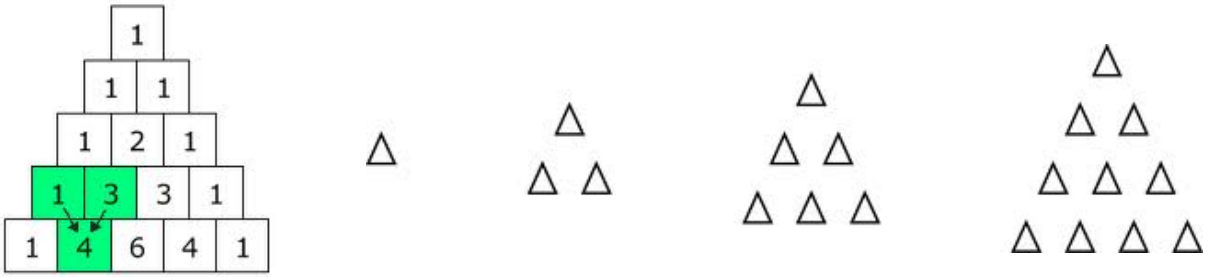
C. P= 4n +6

$= 4(1) + 6$

$P = 4 + 6$

$P = 10$

Let's Explore Patterns...



DRAW!!!

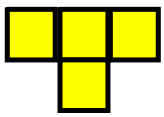


Figure 1

[F1]

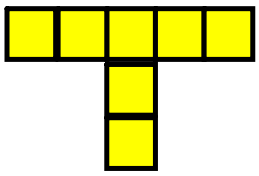


Figure 2

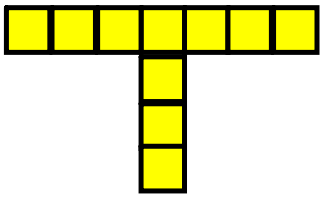


Figure 3

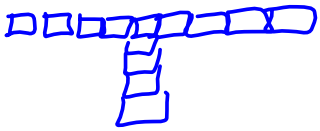


Figure 4????

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

+3, +3, +3

common difference

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

$b = 3f + 1$

common difference

$f = 100$

$b = 3f + 1$

$b = 3(100) + 1$

$b = 300 + 1$

$b = 301$

Linear relation

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

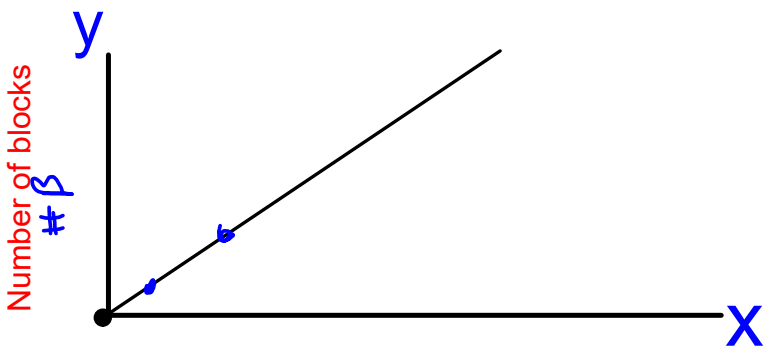
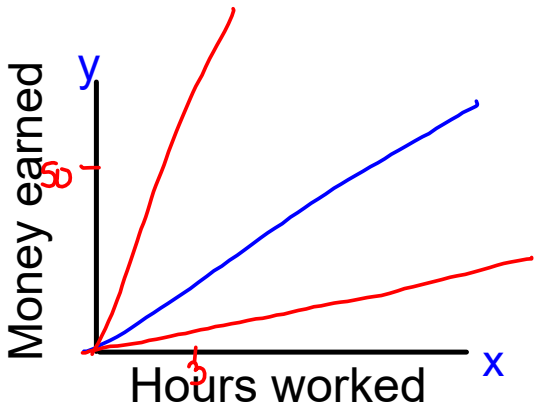
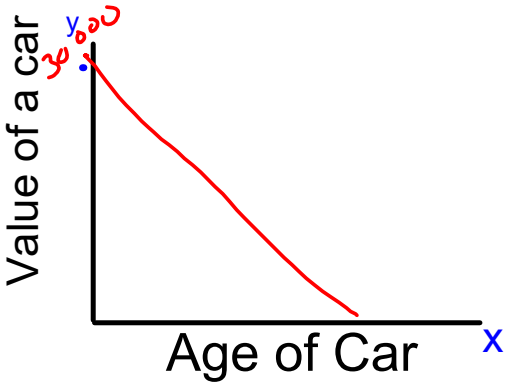


figure number





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 [common] between consecutive numbers [one after the other] in the second column are constant, the relationship is ***LINEAR***.

x	y
0	5
1	10
2	15
3	20

+5 +5 +5

1) Write the equation

[straight line on a graph]

$y = 5x + 5$

2) Describe the relationship.

As x increases by 1, y increase by 5.

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

+2 +2 +2

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 increased 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.

$c = 51$

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

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#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

#8. Make a table

Size	# squares

#9. Copy Table

Page 487 Answers!