

#3: Using this TOV, create an equation written in the NEW format.

Figure Number	Number of Blocks
1 $\times 4 + 1$	= 5 $\searrow + 4$
2	9 $\searrow$
3	13
20 $\times 4 + 1$	= ? 81
50 $\times 4 + 1$	= 20?
100 $\times 4 + 1$	= 401?

Equation from TOV:  $f \times 4 + 1 = b$   $\rightarrow$  re-write equation  $4 \times f + 1 = b$

FINAL REWRITE of equation in 'NEW' format:  $4f + 1 = b$

#4: If this pattern continues, how many small beads will MsT need if she uses 60 and 100 large beads?

MsT's BRACELETS contains large and small beads	
Number of large beads	Number of small beads
1 $\times 3 - 0$	= 3 $\searrow + 3$
2	6 $\searrow$
3	9
60 $\times 3 - 0$	= 180
100 $\times 3 - 0$	= 300

Equation from TOV:  $l \times 3 = s$   $\rightarrow$  re-write equation  $3 \times l = s$

FINAL REWRITE of equation in 'NEW' format:  $3l - 0 = s$   
 $3l = s$

#5: Using this TOV, create an equation written in the NEW format.

Shape Number	Number of Square Tiles
1 $\times 2 + 4$	= 6 $\searrow + 2$
2	8
3	10
4	12
40 $\times 2 + 4$	= 84
60 $\times 2 + 4$	= 124
100 $\times 2 + 4$	= 204

Equation from TOV:  $s \times 2 + 4 = t$   $\rightarrow$  re-write equation  $2 \times s + 4 = t$

FINAL REWRITE of equation in 'NEW' format:  $2s + 4 = t$

#6: Using this TOV, create an equation written in the NEW format to use to obtain the values for shape # 20, 70.

Shape Number	Number of Blocks
1 $\times 3 + 5 = 8$	8
2	11
3	14
20 $\times 3 + 5 = 65?$	
70 $\times 3 + 5 = 215?$	

210

Equation from TOV:  $1 \times 3 + 5 = b$   $\rightarrow$  re-write equation  $3 \times 1 + 5 = b$

FINAL REWRITE of equation in 'NEW' format:  $3 \times 1 + 5 = b$

#7: Using this TOV, create an equation written in the NEW format.

Figure Number	Number of Blocks
1 $\times 3 + 1 = 4$	4
2	7
3	10
30 $\times 3 + 1 = 91?$	
50 $\times 3 + 1 = 151?$	
100 $\times 3 + 1 = 301?$	

Equation from TOV:  $f \times 3 + 1 = b$   $\rightarrow$  re-write equation  $3 \times f + 1 = b$

FINAL REWRITE of equation in 'NEW' format:  $3 \times f + 1 = b$

#8: Using this TOV, create an equation written in the NEW format.

Figure Number	Number of Blocks
1 $\times 6 - 2 = 4$	4
2	10
3	16
40 $\times 6 - 2 = 238$	
80 $\times 6 - 2 = 478$	
100 $\times 6 - 2 = 598$	

240  
480

Equation from TOV:  $f \times 6 - 2 = b$   $\rightarrow$  re-write equation  $6 \times f - 2 = b$

FINAL REWRITE of equation in 'NEW' format:  $6 \times f - 2 = b$

Lesson #1 title: PART 1 = MORE PRACTICE Creating equations Date:

YOUR TURN ☺ We need LOTS of practice

#1: How many toothpicks would be needed for picture #20?

Picture #	Number of toothpicks
1 $\times 2$	$+ 3 = 5$ $\rightarrow +2$
2	7 $\leftarrow +2$
3	9 $\leftarrow +2$
4	11 $\leftarrow +2$
20	

EXPRESSION:  $p \times 2 + 3 = t$

The EQUATION is  $p \times 2 + 3 = t$

final  $2p + 3 = t$  number

#2: How many shovels would be needed for structure #40, 50, and 100?

Structure #	# of shovels
1 $\times 3 +$	$3 = 6$ $\rightarrow +3$
2	9 $\leftarrow +3$
3	12 $\leftarrow +3$
40 $\times 3 + 3$	$= 123$
50 $\times 3 + 3$	$= 153$
100 $\times 3 + 3$	$= 303$

EXPRESSION:  $s \times 3 + 3 = n$

EQUATION:  $s \times 3 + 3 = n \rightarrow 3s + 3 = n$

#3: Create an equation to figure out how many cellphones are needed for figure #70.

Figure #	# cellphones
1 $\times 3$	$+ 0 = 3$ $\rightarrow +3$
2	6 $\leftarrow +3$
3	9
70 $\times 3$	$+ 0 = 210$

EXPRESSION:  $f \times 3 + 0 = c$

EQUATION:  $f \times 3 + 0 = c$

$3f + 0 = c$

#4: Create an equation to figure out how many sweaters would be in terms 40, 80, 100

Term #	# of sweaters
1 $\times 3$	$+ 12 = 15$ $\rightarrow +3$
2	18 $\rightarrow +3$
3	21 $\rightarrow$
40 $\times 3$	$+ 12 = 132$
80 $\times 3$	$+ 12 = 252$
100 $\times 3$	$+ 12 = 312$

120  
240

EXPRESSION:

$$t \times 3 + 12 = s$$

EQUATION:

$$3t + 12 = s$$

#5: Create an equation to figure out how many sticks would be in figure 60, 90

Figure #	# sticks
1 $\times 1 +$	$7 = 8$ $\rightarrow +1$
2	9 $\rightarrow$
3	10
60 $\times 1 +$	$7 = 67$
90 $\times 1 +$	$7 = 97$

EXPRESSION:

$$f \times 1 + 7 = s$$

EQUATION:

$$f + 7 = s$$

#6: Create an equation to figure out how many cars would be in picture #100

picture #	# cars
1 $\times 3 - 2$	$= 1$ $\rightarrow +3$
2	4 $\rightarrow$
3	7
40 $\times 3 - 2$	$= 118$
50 $\times 3 - 2$	$= 148$
100 $\times 3 - 2$	$= 298$

120  
150

←

EXPRESSION:

$$p \times 3 - 2 = c$$

EQUATION:

$$3p - 2 = c$$

**YOUR TURN ☺**

**#1:** Using this TOV, create an equation to use to obtain the values for terms # 20, 50, 100.

Figure Number ( $n$ )	Number of Blocks ( $b$ )
1 $\times 4 + 1$	= 5 $\rightarrow +4$
2 $\times 4 + 1$	= 9 $\rightarrow +4$
3 $\times 4 + 1$	= 13 $\rightarrow +4$
4 $\times 4 + 1$	= 17 $\rightarrow +4$
20 $\times 4 + 1$	= 81
50 $\times 4 + 1$	= 201
100 $\times 4 + 1$	= 401

Expression is  $n \times 4 + 1 = b \rightarrow n4 + 1 = b$   
 Equation is  ~~$n \times 4 + 1 = b$~~   
 $4n + 1 = b$

**#2:** Using this TOV, create an equation to use to obtain the values for terms # 40, 60, 100.

Shape Number ( $n$ )	Number of Square Tiles ( $t$ )
1 $\times 2 + 4$	= 6 $\rightarrow +2$
2 $\times 2 + 4$	= 8 $\rightarrow +2$
3 $\times 2 + 4$	= 10 $\rightarrow +2$
4 $\times 2 + 4$	= 12 $\rightarrow +2$
40 $\times 2 + 4$	= 84
60 $\times 2 + 4$	= 124
100 $\times 2 + 4$	= 204

Expression is  $n \times 2 + 4 \rightarrow n2 + 4$   
 Equation is  ~~$n \times 2 + 4 = t$~~   
 $2n + 4 = t$

Lesson 12: MORE PRACTICE Creating Equations from TOVs

NOTE: YOU NEED TO BECOME REALLY REALLY GOOD AND EFFICIENT at creating equations!

A	B
1	$3 \times 2 + 1 = 7$
2	5
3	7
4	9
$100 \times 2 + 1 = 201$	
Expression:	$a \times 2 + 1$
Equation:	$a \times 2 + 1 = b$
What is the 100 <sup>th</sup> term	<del><math>100 \times 2 + 1 = 201</math></del>

$2a + 1 = b$

C	D
1	$7 \times 5 + 2 = 37$
2	12
3	17
4	22
$100 \times 5 + 2 = 502$	
Expression:	$c \times 5 + 2 = d$
Equation:	$c \times 5 + 2 = d$
What is the 100 <sup>th</sup> term	<del>502</del>

$5c + 2 = d$

E	F
1	$3 \times 4 - 1 = 11$
2	7
3	11
4	15
$100 \times 4 - 1 = 399$	
Expression:	$e \times 4 - 1 = f$
Equation:	$e \times 4 - 1 = f$
What is the 100 <sup>th</sup> term	<del>399</del>

$4e - 1 = f$

G	H
1	$21 \times 1 + 20 = 41$
2	22
3	23
4	24
$100 \times 1 + 20 = 120$	
Expression:	$g \times 1 + 20 = h$
Equation:	$g \times 1 + 20 = h$
What is the 100 <sup>th</sup> term	<del>120</del>

$1g + 20 = h$

I	J
1	$2 \times 3 - 1 = 5$
2	5
3	8
4	11
$100 \times 3 - 1 = 299$	
Expression:	$i \times 3 - 1 = j$
Equation:	$i \times 3 - 1 = j$
What is the 100 <sup>th</sup> term	<del>299</del>

$3i - 1 = j$

K	L
1	$5 \times 5 + 0 = 25$
2	10
3	15
4	20
$100 \times 5 + 0 = 500$	
Expression:	$k \times 5 + 0 = l$
Equation:	$k \times 5 = l$
What is the 100 <sup>th</sup> term	<del>500</del>

$5k + 0 = l$

M	N
1	$5 \times 5 + 1 = 26$
2	11
3	16
4	21
$100 \times 5 + 1 = 501$	
Expression:	$m \times 5 + 1 = n$
Equation:	$m \times 5 + 1 = n$
What is the 100 <sup>th</sup> term	<del>501</del>

$5m + 1 = n$

O	P
1	$7 \times 7 - 6 = 43$
2	8
3	15
4	22
$100 \times 7 - 6 = 694$	
Expression:	$o \times 7 - 6 = p$
Equation:	$o \times 7 - 6 = p$
What is the 100 <sup>th</sup> term	<del>694</del>

$7p - 6 = n$

Q	R
1	$10 \times 10 + 2 = 102$
2	22
3	32
4	42
$100 \times 10 + 2 = 1002$	
Expression:	$q \times 10 + 2 = r$
Equation:	$q \times 10 + 2 = r$
What is the 100 <sup>th</sup> term	<del>1002</del>

$5r + 2 = s$

BONUS

- a) For table MN which term has 101 in the 'N' column? **20** ( $20 \times 5 + 1 = 101$ )
- b) For table OP which term has 64 in the 'P' column? **10** ( $10 \times 7 - 6 = 64$ )
- c) For table QR which term has 92 in the 'R' column? **9** ( $9 \times 10 + 2 = 92$ )