MATHEMATICS
GRADE 6

Quality learning @home

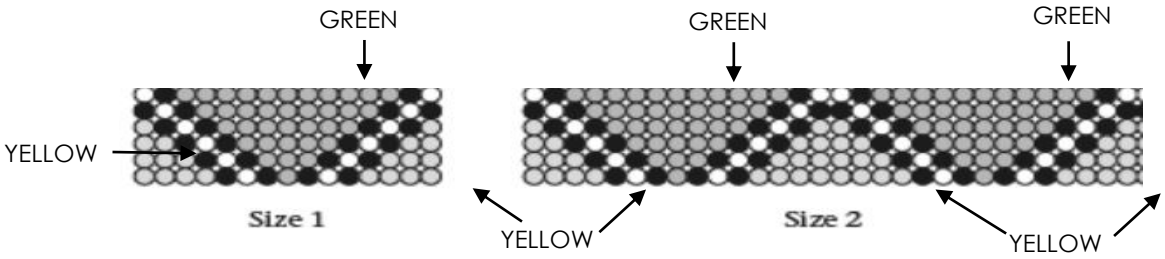
TOPIC: Geometric patterns

DAY 1

INTRODUCTION: CONNECTING GEOMETRIC AND NUMERICAL PROPERTIES

STUDY THE FOLLOWING INTRODUCTORY ACTIVITY:

A PATTERN IS ALL ABOUT REPETITION: The pattern below is a repetition of beads.



Counting the huge lot of beads in an example like this, can take up too much time.

THEREFORE: A MATHEMATICIAN MAKE USE OF "clever counting" also called **A CALCULATION PLAN**

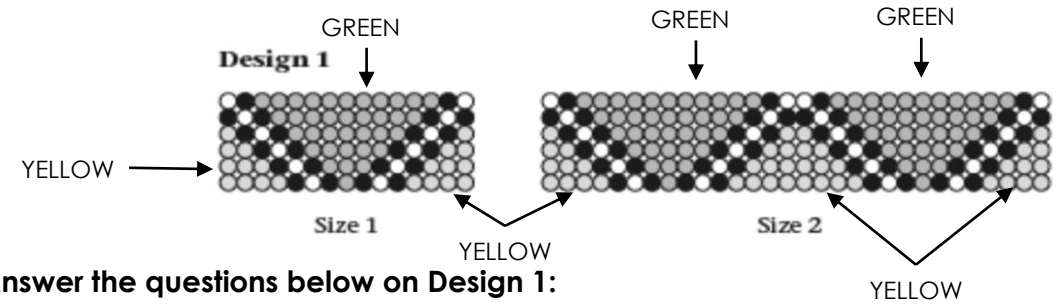
- **Size 1,** there are 2 strips of white beads with 6 beads in each, so we know immediately that there are **2×6 =12** white beads.
- **Size 2**, there are 4 strips of white beads with 6 beads in each, so we know immediately that there are **4×6 = 24** white beads.

CLASSWORK: MAKING BEAUTIFUL PATTERNS

Activity 1:

Busi makes beautiful bead bracelets of different designs and sizes. Size 1 and Size 2 for each design is shown below, but Busi can make bracelets of any size.

STUDY THE PATTERNS BELOW AND ANSWER THE QUESTIONS IN YOUR WORKBOOK.



1. Answer the questions below on Design 1:

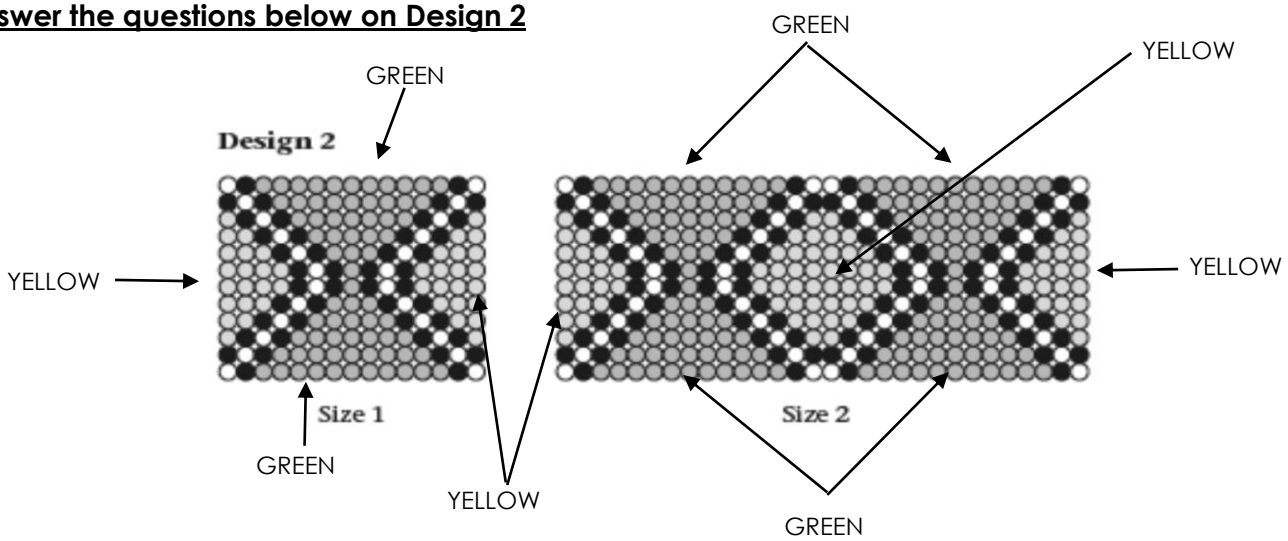
(a) Describe in words how the design works.

(b) **Copy and complete this table**. Do not count the beads in Size 1 and Size 2 one by one but try to see bigger units and use calculation plans.

Size	1	2	3	4	5	30
No. of white beads						
No. of black beads						
No. of yellow beads						
No. of green beads						
Total no. of beads						

(c) Use your calculation plans to calculate the number of beads of each colour for Size 10, Size 20 and Size 100.

2. <u>Answer the questions below on Design 2</u>



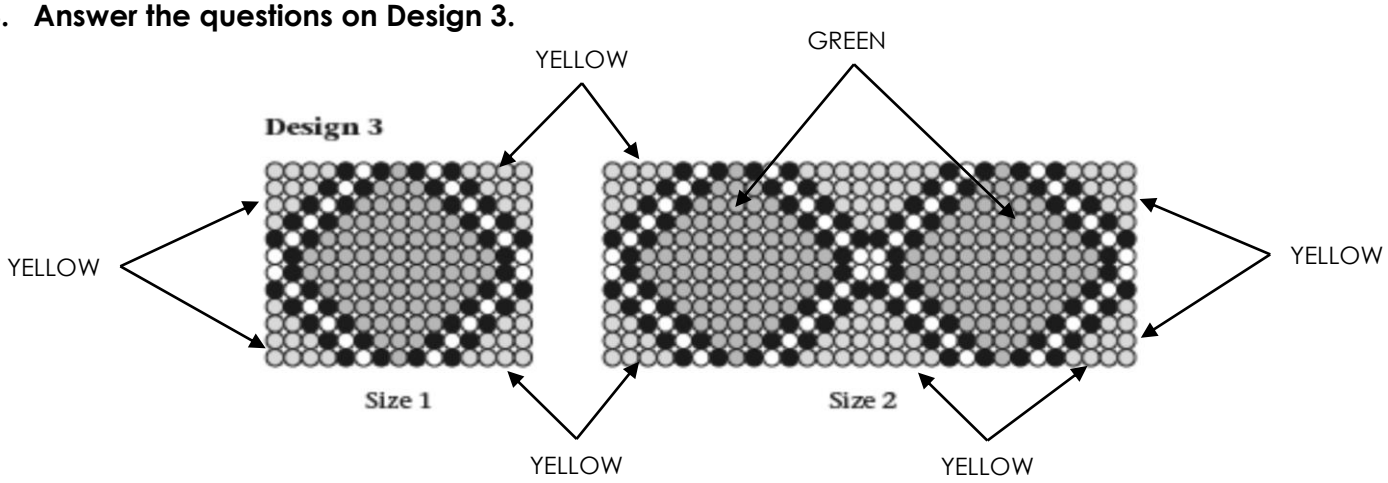
(a) Describe in words how the design works.

(b) **Copy and complete this table**. Do not count the beads in Size 1 and Size 2 one by one, but try to see bigger units and use calculation plans.

Size	1	2	3	4	5	30
No. of white beads						
No. of black beads						
No. of yellow beads						
No. of green beads						
Total no. of beads						

(c) Use your calculation plans to calculate the number of beads of each colour for Size 10, Size 20 and Size 100.
(d) Compare the tables of design 1 and design 2. What do you notice?

3. Answer the questions on Design 3.



(a) Describe in words how the design works.

(b) **Copy and complete this table**. Do not count the beads in Size 1 and Size 2 one by one, but try to see bigger units and use calculation plans.

Size	1	2	3	4	5	30
No. of white beads						
No. of black beads						
No. of yellow beads						
No. of green beads						
Total no. of beads						

(c) Use your calculation plans to calculate the number of beads of each colour for Size 10, Size 20 and Size 100.

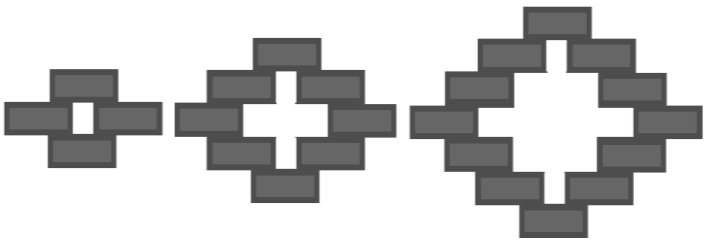
(d) Compare the tables of design 2 and design 3. What do you notice?

CONSOLIDATION

Counting in ones takes time. "Clever counting" is a way of identifying patterns that repeat itself. It could be in the shapes of triangles, squares and rectangles as seen with the different colour beads.

HOMEWORK:

1. Sizwe uses bricks for a design for paving his driveway.



Size 1 **Size 2** **Size 3**

(a) Complete the table below

Size	**1**	**2**	**3**	**4**	**5**	**30**
Number of bricks						

(b)Write down the calculation plan and then use it to calculate Size 6, Size 30 and Size 60

2. Carol uses tiles to make a growing pattern.



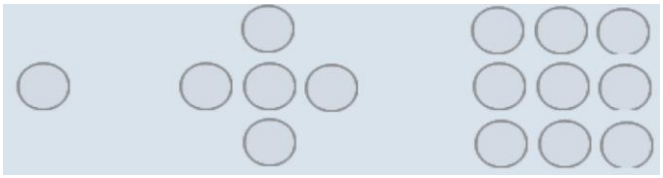
Size 1 **Size 2** **Size 3**

(a)Complete the table below

Size	**1**	**2**	**3**	**4**	**5**	**30**
Number of tiles						

(b)Write down the calculation plan and then use it to calculate Size 6, Size 30 and Size 60

3. Bronwyn is creating an increasing pattern using dots.



Size 1 **Size 2** **Size 3**

(a)Complete the table below.

Size	**1**	**2**	**3**	**4**	**5**	**30**
Number of dots						

(b)Write down the calculation plan and then use it to calculate Size 6, Size 30 and Size 60

MEMORANDUM: Class work

Activity 1:

1 (a) Learners describe the pattern in their own words.

(b)

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. of white beads	**12**	**24**	**36**	**48**	**60**	**360**
No. of black beads	**22**	**44**	**66**	**88**	**110**	**660**
No. of yellow beads	**20**	**40**	**60**	**80**	**100**	**600**
No. of green beads	**36**	**72**	**108**	**144**	**180**	**1 080**
Total no. of beads	**90**	**180**	**270**	**360**	**450**	**2 700**

(c)

Colour	Calculation plan	Size 10	Size 20	Size 100
White	**x 12**	120	240	1 200
Black	**x 22**	220	440	2 200
Yellow	**x 20**	200	400	2 000
Green	**x 36**	360	720	3 600
Total		900	1 800	9 000

2.

(a) Learners describe the pattern in their own words.

(b)

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. of white beads	**24**	**48**	**72**	**96**	**120**	**720**
No. of black beads	**44**	**88**	**132**	**176**	**220**	**1 320**
No. of yellow beads	**40**	**80**	**120**	**160**	**200**	**1 200**
No. of green beads	**72**	**144**	**216**	**288**	**360**	**2 160**
Total no. of beads	**180**	**360**	**540**	**720**	**900**	**5 400**

(c)

Colour	Calculation plan	Size 10	Size 20	Size 100
White	**x 24**	240	480	2 400
Black	**x 44**	440	880	4 400
Yellow	**x 40**	400	800	4 000
Green	**x 72**	720	1 440	7 200
Total		1 800	3 600	18 000

(d) The answers of design 2 is double the answers of design 1. Design 2 is a reflection of design 1

3(a) Learners describe the pattern in their own words.

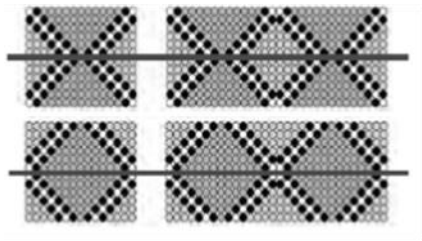
(b)

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. of white beads	**24**	**48**	**72**	**96**	**120**	**720**
No. of black beads	**44**	**88**	**132**	**176**	**220**	**1 320**
No. of yellow beads	**40**	**80**	**120**	**160**	**200**	**1 200**
No. of green beads	**72**	**144**	**216**	**288**	**360**	**2 160**
Total no. of beads	**180**	**360**	**540**	**720**	**900**	**5 400**

(c)

Colour	Calculation plan	Size 10	Size 20	Size 100
White	**x 24**	240	480	2 400
Black	**x 44**	440	880	4 400
Yellow	**x 40**	400	800	4 000
Green	**x 72**	720	1 440	7 200
Total		1 800	3 600	18 000

(d) The answers of both tables are exactly the same. There is no need to do Design 3 – it is simply Design 2 rearranged, as shown here.



MEMORANDUM: HOMEWORK

1(a)Complete the table below.

Size	**1**	**2**	**3**	**4**	**5**	**30**
Number of bricks	**4**	**8**	**12**	**16**	**20**	**120**

(b) Multiply the size number by 4.

Size 6 x **4** = 24 bricks
Size 30 x **4** = 120 bricks
Size 60 x **4** = 240 bricks

2(a)Complete the table below.

Size	1	2	3	4	5	30
Number of tiles	1	4	7	10	13	88

(b) Adding 3 each time

Size 1 x 1 tile = 1
Size 2 x 1 tile = 1 + 3
Size 3 x 1 tile = 1 + 3 + 3
Size 4 x 1 tile = 1 + 3 + 3 + 3
Size 5 x 1 tile = 1 + 3 + 3 + 3 + 3

Rule: Size *number* x 3 then subtract 2

Size 6 x **3** then subtract 2 = 16
Size 30 x **3** then subtract 2 = 88
Size 60 x **3** then subtract 2 =178

3 (a) Complete the table below.

Size	1	2	3	4	5	30
Number of dots	1	5	9	13	17	117

(b) Adding 4 each time

Size 1 x 1 dot = 1
Size 2 x 1 dots = 1 + 4
Size 3 x 1 dots = 1 + 4 + 4
Size 4 x 1 dots = 1 + 4 + 4+ 4
Size 5 x 1 dots = 1 + 4 + 4 + 4 + 4
(repeated addition of 4 is the same as multiplying by 4) subtract 3

Rule: Size number x 4 then subtract 3
Size 6 x **4** then subtract 3 = 21
Size 30 x **4** then subtract 3 =117
Size 60 x **4** then subtract 3 = 237

DAY 2

CLASSWORK:

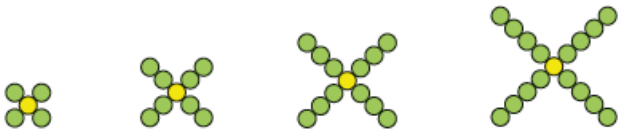
INTRODUCTION: WRITING CALCULATION PLANS

Did you know?

ALL THE GEOMETRIC PATTERNS CAN BE TRANSFORMED TO NUMERIC PATTERNS BY COMPLETING A TABLE.

ACTIVITY 1: WORK THROUGH THE ACTIVITY AND WRITE YOUR ANSWERS IN YOUR CLASSWORK BOOK. Number 2 provides the answer to number 1. Study Mary's explanation in number 2.

1. Thabo uses beads to make a pattern of X's as shown in the diagram



If Thabo continues the pattern,
a) how many beads will there be in **X5**?
b) how many beads will there be in **X6?**
c) how many beads will there be in **X50?**
d) and how many beads will there be in **X60**?

2. Mary uses clever counting to answer question 1! Study her reasoning. **The explanation is provided.**



➔

X1 = 4 × 1 + 1

➔ ➔**Then here:**

X2 = 4 × 2 + 1

➔

Then here:
Four threes
plus 1

X3 = 4 × 3 + 1

Mary starts here:
I see four, four, four, four greens plus one yellow

X4 = 4 × 4 + 1

Mary starts here:
I see four, four, four, four greens plus one yellow

X4 = 4 × 4 + 1

Mary writes a **calculation plan (rule)**:
X *number* = 4 × *number* + 1
Now she can calculate
X *number* for any *number*

Explanation of calculation plan:

Term	Yellow bead	Green beads	Explanation
X1	one	4	4 groups of single green**(one)** beads and **one yellow bead** **X1**= 4 x **1** +1
X2	one	8	4 groups of green **(two)** beads and **one yellow bead** **X2**= 4 x **2** +1
X3	one	12	4 groups of green **(three)** beads and **one yellow bead** **X3**= 4 x **3** +1
X4	one	16	4 groups of green **(four)** beads **and one yellow bead** **X4**= 4 x **4**+1

3. Suzi uses beads to make this growing V-pattern:



(a) **Describe the patterns in** V6, V60 and V87 in words.

(b) **Write your plan** as a ***flow diagram*** and then calculate the number of beads in **V6, V60 and V87.**

(c) **Write down** your **calculation plan (number sentence)** and then use it to **calculate the total number of** beads in **V6, V60 and V87.**

(d) What is the biggest V-number that can be made with **100 green** beads and one yellow bead?

(e) How many beads are left over?

CONSOLIDATION

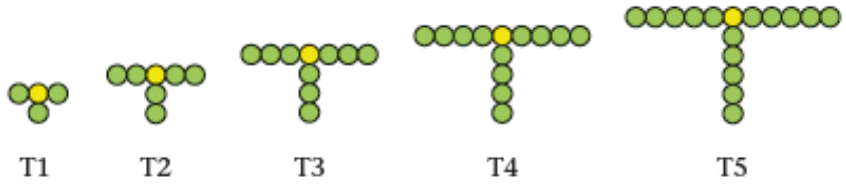
The structure in the Pattern is very important:

We need to identify it as **a series of related numerical expressions.**

- We must be very clear about what is *changing* (the **variable**) and,
- what remains unchanged (**constant**).

HOMEWORK: DO THE EXERCISE IN YOUR CLASSWORK BOOK. First try to finish the exercises before you consult the memorandum at the end of the lesson.

Sam uses beads to make these alphabet patterns.



a. **Describe the patterns in T**6, T60 and T87 in words.

b. **Write your plan** as a ***flow diagram*** and then calculate the number of beads in **T6, T60 and T87.**

c. Write down your **calculation plan (number sentence)** and then use it to **calculate the total number of** beads in **T6, T60 and T87.**

d. What is the biggest V-number that can be made with **100 green** beads and one yellow bead?

e. How many beads are left over?

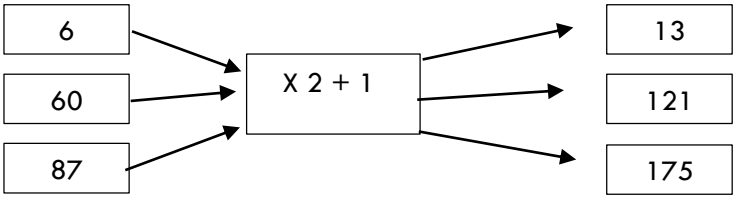
CLASSWORK: MEMORANDUM

1.
a) X5 = 4 x 5 + 1 = 21
b) X6 = 4 x 6 + 1 = 25
c) X50 = 4 x 50 + 1 = 201
d) X60 = 4 x 60 + 1 = 241

2. Mary describes the structure of the pattern with a calculation plan:
X *number* = 4 × *number* + 1.

3(a) V6: 2 arms of 6 green beads each and 1 yellow bead
V60: 2 arms of 60 green beads each and 1 yellow bead
V87: 2 arms of 87 green beads each and 1 yellow bead

(b)



(c) Multiply V-number by 2 and add 1

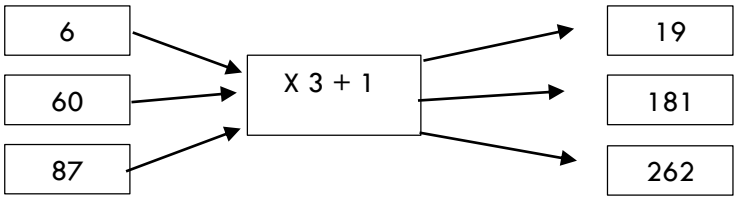
(d) V49

(e) 1 green bead left over

MEMORANDUM: HOMEWORK

1(a) T6: 3 arms of 6 green beads each and 1 yellow bead
T60: 3 arms of 60 green beads each and 1 yellow bead
T87: 3 arms of 87 green beads each and 1 yellow bead

b)



(c) Multiply T-number by 3 and add 1
T6: 6 x 3 + 1 = 19
T60: 60 x 3 + 1 = 181
T87: 87 x 3 + 1 = 262

(d) T33
(e) one green bead left over

DAY 3

Activity 1: Describing patterns

NOTE TO LEARNER:

We have to use the *structure* in the pictures to logically deduce calculation plans through generalization.

WORK THROUGH THE ACTIVITY AND WRITE YOUR ANSWERS IN YOUR CLASSWORK BOOK. First attempt to do the exercise before you check your answers at the end of this lesson

1. Grey tiles and white tiles are arranged to make this growing pattern:



Size 1 Size 2 Size 3 Size 4

Classwork:

a. Copy the table in your classwork book and complete the table. Describe your methods.

Size	1	2	3	4	5	6	30
No of grey tiles							
No of white tiles							
No of tiles							

b. Describe ***horizontal* numeric patterns** (number patterns) for the grey titles, for the white tiles and for the total number of tiles in the table. How can you use these horizontal patterns to calculate the number of grey tiles, the number of white tiles and the total number of tiles?

c. Describe ***vertical* numeric patterns for** the grey tiles, for the white tiles and for the total number of tiles in the table. How can you use these patterns to calculate the number of grey tiles, the number of white tiles and the total number of tiles?

d. How many grey tiles are there in a Size 50 pattern?

e. How many white tiles are there in a Size 50 pattern?

f. How many tiles are there in total in a Size 50 pattern?

2. Copy and complete the table and answers in your classwork book. Describe your methods.

Grey and white tiles are arranged to make this growing pattern.

PATTERN X



Size	1	2	3	4	5	6	30
No. of grey tiles							
No. of white tiles							
Total no. of tiles							

a. Complete the table. Describe your methods.

b. Describe ***horizontal*** **numeric patterns** (number patterns) for the grey titles, for the white tiles and for the total number of tiles in the table. How can you use these horizontal patterns to calculate the number of grey tiles, the number of white tiles and the total number of tiles?

c. Describe ***vertical*** **numeric patterns for** the grey tiles, for the white tiles and for the total number of tiles in the table. How can you use these patterns to calculate the number of grey tiles, the number of white tiles and the total number of tiles?

d. How many grey tiles are there in a Size 50 pattern?

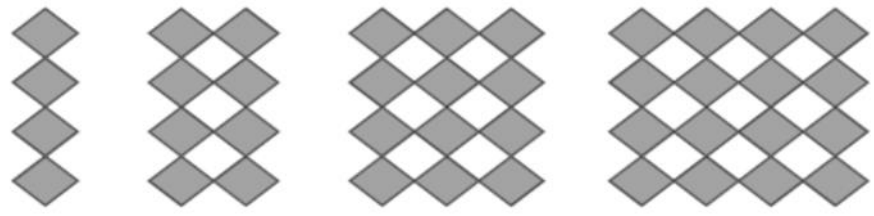
e. How many white tiles are there in a Size 50 pattern?

f. How many tiles are there in total in a Size 50 pattern?

CONSOLIDATION:
Note:
Vertical and horizontal representations are equivalent

HOMEWORK: DO THE EXERCISE IN YOUR CLASSWORK BOOK. First try to finish the exercises before you consult the memorandum at the end of the lesson

PATTERN Y



Size	1	2	3	4	5	6	30
No. of grey tiles							
No. of white tiles							
Total no. of tiles							

1. Copy and complete the table in your classwork book.

2. Describe ***horizontal*** **numeric patterns** (number patterns) for the grey titles, for the white tiles and for the total number of tiles in the table.

3. Describe ***vertical* numeric patterns for** the grey tiles, for the white tiles and for the total number of tiles in the table.

4. How many grey tiles are there in a Size 50 pattern?

5. How many white tiles are there in a Size 50 pattern?

6. How many tiles are there in total in a Size 50 pattern?

MEMORANDUM: DAY 3

PATTERN

1(a)

Size	**1**	**2**	**3**	**4**	**5**	**6**	**30**
No. of grey tiles	2	4	6	8	10	12	60
No. of white tiles	0	1	2	3	4	5	29
Total no. of tiles	2	5	8	11	14	17	89

(b) Grey: Add 2 to every number to get the next number, starting with 2.
White: Add 1 to every number to get the next number, starting with 0.
Total: Add 3 to every number to get the next number, starting with 2.

(c) Grey: Multiply size number by 2. (x 2)
White: Size number subtract . (−1)
Total: Multiply size number by 2 and add 1.

Size number x 2 → + 1 = answer
Or: Multiply size number by 3 and subtract 1.

Size number x 3 → - 1 = answer

(d) 50 × 2 = 100
(e) 50 − 1 = 49
(f) 2 × 50 + 49 = 149

PATTERN X

2(a)

Size	**1**	**2**	**3**	**4**	**5**	**6**	**30**
No. of grey tiles	3	6	9	12	15	18	90
No. of white tiles	0	2	4	6	8	10	58

Total no. of tiles	3	8	13	18	23	28	148

(b) Grey: Add 3 to every number to get the next number, starting with 3
White: Add 2 to every number to get the next number, starting with 0.
Total: Add 5 to every number to get the next one, starting with 3.

(c) Grey: Multiply size number by 3. (x 3)
White: Multiply 1 less than size number by 2, i.e. 2 x (Size number − 1).
Total number of tiles: Multiply size number by 5 and subtract 2.

Size number x 5 → - 2 = answer

(d) 50 × 3 = 150
(e) 2 x (50 −1) = 2 × 49 = 98
(f) 5 x 50 − 2 = 248

MEMORANDUM: HOMEWORK
PATTERN Y
1.

Size	**1**	**2**	**3**	**4**	**5**	**6**	**30**
No. of grey tiles	4	8	12	16	20	24	120
No. of white tiles	0	3	6	9	12	15	87
Total no. of tiles	4	11	18	25	32	39	207

2. Grey tiles: Add 4 to every number to get the next number, starting with 4.
White tiles: Add 3 to every number to get the next number, starting with 0.
Total number of tiles: Add 7 to every number to get the next one, starting with 4.

3. Grey tiles: Multiply size number by 4.
White tiles: Multiply 1 less than size number by 3, i.e. 3 x (Size number − 1).
Total number of tiles: Multiply size number by 7 and subtract 3.

4. 50 × 4 = 200

5. 3 x (50 – 1) = 3 x 49 = 147

6. 7 x 50 – 3 = 347

DAY 4

Activity 1: Developing tables from geometric "pictures"

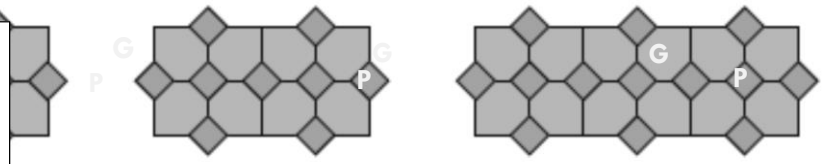
CLASSWORK: YOU WILL NOT GET ANY HOMEWORK TODAY AS YOU NEED TO TAKE TIME TO WORK THROUGH THIS EXAMPLE THOROUGHLY

WORK THROUGH THE ACTIVITY AND WRITE YOUR ANSWERS IN YOUR CLASSWORK BOOK. First attempt to do the exercise before you check your answers at the end of this lesson.

1. In this tile pattern, Size 1 is made of 4 green tiles and 5 smaller purple tiles. The pattern is then continued as shown.

Big tiles = green (G)

Small tiles = purple(P)



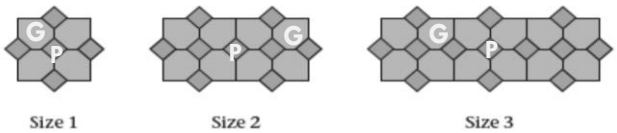
Size 1 **Size 2** **Size 3**

Note: The sequence of green tiles is 4, 8, 12, …. The multiples of 4 …

1a. Copy and complete the table in your classwork book

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. green tiles (G)						
No. of purple tiles (P)						

b. Describe ***horizontal* numeric patterns** (number patterns) for the green tiles and for the purple tiles in the table.
How can you use these horizontal patterns to calculate the number of green tiles and the number of purple tiles?



Size 1 Size 2 Size 3

Big tiles = green (G)

Small tiles = purple(P)

c. Describe ***vertical* numeric patterns for** the green tiles and for the purple tiles in the table.
How can you use these patterns to calculate the number of purple tiles and the number of purple tiles?

d. Write down a calculation plan (rule) to calculate the number of green tiles instead of counting them.

e. How many green tiles are there in a Size 50 pattern?

f. Write down a calculation plan (rule) to calculate the number of purple tiles.

g. How many purple tiles are there in a Size 50 pattern?
h. How many tiles are there in total in a Size 50 pattern**?**

CONSOLIDATION: IMPORTANT TO NOTE THAT:
Representing patterns in a table is an equivalent representation form that you do in your own words and as a picture

HOMEWORK:
Ensure that you understand today's example

MEMORANDUM: DAY 4

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. green tiles	**4**	**8**	**12**	**16**	**20**	**120**
No. of purple tiles	**5**	**9**	**13**	**17**	**21**	**121**

b) Green tiles: Add 4 to every number to get the next number, starting with 4.
Purple tiles: Add 4 to every number to get the next number, starting with 5.
Green tile numbers are multiples of 4 and purple tile numbers are one more than a multiple of 4.

c) Green tiles: Multiply size number by 4.
Purple tiles: Multiply size number by 4 and add 1.

d). Multiply size number by 4.
1 X 4 → = 4
2 X 4 → = 8
3 X 4 → = 12

e) Size 50 has 200 green tiles because 50 X 4 → = 200
f) Multiply size number by 4 and add 1. Size 50 has 201 purple tiles.

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. green tiles	**1 x 4**	**2 x 4**	**3 x 4**	**4 x 4**	**5 x 4**	**30 x 4**
No. of purple tiles	**1 x 4 + 1**	**2 x 4 + 1**	**3x 4 + 1**	**4 x 4 + 1**	**5 x 4 + 1**	**30 x 4 + 1**

(g) Size 50 has 201 purple tiles because 50 X 4 → = 200 + 1
(h) 200 + 201 = 401

DAY 5

Activity 1: Developing tables from geometric "pictures"

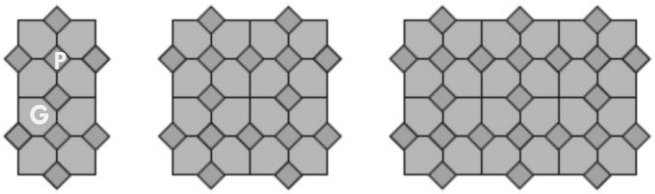
CLASSWORK

WORK THROUGH THE ACTIVITY AND WRITE YOUR ANSWERS IN YOUR CLASSWORK BOOK. First attempt to do the exercise before you check your answers at the end of this lesson

1. In this tile pattern, Size 1 is made of 8 green tiles and 9 smaller purple tiles. The pattern is then continued as shown.

Big tiles = green (G)

Small tiles = purple(P)



Size 1 Size 2 Size 3

a. Copy and complete the table

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. green tiles						
No. of purple tiles						

b. Describe ***horizontal* numeric patterns** (number patterns) for the green titles and for the purple tiles.
How can you use these patterns to calculate the number of green tiles and the number of purple tiles?

c. Describe ***vertical* numeric patterns for** the green tiles and for the purple in the table.
How can you use these patterns to calculate the number of green tiles and the number of purple tiles?

d. Write down a calculation plan (rule) to calculate the number of green tiles instead of counting them.

e. How many *green* tiles are there in a Size 50 pattern?

f. Write down a calculation plan (rule) to calculate the number of purple tiles instead of counting them.

g. How many *purple* tiles are there in a Size 50 pattern?

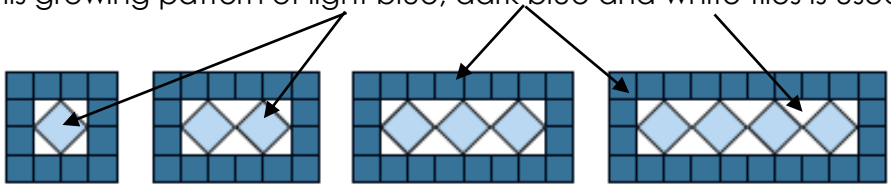
h. How many tiles are there in Size 50 pattern?

CONSOLIDATION: IMPORTANT TO NOTE THAT:

Representing patterns in a table is an equivalent representation form that you do in your own words and as a picture

HOMEWORK: DO THE EXERCISE IN YOUR CLASSWORK BOOK. First try to finish the exercises before you consult the memorandum at the end of the lesson

This growing pattern of light blue, dark blue and white tiles is used for a large supermarket floor.



Size 1 size 2 size 3 size 4

a. Copy and complete the table.

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. of tiles						
No. of tiles						

b. Describe your method, and describe the patterns that you see in the table.

MEMORANDUM: DAY 5

1a)

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. green tiles	8	16	24	32	40	200
No. of purple tiles	9	16	23	30	37	212

b). Green tiles: Starting with 8, add 8 to each number to get the next number.
Purple tiles: Starting with 9, add 7 to each number to get the next number.

The number of green tiles is a multiple of 8 and the number of purple tiles is two more than a multiple of 7.

c) Green tiles: Multiply size number by 8.
Purple tiles: Multiply size number by 7 and add 2; (7 × size number + 2).

1 X 7 → + 2 = 19
2 X 7 → + 2 = 16
5 X 7 → + 2 = 37

d). Green tiles = Size number × 8.

1 X 8 → = 8
2 X 8 → = 16
5 X 8 → = 40

50 X 8 → = 400 green tiles in Size 50 pattern.

e) Purple tiles: Multiply size number by 7 and add 2; .
50 × 7 + 2 = 352 purple tiles in Size 50 pattern.

MEMORANDUM: HOMEWORK

(a)

Size	**1**	**2**	**3**	**4**	**5**	**30**
No. of light blue tiles	1	2	3	4	5	30
No. of dark blue tiles	12	16	20	24	28	128

(b) Number of light blue tiles is the same as size number – add 1 to get the next number.
Size number add 1
1 + 1 → = 2
2 + 1 → = 3
3 + 1 → = 4
Dark blue tiles: starting with 12, add 4 to each number to get the next number.
Number of dark blue tiles is 4 times size number + 8.