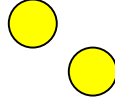
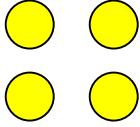


BOB'S BUTTONS

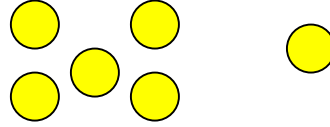
NAME: _____

SHEET 1

Bob arranges buttons in groups of 4 with 2 left over, and the same number of buttons in groups of 5 with 1 left over. The smallest number of buttons he could have is 6



OR



What is the next smallest number of buttons he could have had?

What is the next smallest?

Is there a pattern, if so explain it.

Which of these numbers fit the pattern? 316, 223, 846, 715, 3476?

Bob now arranges buttons in groups of 4 with 3 left over, and the same number of buttons in groups of 5 also with 3 left over. **The smallest number of buttons he could have is now, what?**

What is the next smallest number of buttons he could have had?

What is the next smallest?

Is there a pattern, if so explain it.

Which of these numbers fit the pattern? 316, 223, 846, 715, 3476?

Bob now arranges buttons in groups of 5 with 2 left over, and the same number of buttons in groups of 7 also with 3 left over. **The smallest number of buttons he could have is now, what?**

What is the next smallest number of buttons he could have had?

What is the next smallest?

Is there a pattern, if so explain it.

Which of these numbers fit the pattern? 132, 223, 846, 715, 3476?

BOB'S BUTTONS

NAME: _____

SHEET 2

Complete the table

Group Sizes	Left-over	Smallest number of buttons that fits BOTH rules	Next two numbers in the series	Explanation of any patterns
4 5	2 0			
4 5	2 1			
4 5	2 2			
4 5	2 3			
4 5	2 4			
4 5	3 0			
4 5	3 1			
4 5	3 2			
4 5	3 3			
4 5	3 4			
4 5	1 0			
4 5	1 1			
4 5	1 2			
4 5	1 3			
4 5	1 4			
3 5	1 0			
3 5	1 1			
3 5	1 2			
3 5	1 3			
3 5	1 4			

Group Sizes	Left-over	Smallest number of buttons that fits BOTH rules	Next two numbers in the series	Explanation of any patterns
3 5	2 0			
3 5	2 1			
3 5	2 2			
3 5	2 3			
3 5	2 4			

3 4	1 0			
3 4	1 1			
3 4	1 2			
3 4	1 3			

3 4	2 0			
3 4	2 1			
3 4	2 2			
3 4	2 3			

4 7	1 0			
4 7	1 1			
4 7	1 2			
4 7	1 3			
4 7	1 4			
4 7	1 5			
4 7	1 6			

What if there were three types of groups:

- In groups of 3 there were 2 remainder
- In groups of 4 there were 1 remainder
- In groups of 5 there were 2 remainder

What is the smallest number of buttons that fits all three rules?

What are the next two numbers that fit all three rules?

BOB'S BUTTONS

NAME: _____

SHEET 3

Complete each table, use the buttons or use the sheet you have already filled in.

After you have filled in the first table you should be able to recognise the pattern and fill in the 2nd and 3rd easily.

Once you recognise the pattern **explain it** in the space below the table.

(In the table write the smallest group size that is true for **both** group sizes and remainders)

Group Size = 5

		Remainder				
		0	1	2	3	4
Group Size=4	Remainder					
	0					
	1					
	2					
3						

Group Size = 4

		Remainder			
		0	1	2	3
Group Size=3	Remainder				
	0				
	1				
	2				

Group Size = 6

		Remainder					
		0	1	2	3	4	5
Group Size=4	Remainder						
	0						
	1						
	2						
3							

Explanation of patterns: