OBJECTS, ACTIONS, STRUCTURE

EXAMPLE 1

- **Objects** The numbers 0, 1, 2
- **Action** Addition *modulo* 3

+	0	1	2
0			
1			
2			

EXAMPLE 2

- **Objects** Rotations of an equilateral triangle
- **Action** Composition (one followed by another)

Followed by	Rot $0°$	Rot $120°$	Rot $240°$
Rot $0°$			
Rot $120°$			
Rot $240°$			

What do you notice about the two tables above?

EXAMPLE 3

- **Objects** The numbers 0,1,2,3
- **Action** Multiplication *modulo* 4

$\times$	0	1	2	3
0				
1				
2				
3				

EXAMPLE 4

- **Objects** The symmetries of a rectangle
- $I =$identity (do nothing)
- $R =$rotate (through $180°$)
- $H =$horizontal reflection
- $V =$vertical reflection
- **Action** Composition (one followed by another)

$\circ$	I	R	H	V
I				
R				
H				
V				

What do you notice this time?