

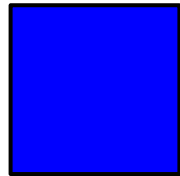
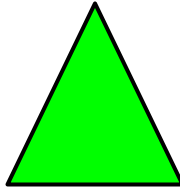
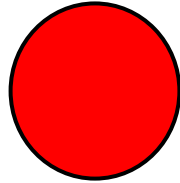
Circle, Triangle, Square

→ Towards →

The Binary Number System

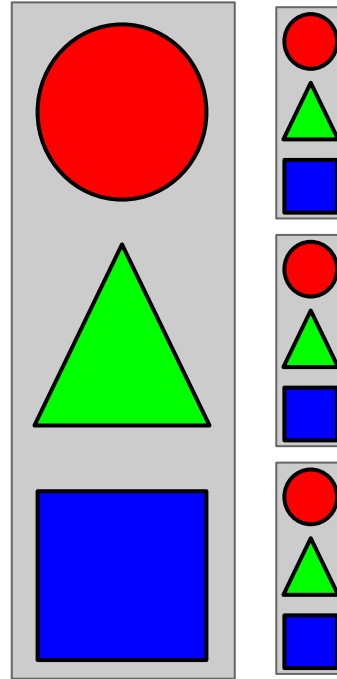


1 place = 3, 1-shape patterns



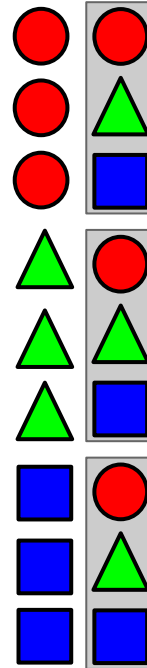


2 places = 9, 2-shape patterns

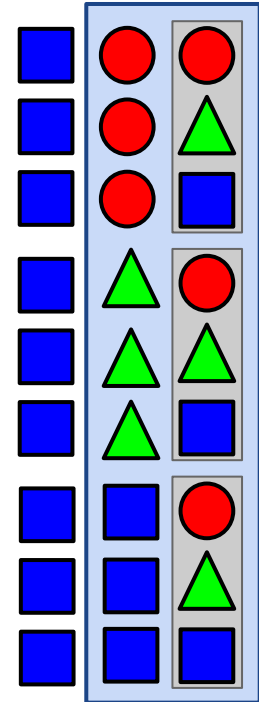
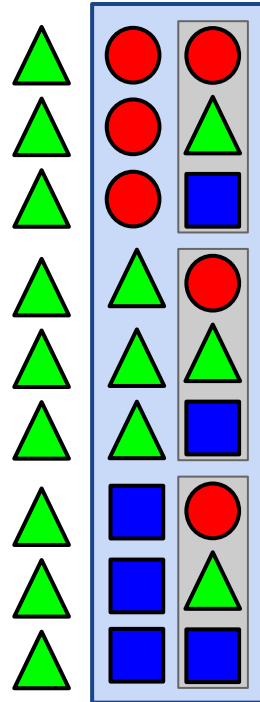
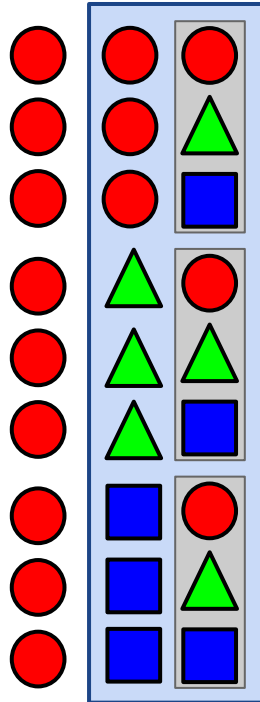




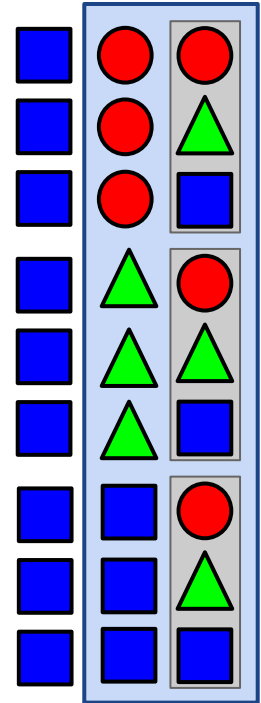
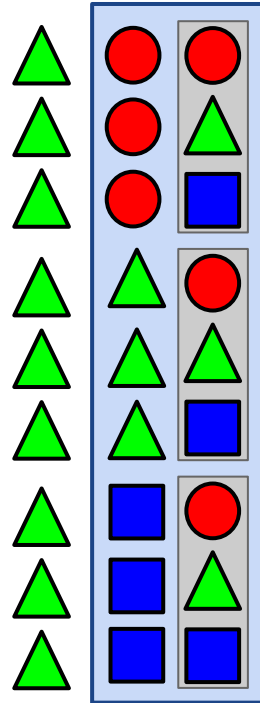
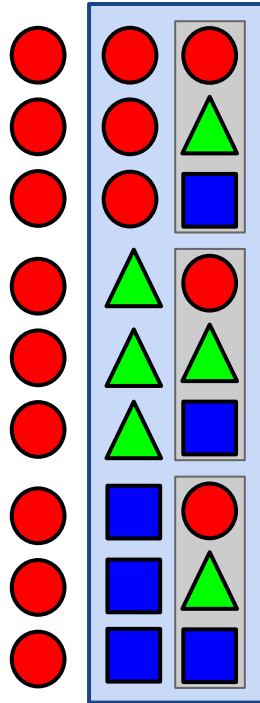
2 places = 9, 2-shape patterns



3 places = 27, 3-shape patterns



3 places = 27, 3-shape patterns



Number each pattern to make a shape -> number mapping

	0		9		18
	1		10		19
	2		11		20
	3		12		21
	4		13		22
	5		14		23
	6		15		24
	7		16		25
	8		17		26



What if we had 10 shapes?



1 place = Ten 1-shape patterns

0
1
2
3
4
5
6
7
8
9

← These are just shapes!



Quiz: What comes next?

*Ten
shapes*

0
1
2
3
4
5
6
7
8
9

0 9 9

— — —



Quiz: What comes next?

*Ten
shapes*

0
1
2
3
4
5
6
7
8
9

0 9 9

1 0 0



Previously on CSP...

Place Values...



Place Values...

With Ten “shapes” every time you add a place, you multiply by 10 the number of numbers...

_____ 10 possibilities (0 - 9)

_____ _____ 100 possibilities (00 - 99)

_____ _____ _____ 1000 possibilities (000 - 999)



Place Values...

With Three “shapes” every time you add a place, you multiply by 3 the number of numbers...

_____ 3 possibilities (● ▲ ■)

_____ _____ 9 possibilities (●● - ■■)

_____ _____ _____ 27 possibilities (●●● - ■■■)

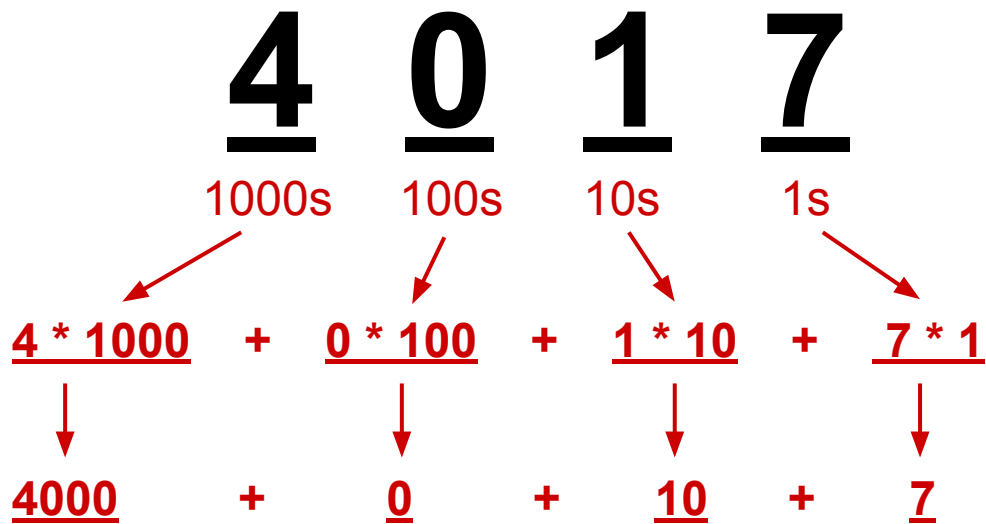


Write the number...

Four thousand and seventeen



Place Values...Remember what it means?



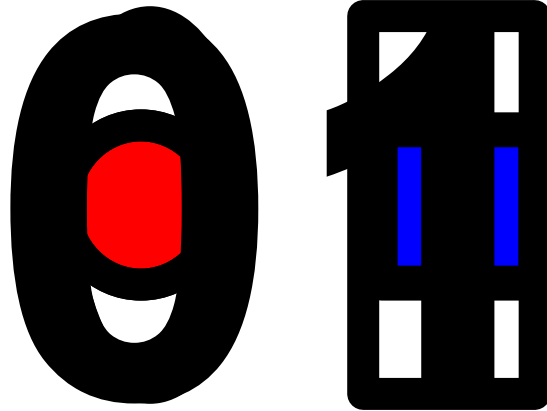


Where is this heading?

...binary...



“Binary” is a number system with 2 shapes...





The pattern holds...

With two “shapes” every time you add a place, you multiply by 2 the number of numbers...

_____ 2 possibilities (0 1)

_____ _____ 4 possibilities (00 - 11)

_____ _____ _____ 8 possibilities (000 - 111)

_____ _____ _____ _____ 16 possibilities (0000 -

_____ _____ _____ _____ 1111)



Constructing a binary number means figuring out which powers of 2 add up to the number you want

128 64 32 16 8 4 2 1



Constructing a binary number means figuring out which powers of 2 add up to the number you want

128	64	32	16	8	4	2	1
0	0	1	0	1	0	0	1
		32	+	8	+		1 = 41

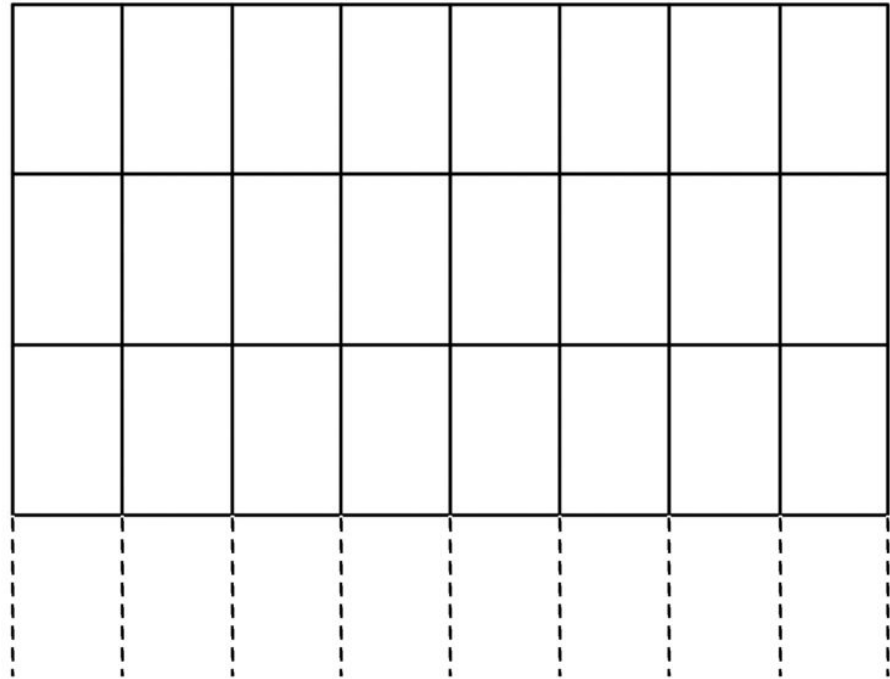


To the flippy do!

Flippy Do

Fold along the bold line. Cut on the dotted lines

Name: _____





Flippy Do Quiz:

What's the binary number?

- 5
- 17
- 63
- 64
- 100
- 127

What's the decimal number?

- 100
- 101
- 1101
- 1 0000
- 1010 1010
- 1111 1111