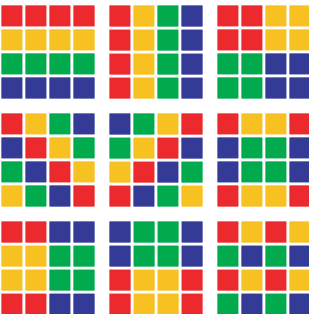


Happy 16th Birthday

A “Most-perfect” 4×4 Magic Square

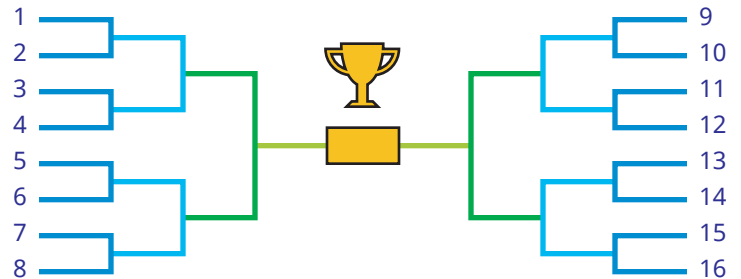
7	12	1	14
2	13	8	11
16	3	10	5
9	6	15	4



Rows, columns, diagonals and many other subsets sum to the magic constant 34.

Binary Tree

16—8—4—2—1



Sports playoff bracket

Hex – Base 16

Decimal (base 10) is used by people. **Binary (base 2)** is used by computers.

Hexadecimal (hex) (base 16) is used by computer programmers.

16 hex digits — some are letters!

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
										10	11	12	13	14	15

Hex is a compact way to write binary.

1 hex digit is 4 binary digits (bits).

Example: $F_{16} = 1111_2 = 15_{10}$

Hex Color Codes

A web color is specified by three numbers:

Red, **Green**, and **Blue**. Each number is in the range 00 to FF hex, 0 to 255 decimal.

Decoding hex — examples

Dec	Hex	Calculate
0	0 0	$0 \times 16 + 0$
8	0 8	$0 \times 16 + 8$
10	0 A	$0 \times 16 + 10$
15	0 F	$0 \times 16 + 15$
43	2 B	$2 \times 16 + 11$
64	4 0	$4 \times 16 + 0$
128	8 0	$8 \times 16 + 0$
192	C 0	$12 \times 16 + 0$
255	F F	$15 \times 16 + 15$
512	2 0 0	2×256
	256s 16s 1s	
16^2	16	1

		Hex	Decimal
		R G B	R G B
black	●	00 00 00	0 0 0
white	○	FF FF FF	255 255 255
gray	●	80 80 80	128 128 128
red	●	FF 00 00	255 0 0
orange	●	FF A5 00	255 165 0
yellow	●	FF FF 00	255 255 0
lime	●	00 FF 00	0 255 0
green	●	00 80 00	0 128 0
cyan	●	00 FF FF	0 255 255
blue	●	00 00 FF	0 0 255
purple	●	80 00 80	128 0 128
magenta	●	FF 00 FF	255 0 255

What are these colors?

C0C0C0
800000
000080
008080
FFC0C0
E0FFFF
D08040