

Activity: “MIND YOUR 4s”

Use four 4s and any operations you can think of to get to each target number.

As for mathematical operations, ***anything goes!***

The basic +, -, x, / along with negative exponents, roots, decimals (4.4 or .4), concatenation (44), percentages, repeating decimals ($\bar{4}$) are 'legal'.

A few have been filled in to get you started.

Remember to include exactly 4 4s (that's four fours) in each equation, and use proper notation.

You can write down an equation for a number that has already been solved provided your method is unique.

Other:

This is an exercise to promote ...

- teamwork, conversation, thinking, and community
- exploring the beauty of numbers and number relationships
- healthy competition (looking for teams that are participating well, complexity, elegance, explanation of different ways of getting to a solution)

Roles/Actions:

- the student with the whiteboard marker is taking ideas/direction from other members of their group
- occasionally take inventory of what other groups are posting
- for every unique expression, record your group's work on the SmartBoard
- be sure that you take on different roles when working with your group

Something to consider:

$$4^4 = 4 \times 4 \times 4 \times 4 = 256$$

$$4^{-4} = \frac{1}{4^4} = \frac{1}{4 \times 4 \times 4 \times 4}$$
$$= \frac{1}{256}$$

1 to 40:

1. $\frac{4+4}{4+4}$	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12. $4 \times (4-4/4)$
13.	14.	15.	16.
17.	18.	19.	20.
21.	22.	23.	24.
25.	26.	27.	28.
29.	30.	31.	32.
33.	34.	35.	36.
37.	38.	39.	40.

Isn't ! Exciting!

Consider the following:

$$1! = 1$$

$$2! = 2 \times 1$$

$$3! = 3 \times 2 \times 1$$

$$4! = 4 \times 3 \times 2 \times 1$$

$$n! = n \times (n - 1) \times (n - 2) \times \dots$$

Thus, $n!$ is defined as:

41 to 80:

41.	42.	43.	44. $44 \times 4/4$
45.	46.	47.	48.
49.	50.	51.	52.
53.	54.	55.	56.
57.	58.	59.	60.
61. $\frac{4! + 4}{.4 \ 4}$	62. $4 \times 4 \times 4 - \sqrt{4}$	63.	64.
65.	66.	67.	68.
69.	70.	71.	72.
73.	74.	75.	76.
77.	78.	79.	80.

81 to 100:

81.	82.	83.	84.
85.	86.	87.	88.
89.	90.	91.	92.
93.	94.	95.	96.
97.	98.	99.	100.