

$$9! = 362880$$

$$1m \ 119! = 2$$

2

$$274240$$

$$8! = 40320$$

$$274240 / 118! = 6$$

$$32320$$

27

$$7! = 5040$$

$$32320 / 15040 = 6$$

278

$$2080$$

$$6! = 720$$

$$2080 / 720 = 2$$

2783

$$640$$

$$5! = 120$$

$$640 / 120 = 5$$

27839

$$40$$

$$4! = 24$$

$$40 / 1124 = 2$$

278391

$$16$$

$$3! = 6$$

$$16 / 3! = 2$$

2783915

$$4$$

$$2! = 2$$

$$4 / 2! = 2$$

2783915460

$$2783915460$$

$$1064$$

$$2 \times 2$$

$$406$$

$$3 \times 2$$

$$460$$

for 1 millionth

$$\Rightarrow 2783915460$$