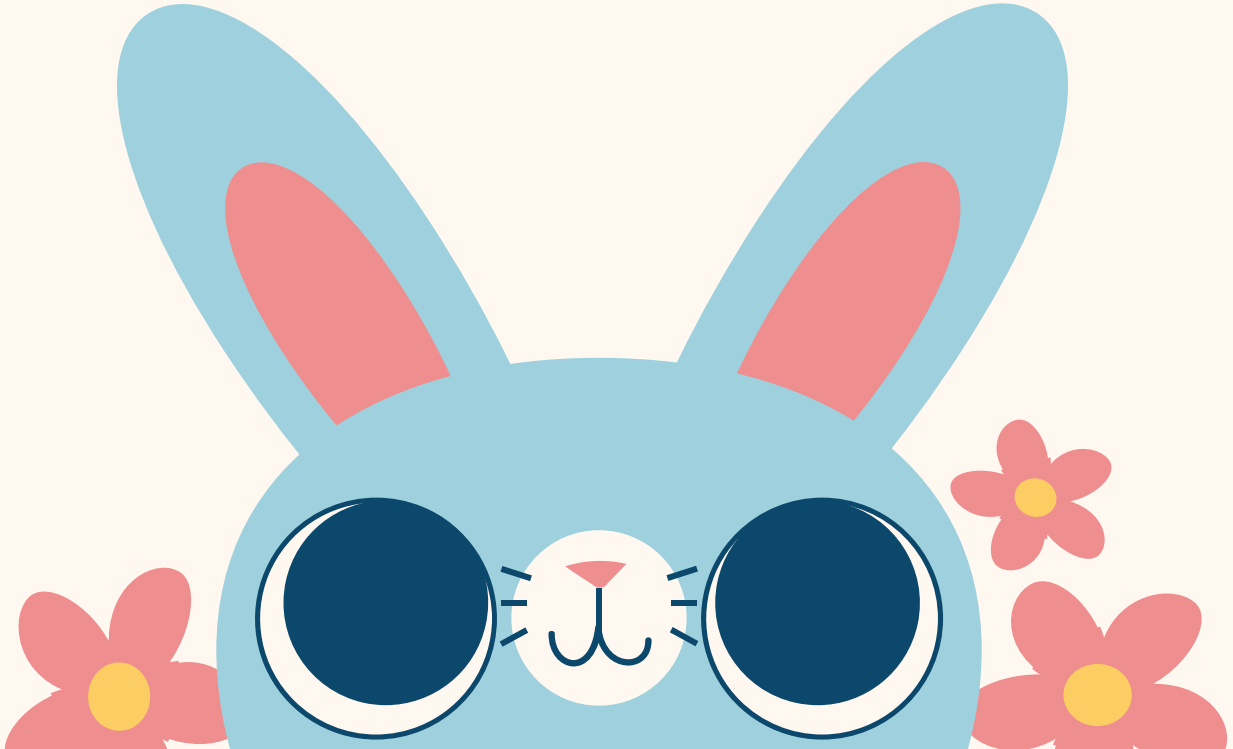
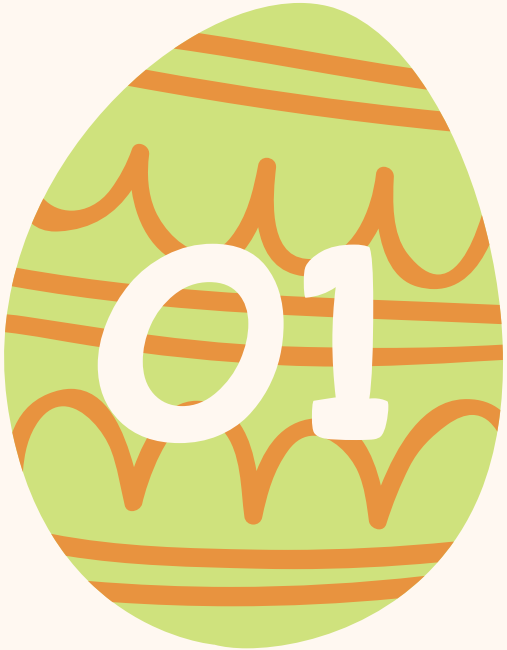
HAPPY EASTER

Challenge question

A car's odometer shows 15951 miles, a palindromic number. What is the minimum number of miles you would need to travel to form the next palindrome?

Exponents & Divisibility





Exponents

Everyone pick a two numbers, any two numbers!

Write one number down on a piece of paper and write the other number smaller n the upper right corner of the number.

Why do we use exponents?

01

Abbreviate math

02

Write really big numbers

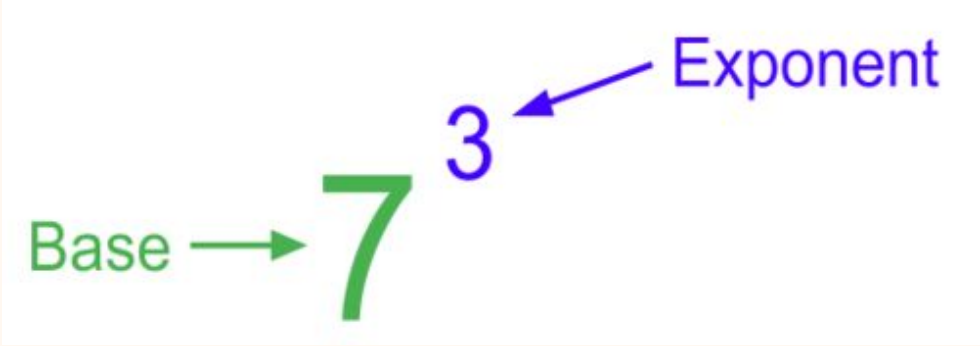
03

Write really small numbers

What is an exponent?

Remember how you learned multiplication...

$7 \times 2 = 7+7$



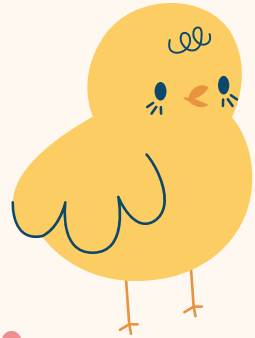
Let's try some examples!

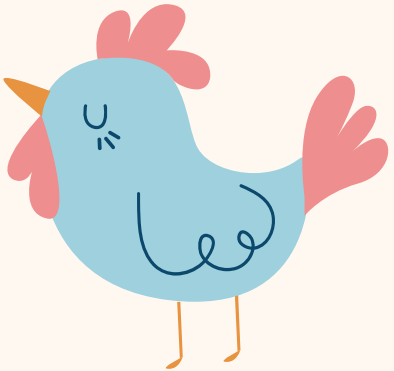
What is 9^3?

What is 7^4?

What is 10^8?

What is 2^{10}?





Exponents have special rules

What do you think happens if you do:

$3^2 \times 3^4$?

There are 8 rules with exponents!

01

Product Rule

$3^2 \times 3^4 =$

02

$3^4 \div 3^2 =$

Quotient Rule

03

Power Rule

$[3^4]^2 =$

04

$[4 \times 2]^3$

Power of a Product Rule

There are 8 rules with exponents!

05

Power of a Fraction Rule

$[½]^3$ =

06

3^0 =

Zero Exponent

07

Negative Exponents

3^{-4} =

08

$3^{[½]}$ =

Fractional Exponent

That was a lot! Let's practice some of the rules!

$2^4 \times 2^8 =$

$2^8 \div 2^4 =$

$2^8 \times 2^{-4} =$

Four friends are collecting Easter eggs...

Bob

Has 2^4 eggs!

Bobalina

Has 2^3 eggs!

George

Has 3^3 eggs!

Georgalina

Has 3^2 eggs.

Do Bob and Bobalina have more or eggs or do George and Georgalina have more eggs?

Perfect squares!

Numbers that are itself times itself.

Here are some examples:

1 = 1 x 1
4 = 2 x 2
9 = 3 x 4

Here's a tricky question:

Which of the following numbers is not a perfect square?

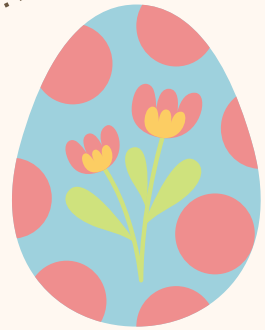
(A) 1^{2016} **(B)** 2^{2017} **(C)** 3^{2018} **(D)** 4^{2019} **(E)** 5^{2020}

Last question!

I want a number of Easter eggs which is a perfect square. I want no more than 50, but more than 3 dozen eggs. How many eggs must I collect?

Which egg is your favorite?

#1



#2

#3

Divisibility

What happens if you do...

$3 \div 2$

$22 \div 4$

$100 \div 3$

$25 \div 7$

Divisibility

Means a number goes into another number with no remainder

There are a few divisibility rules...

Twos

Last number is even.

Threes

Digits add to a multiple of three

Fours

Last two digits are divisible by four

Fives

End in a five or a zero

How many of these numbers are divisible by three?

123	348238
289	2348
3892	27
2387	3
89	234
9796	978376

Here are some friends!

CINNAMON

FLOPSY

SPRINGS

They want to run a few miles because they have eaten so much sugar and have plenty of energy! A mile is four laps around the track. They want to finish after running a whole number of miles.

Which number of laps would allow them to achieve this goal?

a. 720 b. 455 c. 22 d. 97 e. 86

Challenge Problem!

What is the least prime number this is a divisor of N?

$$N = [13 \times 17] + [19 \times 23]$$