

# Multiplying fractions

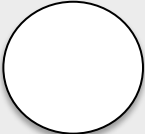
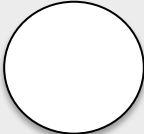
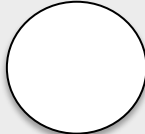
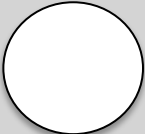

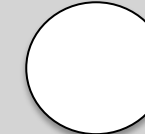
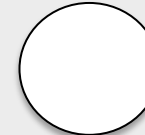
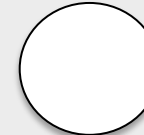

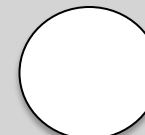
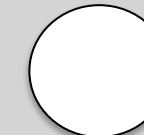






With turtle eggs

Also, like denominators

Let's say we have 15 turtle eggs



# Fractions, Addition and Denominators

Let's take our turtle eggs. There are 15 eggs. If you take one egg that fraction is  $\frac{1}{15}$ . If you took 3 eggs, that is :

$$\frac{1}{15} + \frac{1}{15} + \frac{1}{15}$$

If fractions have the same denominator, you can add them up just like whole numbers.

$$\frac{1}{15} + \frac{1}{15} + \frac{1}{15} = \frac{3}{15}$$

$$3 \times \frac{1}{15} = \frac{3}{15}$$

What is adding the same thing over and over?

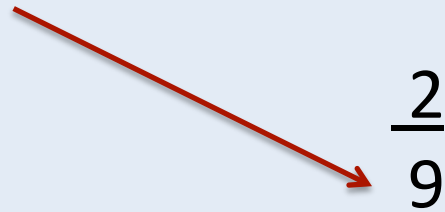
**MULTIPLICATION, OF COURSE**

We took  $\frac{3}{15}$  of the eggs



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The denominator is the bottom number in the fraction. One way to remember it is the denominator is down below and both Down and Denominator start with D.



Same denominators

$$\frac{1}{9} \quad \frac{4}{9} \quad \frac{7}{9}$$

Different denominators

$$\frac{4}{9} \quad \frac{4}{11} \quad \frac{1}{12}$$

# Denominator means: the number of parts

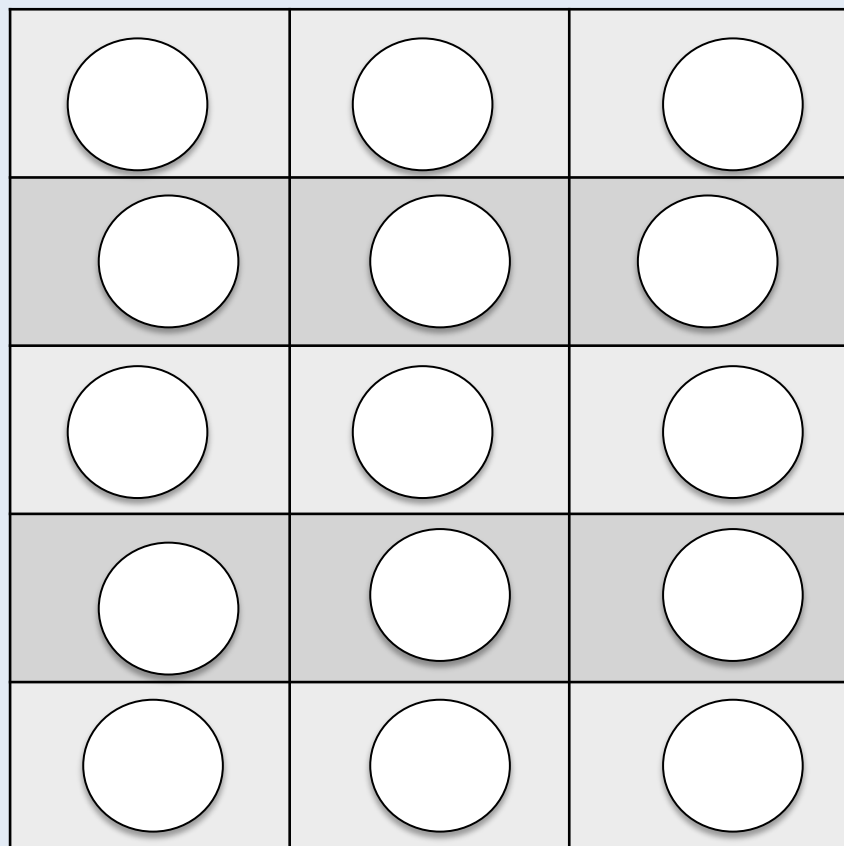
Denominator means more than "the number on the bottom".



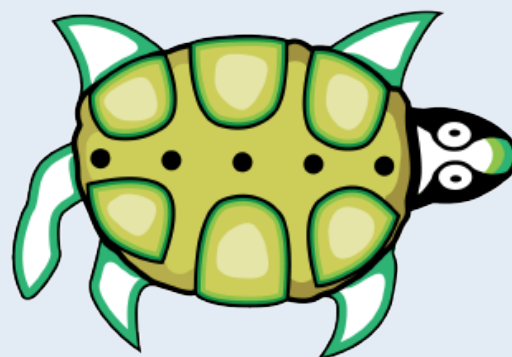
Yes, these are actual turtle eggs

- It's the number of pieces that make up a whole.
- So, if there are 15 eggs, one egg is  $\frac{1}{15}$
- The number 15 on the bottom, the denominator, tells you how many eggs make up the whole nest of turtle eggs.

# Multiplying fractions (again)

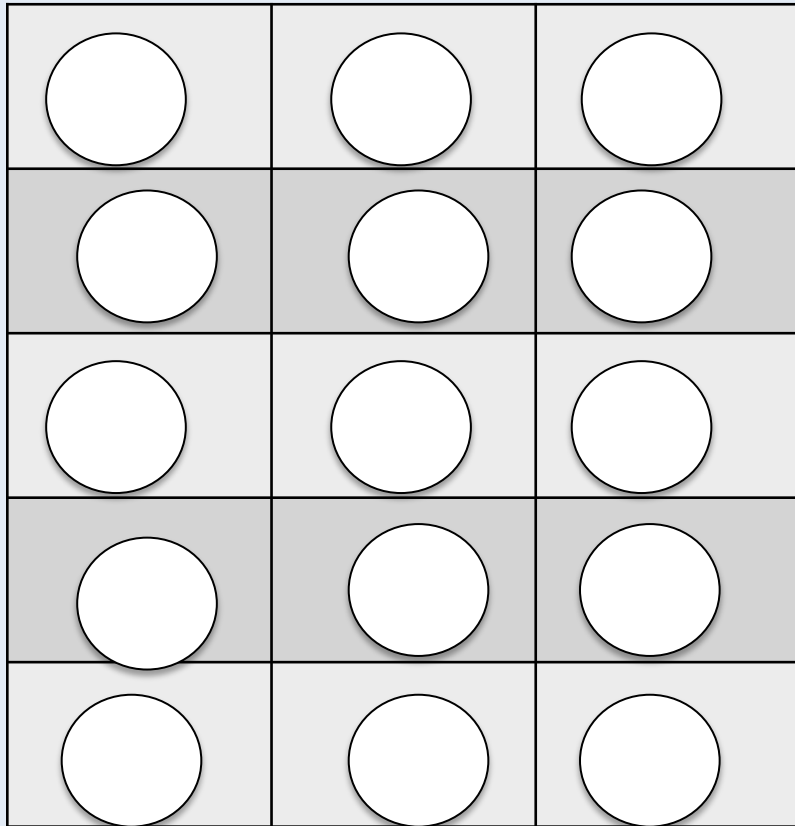


A turtle lays her eggs in three lines of five eggs each (she's a very strange mother turtle)





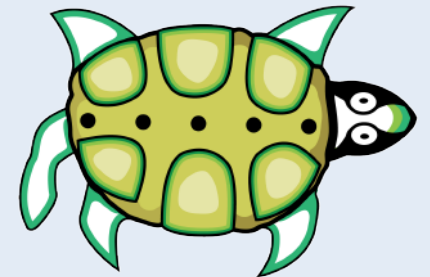
If we take 5 out of 15 eggs,



it is  $\frac{5}{15}$

because

- We have 5 eggs (the numerator)
- It takes 15 eggs to make up the whole (the denominator)



If we take 5 out of 15 eggs,

○		○
○		○
○		○
○		○
○		○

it is also  $\frac{1}{3}$

because

- if we think of our whole nest of eggs as 3 lines, 3 would be the number of parts to make a whole (denominator), and 1 would be the number we have (numerator).

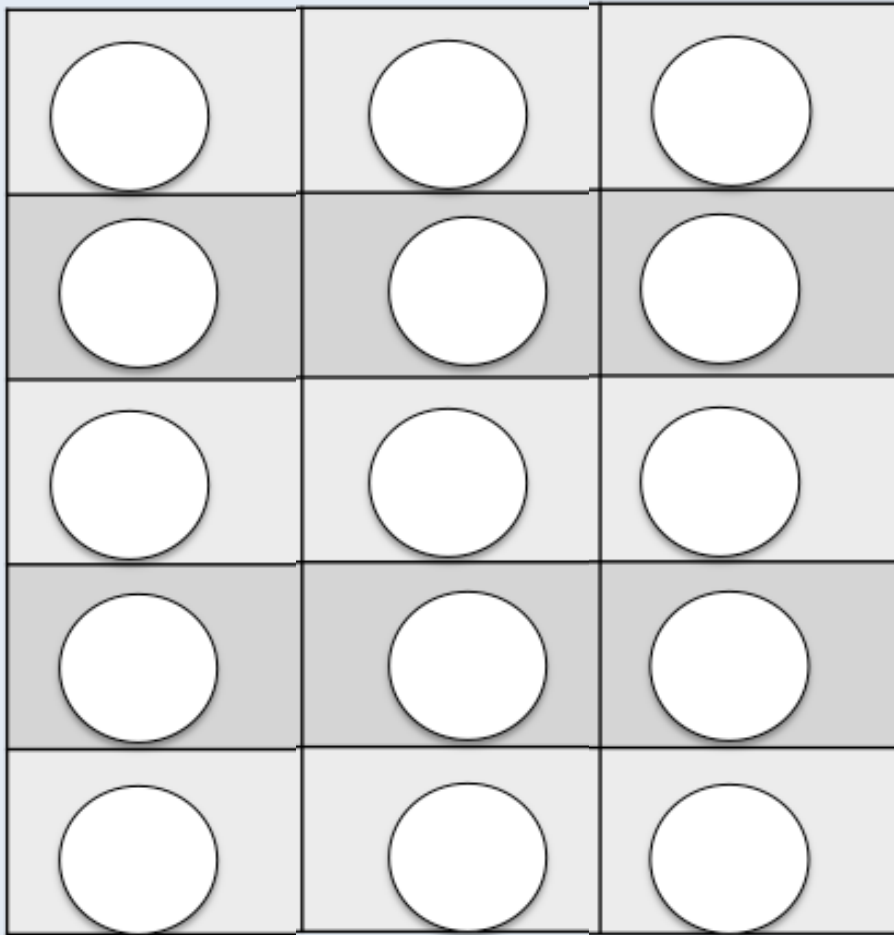
Let's say  $\frac{1}{3}$  of the eggs was just enough for grandfather



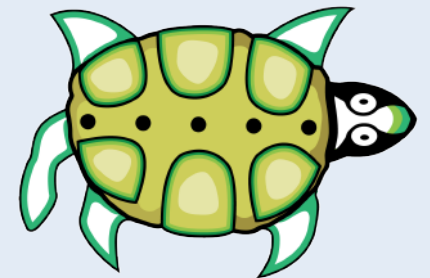
But then two people came to visit



$$3 \times \frac{1}{3} = \frac{3}{3} = 1$$



- If we take  $\frac{1}{3}$  of the eggs 3 times
- We have taken 1 whole nest full of eggs



# What if THREE people came to visit?



Then there would be 4 people altogether



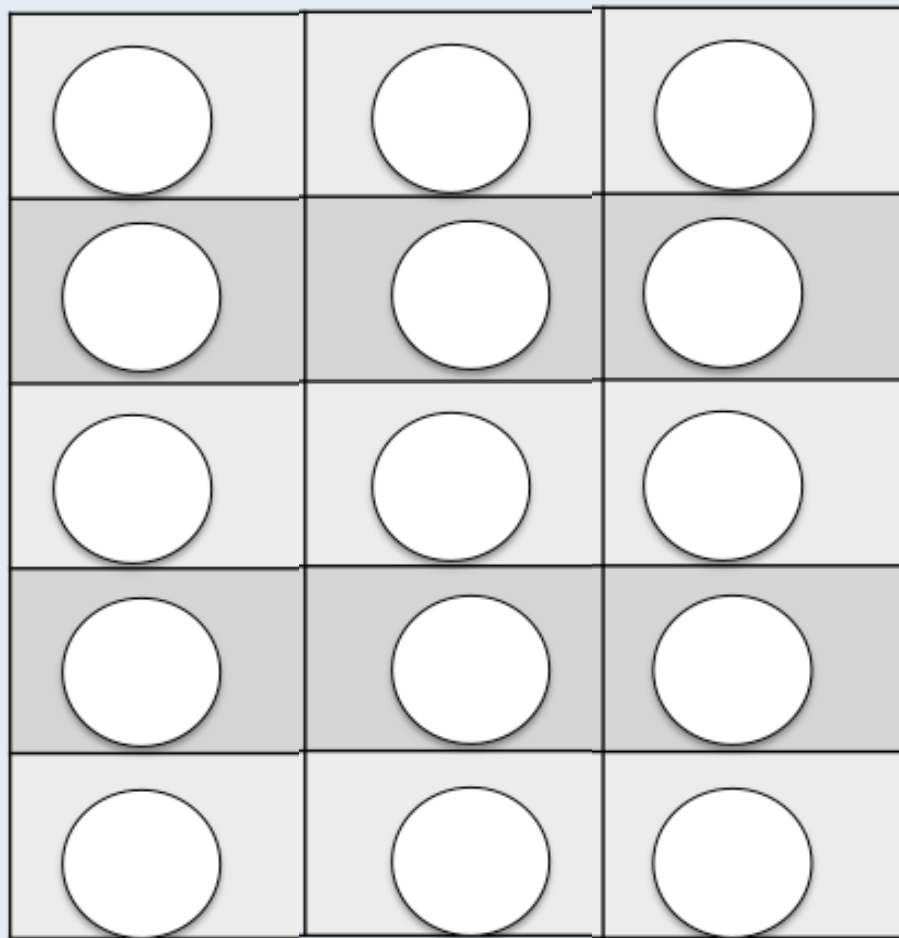
$$4 \times \frac{1}{3} = \frac{4}{3} = 1\frac{1}{3}$$


- We already ate all of the eggs in 1 whole nest

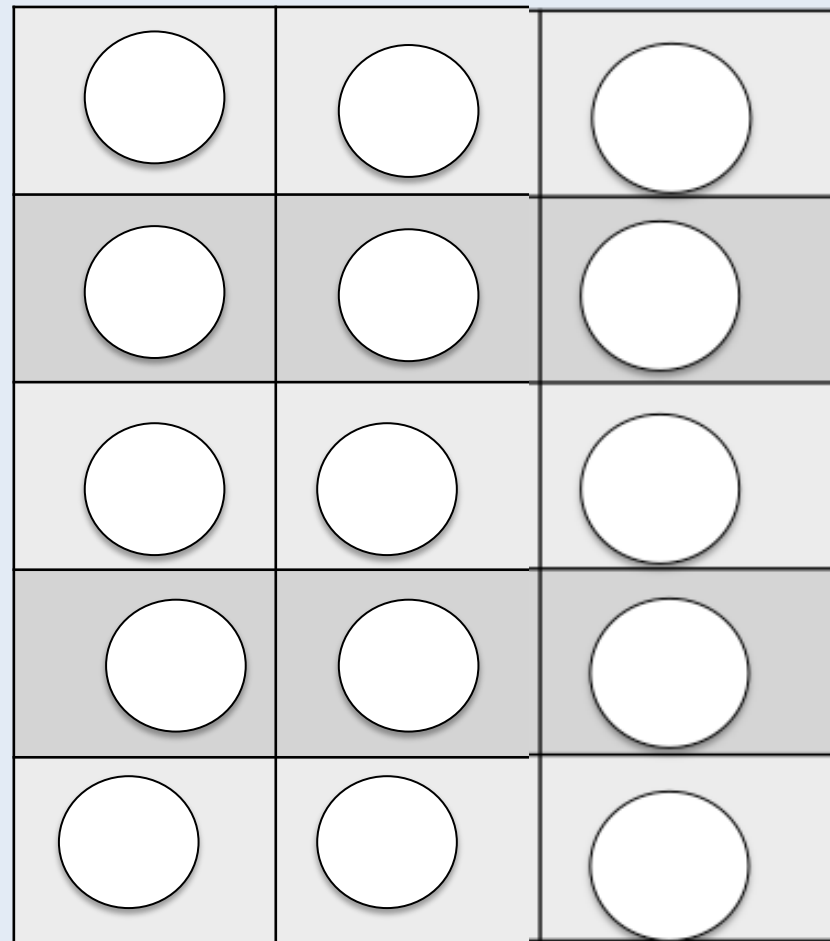
But I'm hungry



We need 2 nests  
And  $\frac{1}{3}$  of a 2<sup>nd</sup> nest



We take 1 whole nest of  
eggs



$$4 \times \frac{1}{3} = \frac{4}{3}$$

$$4 \times \frac{1}{3} = 1\frac{1}{3}$$