

# FRACTIONS: ADDITION AND SUBTRACTION

*Why do people find this topic so scary? Pies and boys (and pies and girls) makes it easy!*

TOPICS COVERED: Fractions and their addition and subtraction

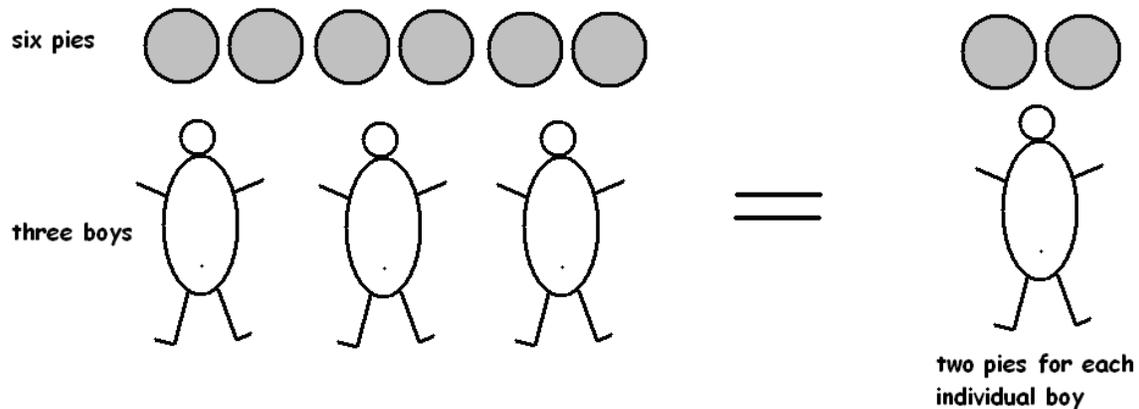
## A. GETTING STARTED

A fraction is simply another way to represent a division problem.

For example, suppose 6 pies are to be shared equally among 3 boys. This yields 2 pies per boy. We write:

$$\frac{6}{3} = 2$$

(We could, of course, also write  $6 \div 3 = 2$  or  $3 \overline{)6}^2$ .)



Here the fraction " $\frac{6}{3}$ ", our division problem, is equivalent to the number 2. It represents the number of pies one whole boy receives.

In the same way ...

sharing 10 pies among 2 boys yields:  $\frac{10}{2} = 5$  pies per boy.

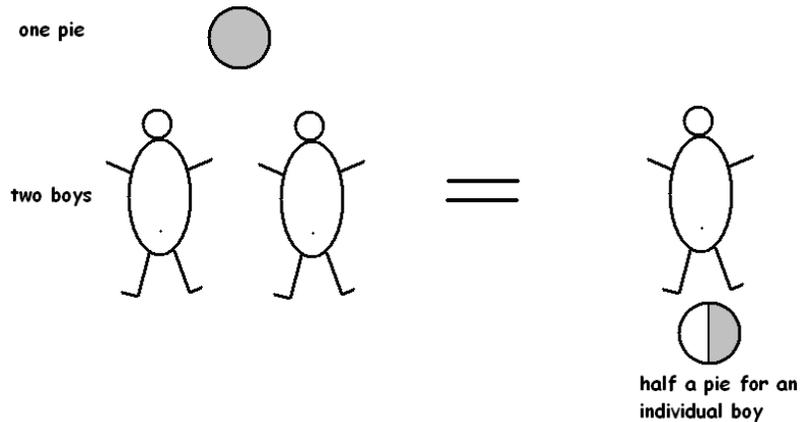
sharing 8 pies among 2 boys yields:  $\frac{8}{2} = 4$

sharing 5 pies among 5 boys yields:  $\frac{5}{5} = 1$

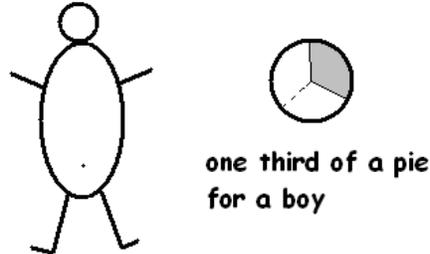
and the answer to sharing 1 pie among 2 boys is  $\frac{1}{2}$ , which we call one half.

This final example is actually saying something of note and it represents how fractions are usually taught to students:

*If one pie is shared (equally) between two boys, then each boy receives a portion of a pie which we choose to call "half."*



*If one pie is shared equally between three boys, then each boy receives a portion of pie which we choose to call "one third."*

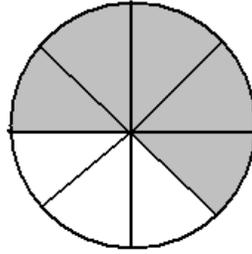


*And  $\frac{1}{5}$  is the result of sharing one pie between five boys, which we choose to call "one fifth."*



Students are usually taught to divide shapes (pies) into equally sized sections and color in portions that represent certain fractions. The idea that this process is a division problem (sharing pie among boys) might not be always be clear.

**EXAMPLE:** This picture shows the amount of pie an individual boy received when  $a$  pies were shared among  $b$  boys.



What might the numbers  $a$  and  $b$  be?

**Answer:** The pie is divided into 8 equal parts which suggests ...

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