

# Fractions

Do you remember how to do this?

$$\frac{2}{3} \div \frac{3}{4}$$

Well, sort of...

$$\begin{aligned}\frac{2}{3} \div \frac{3}{4} &= \frac{2}{3} \times \frac{4}{3} \\ &= \frac{2 \times 4}{3 \times 3} \\ &= \frac{8}{9}\end{aligned}$$

# Questions we should be asking:

1. What is a fraction?
2. What does it mean to divide fractions?

$$\frac{2}{3} \div \frac{3}{4} = \frac{2}{3} \times \frac{4}{3}$$

3. Why does this rule work?
4. What does it mean to multiply fractions?

$$= \frac{2 \times 4}{3 \times 3}$$

5. Huh?

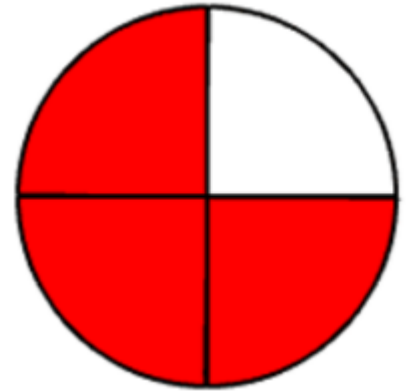
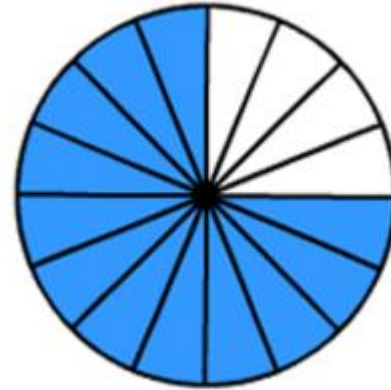
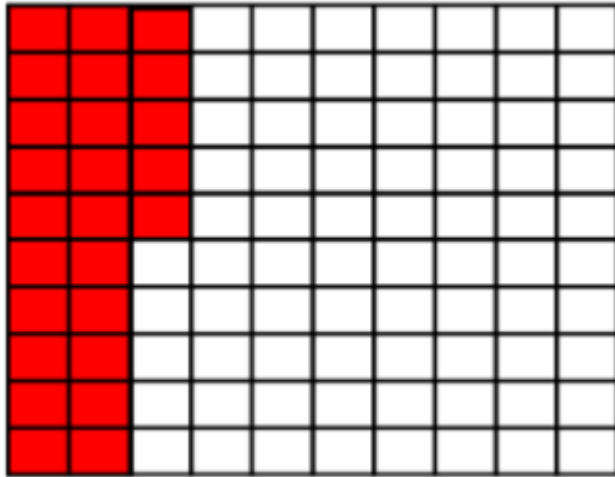
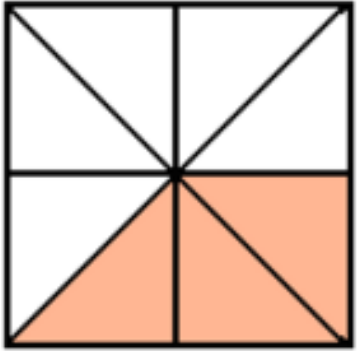
$$= \frac{8}{9}$$

6. How is this answer interpreted?

7. Can we build mathematical models/representations to help support this understanding?
8. Which model(s) are best?

# Some Common Models

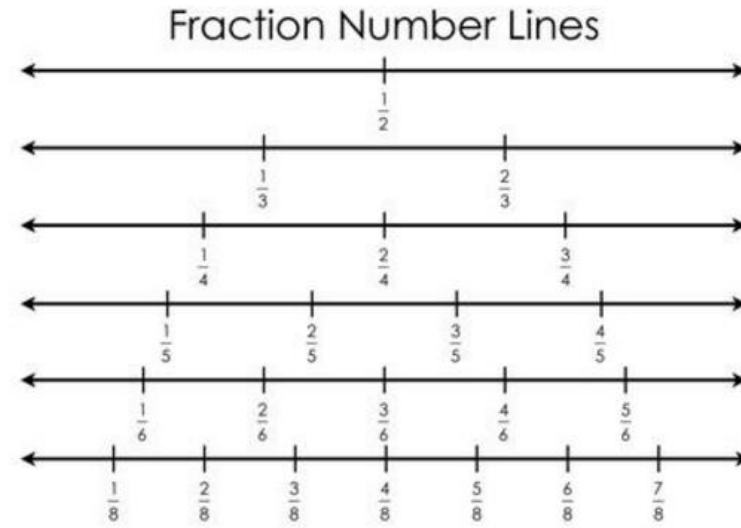
# Part-Whole of a Region (Area Model)



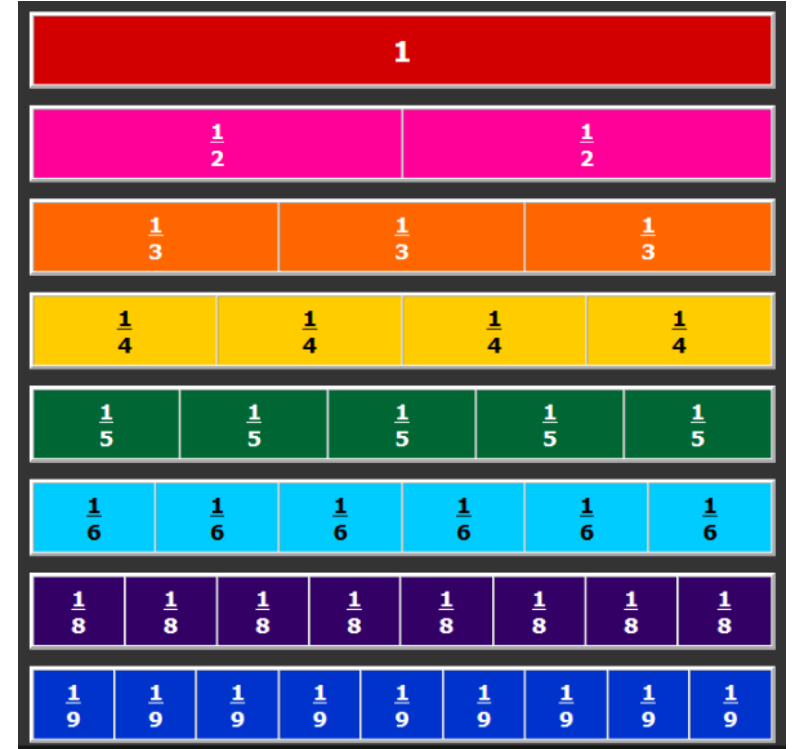
# Measure (Length)



Cuisenaire Rods



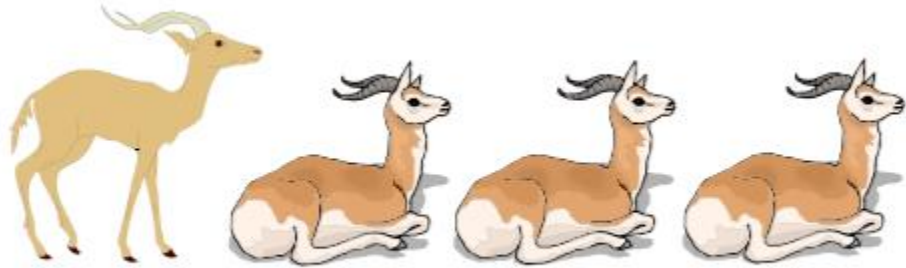
Source: Luminous Learning



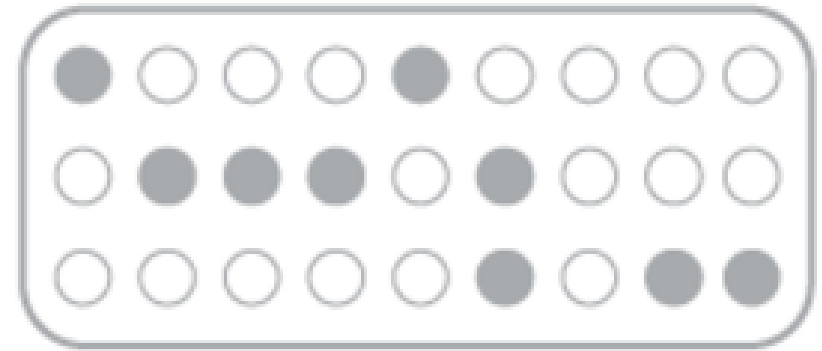
Fraction Bars/Fraction Strips



# Set of Objects



Source: Fractions4kids



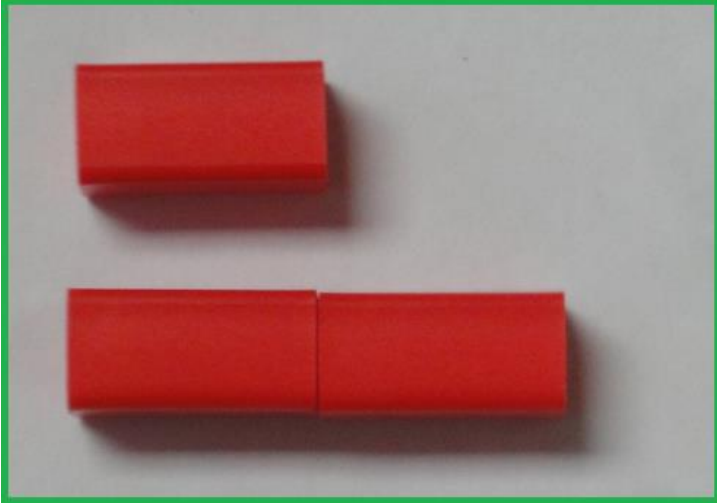
Source: mathinenglish.com



Source: Daily Mail



# Ratio



1 red rod  
out of 2 red rods

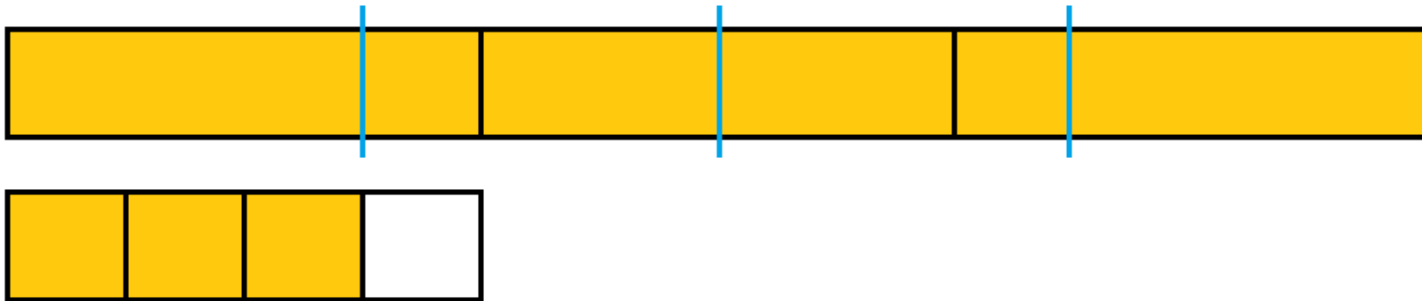
is the same as



2 white rods out  
of 4 white rods

# Division

$$3 \div 4 = 4 \overline{)3} = \frac{3}{4}$$



$$\frac{3}{4}$$