Visualizing Division Using Length Models

Suppose that you have a pipe that is 4 feet long. For each of the pipe lengths listed in the chart below, determine how many pieces of that length you can divide your 4 foot pipe into. On another piece of paper,

a) Use a picture to solve the problem

b) Show how you could compute this numerically

c) Explain the connection between your picture and the computational approach.

Whole pipe length (in feet)	Length of pieces (in feet)	Number of pieces
4	4	
4	2	
4	1	
4	$\frac{1}{2}$	
4	$\frac{1}{3}$	
4	$\frac{2}{3}$	
4	$\frac{1}{4}$	
4	$\frac{3}{4}$	

Complete the following chart and draw pictures showing the solutions.

Whole pipe length (in feet)	Length of pieces (in feet)	Number of pieces
$\frac{10}{3}$	$\frac{1}{3}$	
$\frac{10}{3}$	$\frac{5}{3}$	
$\frac{10}{3}$	$\frac{1}{6}$	
$\frac{10}{3}$	$\frac{5}{6}$	
2	4	
3	4	
$\frac{1}{2}$	$\frac{3}{4}$	
$\frac{2}{3}$	$\frac{1}{2}$	

What is the procedure for dividing one fraction by another? For example, how can you compute $\frac{2}{3} \div \frac{1}{2}$ numerically?

Use the diagram you drew for $\frac{2}{3} \div \frac{1}{2}$ to explain why the numerical procedure is correct.