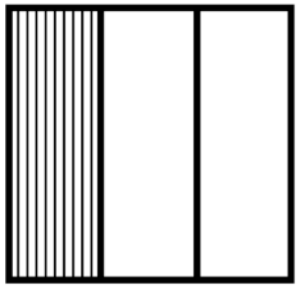
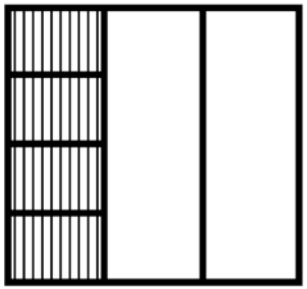
Fraction Multiplication: On the Grid

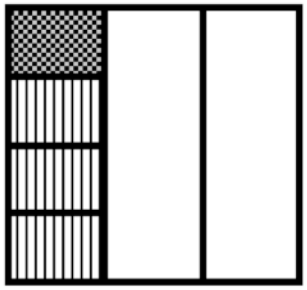
QUESTION: What is $\frac{1}{4}$ of $\frac{1}{3}$? In order to find out what $\frac{1}{4}$ of $\frac{1}{3}$ is, you can use a grid model.



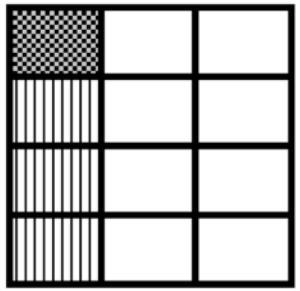
The shaded column is $\frac{1}{3}$ of the rectangle.



Split the $\frac{1}{3}$ into four equal pieces – fourths.



Darken $\frac{1}{4}$ of the $\frac{1}{3}$. Now the question is, "What is *that* piece called?"



Split the rest of the rectangle so all pieces are of equal size.

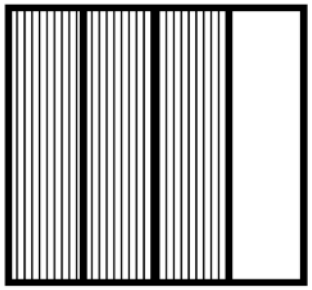
The darkened section is $\frac{1}{12}$ of the rectangle.

That means $\frac{1}{4}$ of $\frac{1}{3}$ is $\frac{1}{12}$.

$\frac{1}{12}$ is the product of $\frac{1}{4}$ x $\frac{1}{3}$.

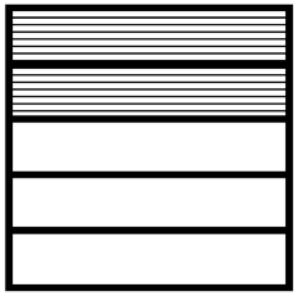
Grids can be used to model multiplying a fraction by a fraction, such as $\frac{3}{4}$ x $\frac{2}{5}$.

$\frac{3}{4}$



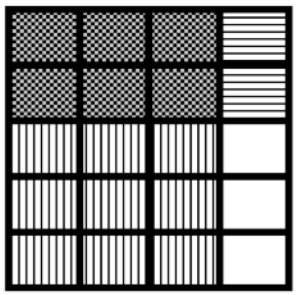
Make a model of the first factor, using vertical columns.

$\frac{2}{5}$



Make an identically-sized model of the second factor, using horizontal rows.

$\frac{3}{4}$ x $\frac{2}{5}$



Overlap the two models.

The sections of the rectangle where the two fractions overlap is the product of $\frac{3}{4}$ x $\frac{2}{5}$.

Those sections are $\frac{6}{20}$.

So $\frac{3}{4}$ x $\frac{2}{5} = \frac{6}{20}$ or $\frac{3}{10}$