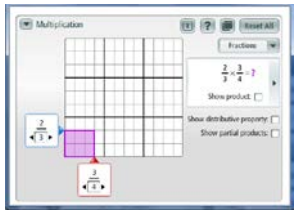
Interactive Resources for Multiplication of Fractions — Area Models

Students' previous work with area models helped to build foundational conceptual understandings of whole number multiplication and division. Area models are also essential for students' conceptual understanding of multiplication with fractions. Students should interpret and draw area models to explain and represent their thinking. As the models become more complex, students may struggle to draw area models to represent multiplication of fractions. The resources listed below can be used to provide supports and scaffolds to students as they represent area models. These resources include a variety of features, and one resource may make more sense to a student than another resource.

Multiplying a fraction and a fraction (both factors < 1)

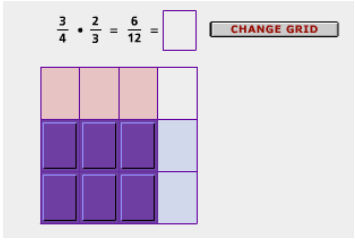
Math Tools — Multiplication/Area Models



- The whole can be partitioned into the following denominators: 1 – 5.
- "Equation" and "Show Product" can be shown or hidden.

(From the Instruction Center)

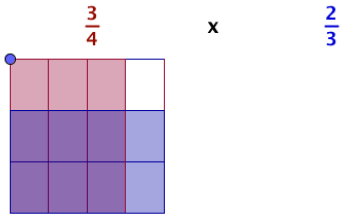
Area Model for Multiplication



- The whole can be partitioned into the following denominators: 1 – 9.
- Clicking on "Change Grid" presents fractions in simplified form; students do not simplify fractions until Grade 6.

(Annenberg Foundation)

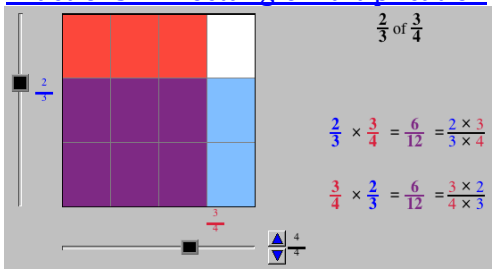
Multiplying Fractions — Area Models



- The whole can be partitioned into the following denominators: 2 – 10.
- The solution is only given after clicking "Solution."
- There is an option for "Simplified Solution" that students should not choose; students do not simplify fractions until Grade 6.

(Maine Department of Education)

Fractions — Rectangle Multiplication

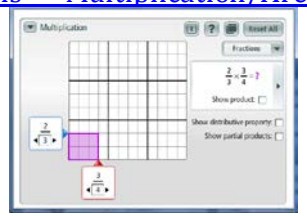


- Click "Proper Fraction" for factors < 1.
- The whole can be partitioned into the following denominators: 1 – 8.
- Students are not familiar with the terms *proper* or *improper fractions.* Clarify to students that they should refer to fractions as less than 1 or greater than 1.
- Equations and solutions appear automatically on the right.

(National Library of Virtual Manipulatives)

Multiplying a fraction and a fraction (including factors > 1)

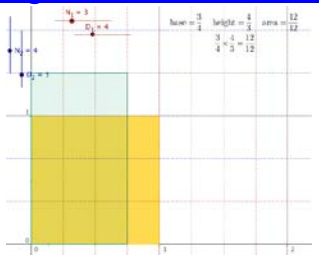
Math Tools — Multiplication/Area Models



- The whole can be partitioned into the following denominators: 1 – 5.
- "Equation" and "Show Product" can be shown or hidden.
- Fractions or Mixed Number can be chosen.

(From the Instruction Center)

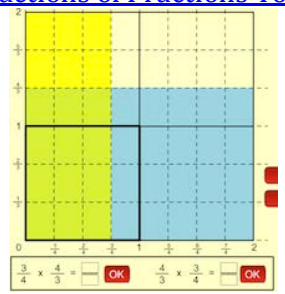
Multiplying Fractions — The Area Model



- The whole can be partitioned into the following denominators: 1 – 10.
- Solutions appear automatically on resource.

(Cornell and SUNY Stony Brook)

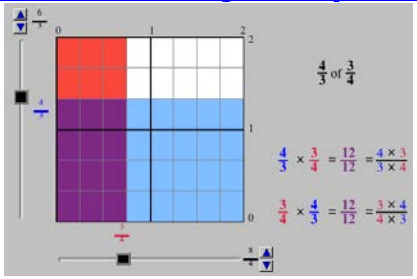
Fractions of Fractions Tool



- Wholes can be partitioned into the following denominators: 2, 3, 4, 5, 8, 10.
- Students enter the solution.
- Explain to students that *axis* refers to the lines that are marked with fractional values.

(New Zealand Ministry of Education)

Fractions — Rectangle Multiplication



- Click "Improper Fraction" for factors >1.
- The whole can be partitioned into the following denominators: 1 – 8.
- Students are not familiar with the terms *proper* or *improper fractions.* Clarify to students that they should refer to fractions as less than 1 or greater than 1.
- Equations and solutions appear automatically on the right.

(National Library of Virtual Manipulatives)