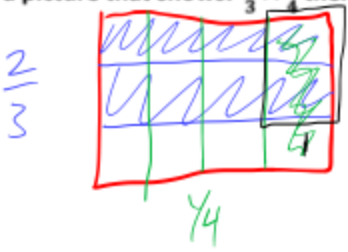
Math 9 Section 3.3 – Multiplying/Dividing Rational Numbers

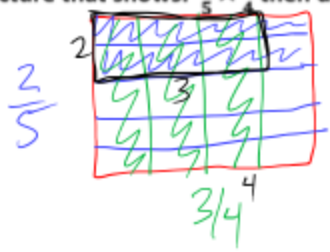
Homework: Section 3.4 on Pg. 113; #1-7half, 8, 10, 11

Draw a picture that shows: $\frac{2}{3} \times \frac{1}{4}$ then use it to get the answer



$\frac{2 \text{ pieces}}{12 \text{ total}} = \frac{2 \cdot 1}{3 \cdot 4} = \frac{2}{12} = \boxed{\frac{1}{6}}$

Draw a picture that shows: $\frac{2}{5} \times \frac{3}{4}$ then use it to get the answer



$\frac{6 \text{ pieces}}{20 \text{ total}} = \frac{2 \cdot 3}{5 \cdot 4} = \frac{6}{20} = \boxed{\frac{3}{10}}$

When multiplying two fractions, you multiply the numerators together and the denominators together to get the answer.

$-\frac{2}{9} \times \frac{3}{4} = -\frac{6 \div 3}{36 \div 3} = -\frac{2 \div 2}{12 \div 2} = \boxed{-\frac{1}{6}}$

$-\frac{5}{12} \times -\frac{8}{15} =$

① Cross reduce (multiplying) $= -\frac{\cancel{8}^{2}}{\cancel{12}_{3}} \times -\frac{\cancel{8}^{4}}{\cancel{15}_{3}} = \boxed{+\frac{2}{9}}$

② reduce after $= \frac{40 \div 5}{180 \div 5} = \frac{8 \div 4}{36 \div 4} = \boxed{\frac{2}{9}}$

This only works if the fractions are both in improper form.

$1\frac{1}{2} \times 2\frac{1}{3} = \frac{2 \cdot 1 + 1}{2} \times \frac{3 \cdot 2 + 1}{3} = \frac{\cancel{3}^{1}}{2} \times \frac{7}{\cancel{3}_{1}} = \boxed{\frac{7}{2}}$

$= \frac{21 \div 3}{6 \div 3} = \boxed{\frac{7}{2}}$

When dividing two fractions, you take the reciprocal of the second Fraction (you flip it), then change the division sign to multiplication

$\frac{7}{5} \div \frac{14}{15} = \frac{7}{5} \cdot \frac{15}{14} = \frac{105}{70} = \frac{105 \div 5}{70 \div 5} = \frac{21}{14} = \frac{21 \div 7}{14 \div 7} = \frac{3}{2}$

$1.6 \div -\frac{5}{4} = \frac{16}{10} \div -\frac{5}{4} = \frac{16}{10} \cdot -\frac{4}{5} = -\frac{32}{25}$

$-\frac{9}{7} \div \frac{-3}{1} = -\frac{9}{7} \div -\frac{3}{1} = -\frac{9}{7} \cdot -\frac{1}{3} = +\frac{9}{21} = \frac{9 \div 3}{21 \div 3} = \frac{3}{7}$

Improper first before flip

$-1\frac{1}{6} \div 2\frac{5}{8} = -\left(\frac{1 \cdot 6 + 1}{6}\right) \div \frac{2 \cdot 8 + 5}{8} = -\frac{7}{6} \div \frac{21}{8}$

$= -\frac{7}{6} \cdot \frac{8}{21} = -\frac{4}{9}$