M4.

There are 6 students not wearing blue or white.

36

$\frac{1}{6}$	$\frac{2}{3}$	?
B $\frac{5}{6}$	W	$\frac{1}{6}$

$\frac{1}{6} + \frac{2}{3}$

$\left(\frac{1}{6} = \frac{1}{6}\right) + \left(\frac{2}{3} = \frac{4}{6}\right)$

$\frac{1}{6} + \frac{4}{6} = \frac{5}{6}$

$\frac{1}{6}$ of $36 = \frac{1 \times 36}{6} = \frac{36}{6}$

6

$\frac{1}{3}$ yrd = 1 ft = 12 in

$\frac{2}{3}$ yrd = 2 ft = 24 in

$\frac{1}{3}$ hour = 20 minutes

$\frac{2}{3}$ hour = 40 min

$\frac{1}{4}$ year = 3 months

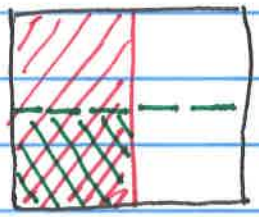
$\frac{3}{4}$ year = 9 months

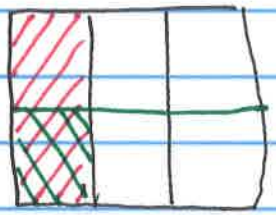
M4 · L13/14 ~ Multiplying Fraction by Fraction

$\frac{1}{2}$ of 4 pans = 2 pans $\quad \frac{1}{2} \times 4 = 2$

$\frac{1}{2}$ of 2 pans = 1 pan $\quad \frac{1}{2} \times 2 = 1$

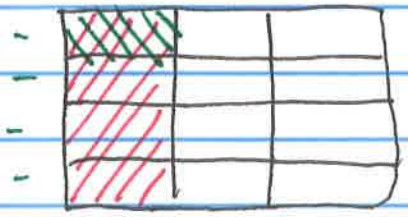
$\frac{1}{2}$ of 1 pan = $\frac{1}{2}$ pan $\quad \frac{1}{2} \times 1 = \frac{1}{2}$

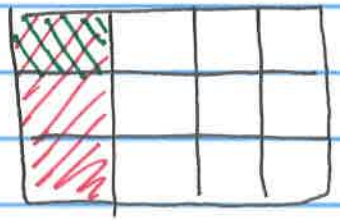




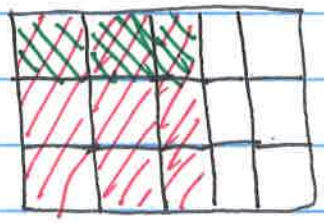
$\frac{1}{2}$ of $\frac{1}{2} = \frac{1}{4}$ $\qquad$ $\frac{1}{2}$ of $\frac{1}{3} = \frac{1}{6}$

$\frac{1}{4}$ of $\frac{1}{3} = \frac{1}{12}$ $\qquad$ $\frac{1}{3}$ of $\frac{1}{4} = \frac{1}{12}$



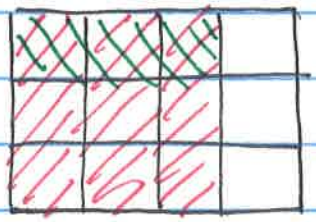


$\frac{1}{3} \times \frac{3}{5} = \frac{1}{3}$ of 3 fifths = 1 fifth



$= \frac{3}{15} \div 3 = \frac{1}{5}$

$\frac{1}{3}$ of $\frac{3}{4} = \frac{1}{3}$ of 3 fourths = 1 fourths



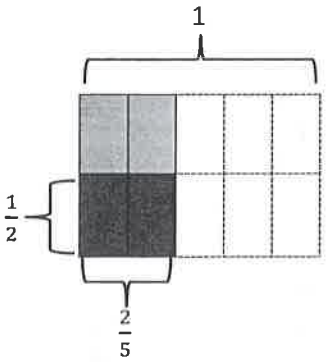
$= \frac{3}{12} = \frac{1}{4}$

Name _____ Date _____

1. Solve. Draw a rectangular fraction model to explain your thinking. Then, write a number sentence. An example has been done for you.

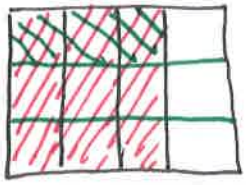
Example:

$\frac{1}{2}$ of $\frac{2}{5} = \frac{1}{2}$ of 2 fifths = 1 fifth(s)



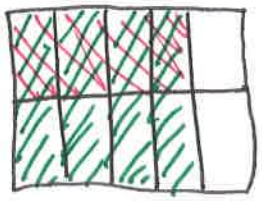
$\frac{1}{2} \times \frac{2}{5} = \frac{2}{10} = \frac{1}{5}$

a. $\frac{1}{3}$ of $\frac{3}{4} = \frac{1}{3}$ of 3 fourth(s) = 1 fourth(s)



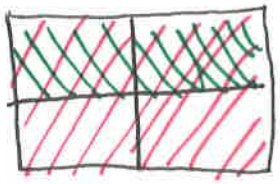
$\frac{1}{3} \times \frac{3}{4} = \frac{3}{12} = \frac{1}{4}$

b. $\frac{1}{2}$ of $\frac{4}{5} = \frac{1}{2}$ of 4 fifth(s) = 2 fifth(s)



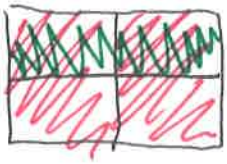
$\frac{1}{2} \times \frac{4}{5} = \frac{4}{10} \div 2 \frac{2}{5}$

c. $\frac{1}{2}$ of $\frac{2}{2}$ =



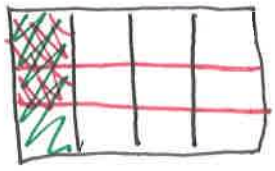
$\frac{1}{2}$ of $\frac{2}{2} = \frac{2}{4} = \frac{1}{2}$

d. $\frac{2}{3}$ of $\frac{1}{2}$ =



e. $\frac{1}{2} \times \frac{3}{5}$ =

f. $\frac{2}{3} \times \frac{1}{4}$ =

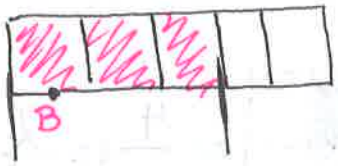


$\frac{2}{3} \times \frac{1}{4} = \frac{2}{12} \div 2 \frac{1}{6}$

2. $\frac{5}{8}$ of the songs on Harrison's music player are hip-hop. $\frac{1}{3}$ of the remaining songs are rhythm and blues. What fraction of all the songs are rhythm and blues? Use a tape diagram to solve.

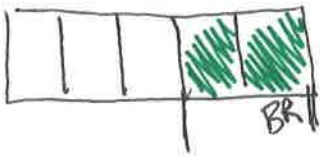
3. Three-fifths of the students in a room are girls. One-third of the girls have blond hair. One-half of the boys have brown hair.

   a. What fraction of all the students are girls with blond hair?



$\frac{1}{3} \text{ of } \frac{3}{5} = \frac{3}{15} = \frac{1}{5}$

   b. What fraction of all the students are boys without brown hair?



$\frac{1}{2} \text{ of } \frac{2}{5} = \frac{2}{10} = \frac{1}{5}$

4. Cody and Sam mowed the yard on Saturday. Dad told Cody to mow $\frac{1}{4}$ of the yard. He told Sam to mow $\frac{1}{3}$ of the remainder of the yard. Dad paid each of the boys an equal amount. Sam said, "Dad, that's not fair! I had to mow one-third, and Cody only mowed one-fourth!" Explain to Sam the error in his thinking. Draw a picture to support your reasoning.