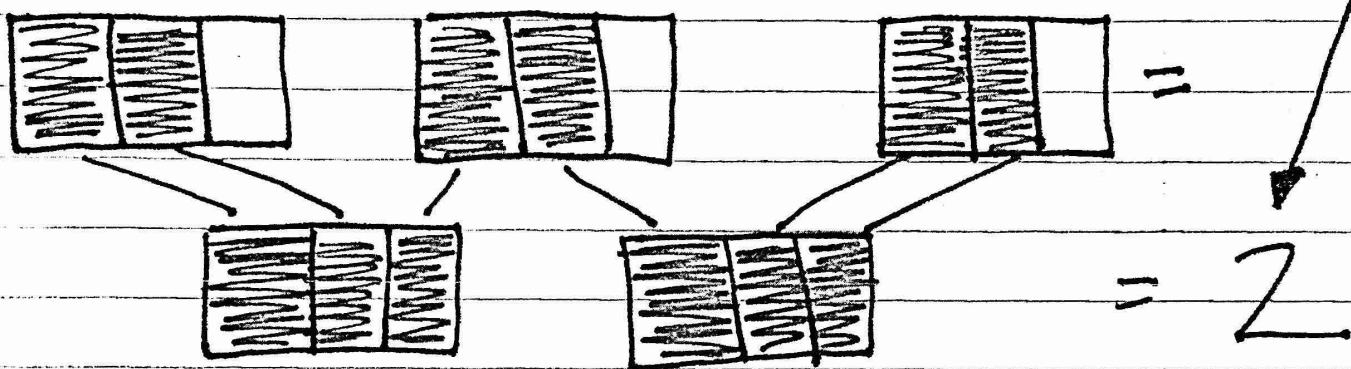
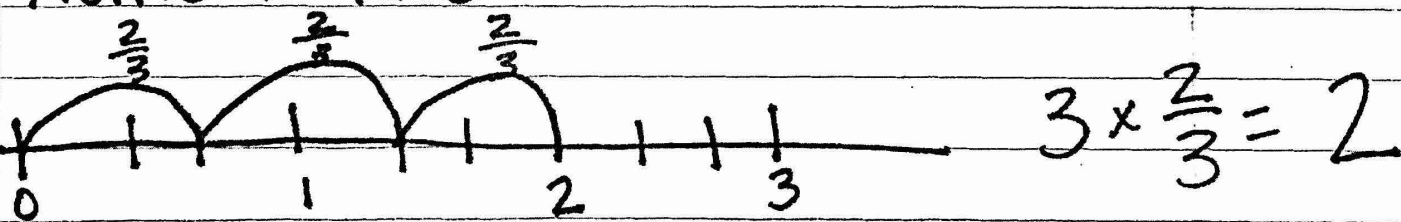


Multiply a Fraction and a Whole Number

$$3 \times \frac{2}{3} = \frac{3}{1} \times \frac{2}{3} = \frac{3 \times 2}{1 \times 3} = \frac{6}{3} = 2$$

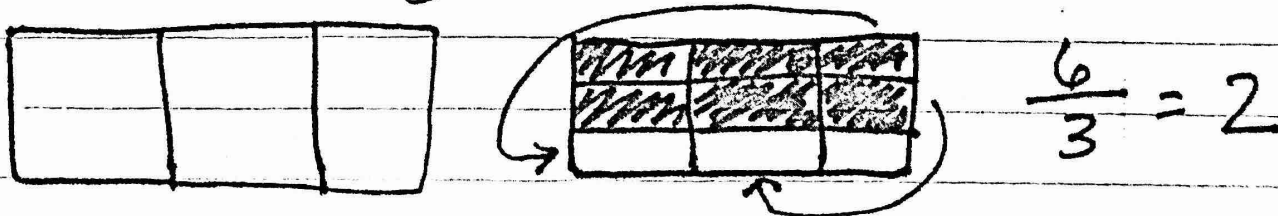


Number line



Fraction of an Area Model

$$3 \times \frac{2}{3} = \frac{2}{3} \times 3$$



Multiplying Fractions

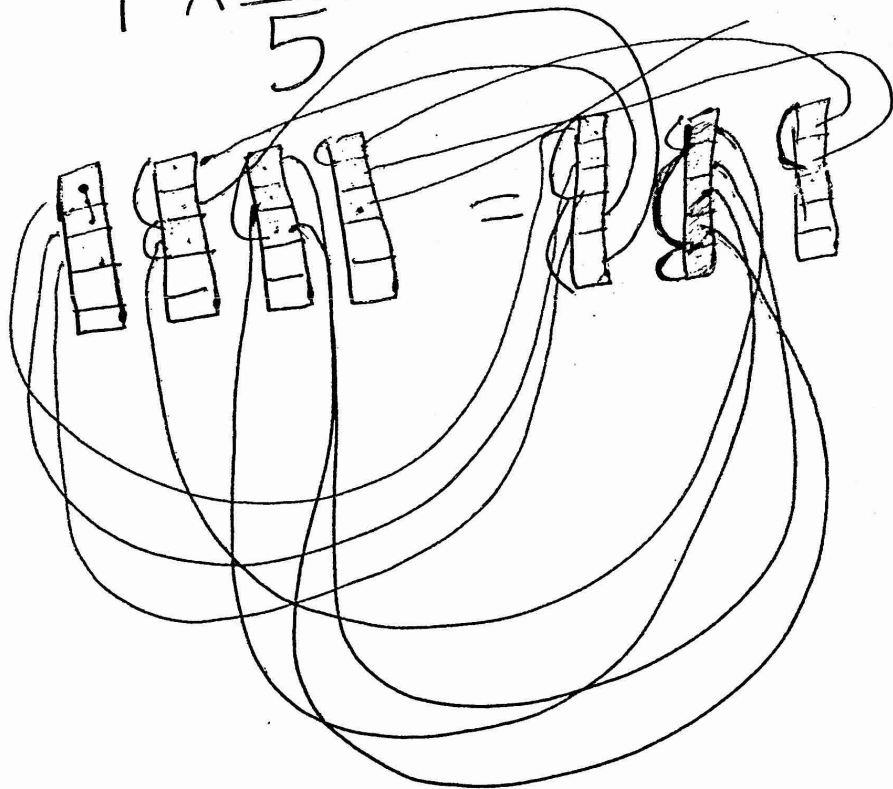
$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

(EX)
$$\frac{3}{4} \times \frac{2}{3} = \frac{3 \times 2}{4 \times 3} = \frac{6}{12} = \frac{1}{2}$$

- ① multiply the numerators
- ② multiply the denominators
- ③ simplify the answer

Multiply a whole number and a Fraction

$$4 \times \frac{3}{5}$$



$$\frac{4}{1} \times \frac{3}{5} = \frac{4 \times 3}{5} = \frac{12}{5}$$

$$\boxed{2\frac{2}{5}}$$

$$\begin{array}{r} 5 \overline{)12} \\ \underline{-10} \\ 2 \end{array}$$

- ① multiply the numerators
- ② multiply the denominators
- ③ simplify

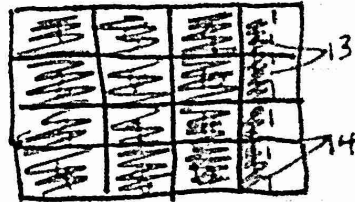
Multiplying
by a

A Mixed Number
whole number

$3\frac{1}{2}$

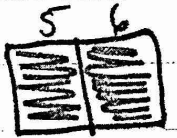
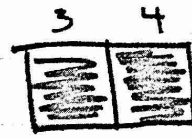
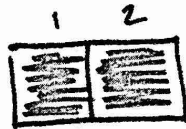
$$3\frac{1}{2} \times 4$$

4



① Convert the mixed number to an
improper fraction

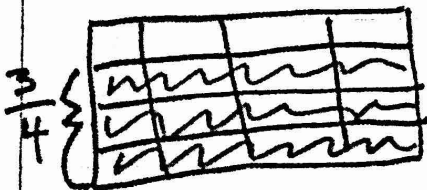
$$3\frac{1}{2} = \frac{7}{2}$$

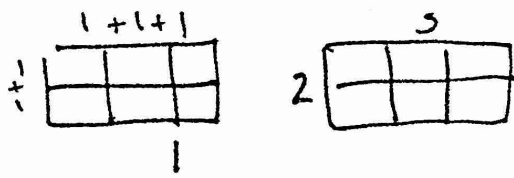


$$\frac{7}{2} \times \frac{4}{1} = \frac{7 \times 4}{2 \times 1} = \frac{28}{2} = 2 \overline{)28}$$

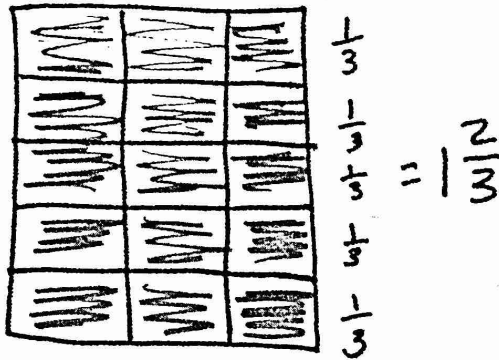
$$\begin{array}{r} 14 \\ \hline 2 \overline{)28} \\ \underline{-2} \\ 08 \\ \underline{-8} \\ 0 \end{array}$$

$$4 \times \frac{3}{4}$$





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



$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3} = 1$$

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{5}{3} =$$

$$\frac{5}{3} = 3 \overline{) \begin{array}{r} 1 \frac{2}{3} \\ -3 \\ \hline 2 \end{array}}$$

$$1 \times 1 \frac{2}{3} = \boxed{1 \frac{2}{3}}$$

OR

$$\frac{1}{1} \times \frac{5}{3} = \frac{1 \times 5}{1 \times 3} = \frac{5}{3} = 3 \overline{) \begin{array}{r} 1 \frac{2}{3} \\ -3 \\ \hline 2 \end{array}}$$

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

ARRAY = Multiplication Model

Notes

What is a reciprocal?

reciprocal is when you
flip the numerator and
denominator

$$\frac{1}{2} \begin{matrix} \swarrow \\ \searrow \end{matrix} \text{reciprocal is } \frac{2}{1}$$

$$\frac{3}{4} \begin{matrix} \swarrow \\ \searrow \end{matrix} \text{reciprocal is } \frac{4}{3}$$

$$2 = \frac{2}{1} \begin{matrix} \swarrow \\ \searrow \end{matrix} \text{reciprocal } \frac{1}{2}$$

Dividing Fractions by a whole number

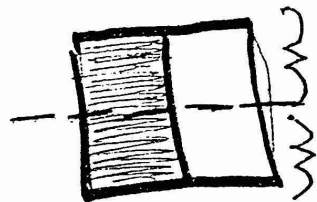
$$6 \div 2 = \frac{\boxed{} \boxed{} \boxed{}}{3} \quad | \quad \boxed{} \boxed{} \boxed{}$$

$$\frac{6}{1} \times \frac{1}{2} = \frac{6}{2} = 3 \quad \frac{\boxed{} \boxed{} \boxed{}}{\boxed{} \boxed{} \boxed{}}$$

$$9 \div 3 = 3 \quad \boxed{} \boxed{} \boxed{} \quad | \quad \boxed{} \boxed{} \boxed{} \quad | \quad \boxed{} \boxed{} \boxed{}$$

$$9 \times \frac{1}{3} = \frac{9}{3} = 3 \quad \frac{\boxed{} \boxed{} \boxed{}}{\boxed{} \boxed{} \boxed{}}$$
$$\frac{\boxed{} \boxed{} \boxed{}}{\boxed{} \boxed{} \boxed{}}$$

$$\frac{1}{2} \div 2$$


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

$$\frac{1}{2} \div 2$$

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

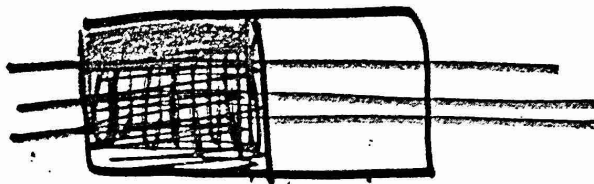
$$\frac{1}{2} \times$$

① change the division sign to a multiplication sign

② find the reciprocal of the 2nd fraction

③ simplify if needed

$$\frac{1}{2} \div 4 = \frac{1}{8}$$



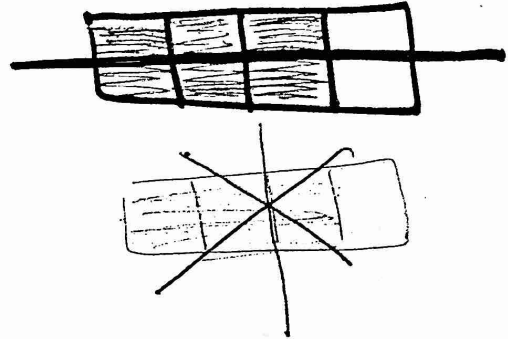
$$\begin{array}{c} \frac{1}{2} \div 4 \\ \downarrow \\ \frac{1}{2} \times \frac{1}{4} = \frac{1}{8} \end{array}$$

- ① write your whole number as a fraction
- ② ~~find~~ write the reciprocal of the 2nd fraction
- ③ change the \div sign to \times
- ④ solve and simplify

$$6 \div 2 = 3$$



$$\frac{3}{4} \div 2 = \frac{3}{8}$$

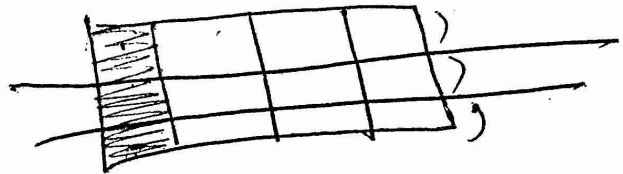


$$\frac{3}{4} \div \frac{2}{1}$$

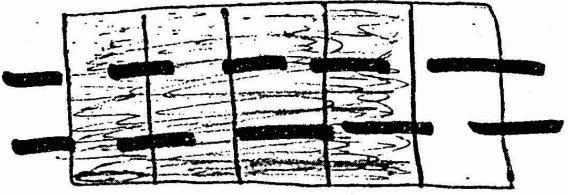


$$\frac{3}{4} \times \frac{1}{2} = \frac{3 \times 1}{4 \times 2} = \boxed{\frac{3}{8}}$$

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

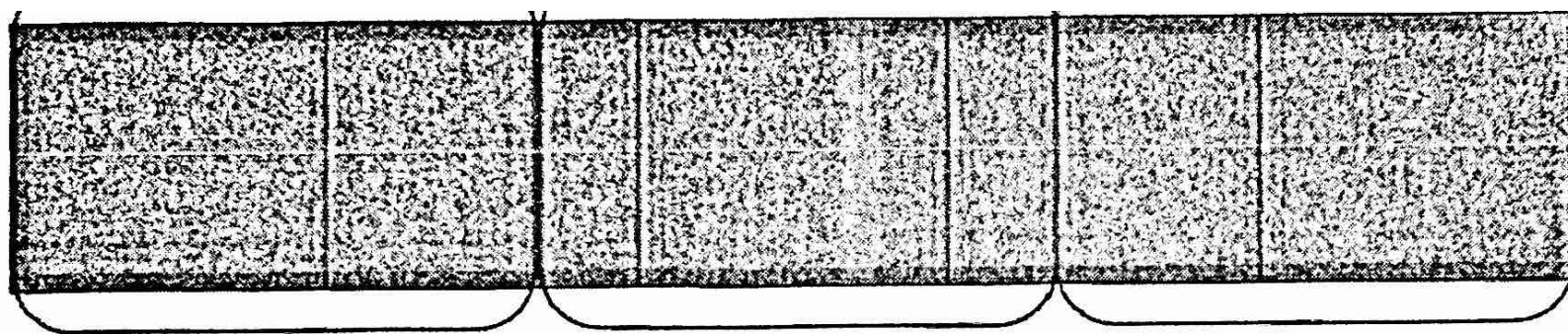


$$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$$

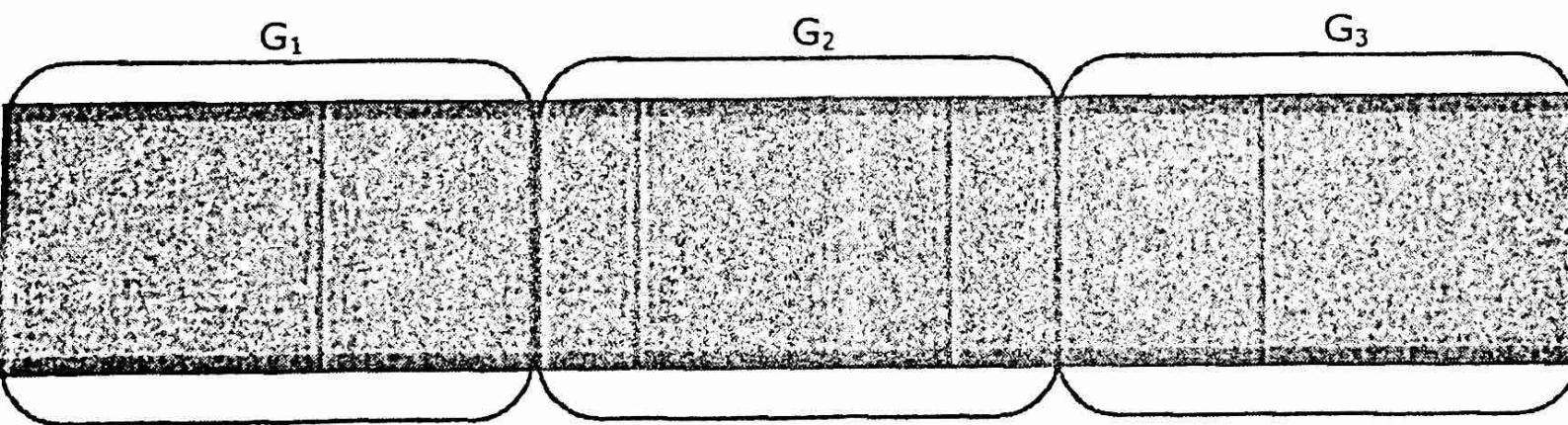
$$\frac{4}{5} \div 3 = \boxed{\frac{4}{15}}$$


$$\frac{4}{5} \div 3 = \frac{4}{5} \div \frac{3}{1}$$

$$\frac{4}{5} \times \frac{1}{3} = \boxed{\frac{4}{15}}$$

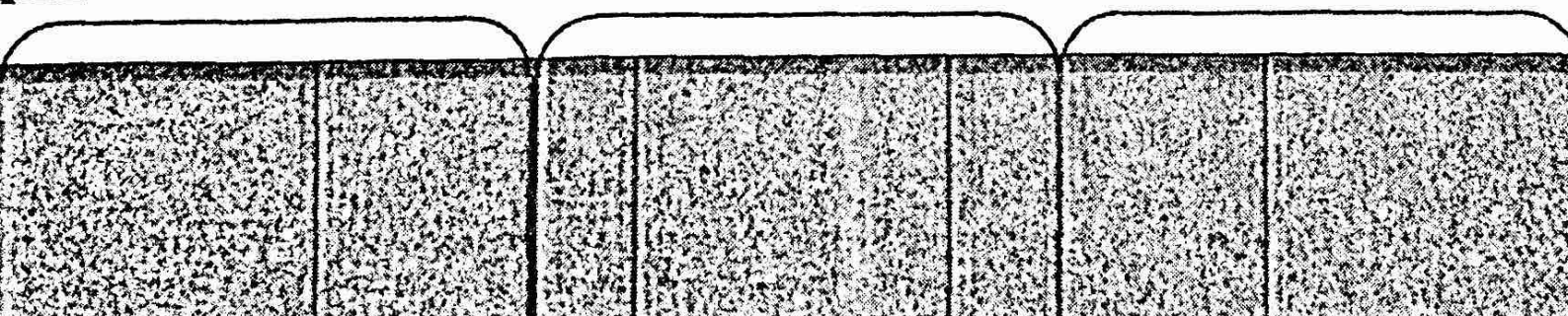


Step 2: Partition each $\frac{1}{6}$ into two equal parts. Do we now have



because $\frac{5}{6}$ would now become $\frac{10}{12}$ and 10 is not divisible by 3.

Step 3: Partition each $\frac{1}{6}$ into three equal parts. Do we now have



* Turn in your work for 10 problems!

Name _____

Vehicle Type _____ example-Chevy Suburban

Average Highway mileage _____ ex- 23 miles per gallon

Fuel Tank Size _____

google: What is the Average highway mileage for a _____? google: What is the fuel tank size of a _____?

	Starting City	Stop 1	Stop 2	Ending City
Miles to next City Rounded to the ones place (show work)	New York to Austin ex 1744mi Ex. New York, NY	Austin to Aspen ex. 1021mi Ex Austin, TX	Aspen to San Fran ex. 1144mi Ex. Aspen, CO	San Francisco, CA
Gas Price per Gallon - Use price for your city	Use gasbuddy.com- round to the nearest hundredth 2.726->\$2.73	2.184->\$2.18	2.721->\$2.72	No work here
Gallons needed to get to the from one city to the next (show work)	Miles divided by average highway mileage $\frac{1744}{2.73} = 638.8$ ②	$\frac{1021}{2.18} = 468.3$ ③	$\frac{1144}{2.72} = 420.6$ ④	Total= ②+③+④ ⑤
How much will you spend on gas? (show work)	Gallons needed time price per gallon $638.8 \times 2.73 = 1744$ ② X ⑥	$468.3 \times 2.18 = 1021$ ③ X ⑦	$420.6 \times 2.72 = 1144$ ④ X ⑧	Total= ⑥+⑦+⑧ ⑨
Time to get from one city to the next- travel time	Use mapquest.com or googlemaps Ex 26 hours 40 min	16 hours 39 minutes	18 hours 4 minutes	Total travel time ⑩

Total Gas Expense (show work) _____