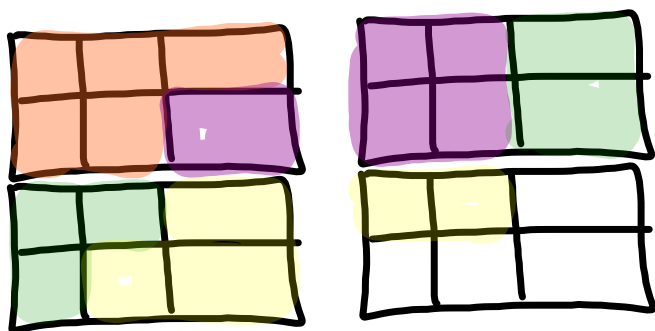


Warm Up Grade 8

February 14, 2019

1) Use the box method or fraction circles to model $4 \div \frac{5}{6} = 4 \frac{4}{5}$

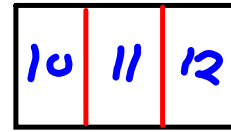
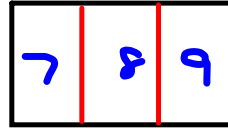
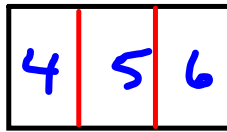
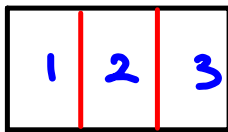


2) Reduce and multiply

$$\begin{aligned}
 & \frac{15 \div 3}{24 \div 3} \times \frac{16}{27} \\
 = & \frac{5}{8} \times \frac{16}{27} \\
 = & \frac{5 \times 2}{1 \times 27} \\
 = & \frac{10}{27}
 \end{aligned}$$

pg 132
3a) $4 \div \frac{1}{3} = 12$

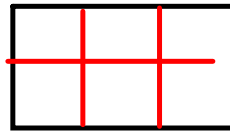
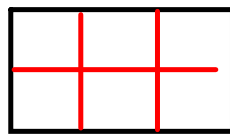
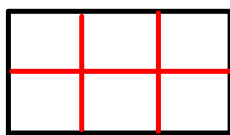
How many $\frac{1}{3}$'s are in 4



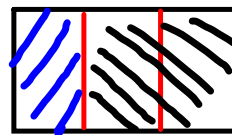
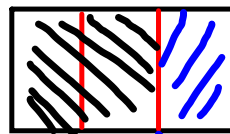
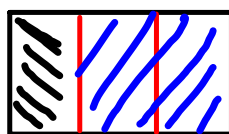
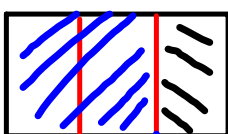
There are 3 $\rightarrow \frac{1}{3}$'s in one whole

In 4 wholes $\rightarrow 4 \times 3 = 12$

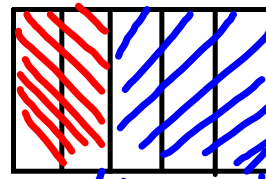
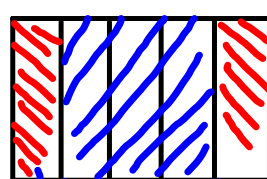
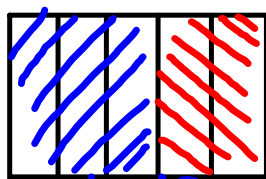
b) $3 \div \frac{1}{6} = 18$



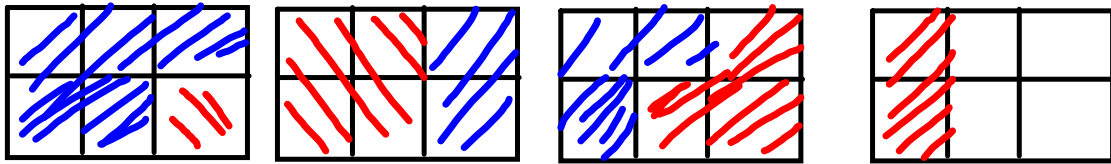
c) $4 \div \frac{2}{3} = 6$



d) $3 \div \frac{2}{3} = 4\frac{1}{2}$



4 $4 \div \frac{5}{6}$

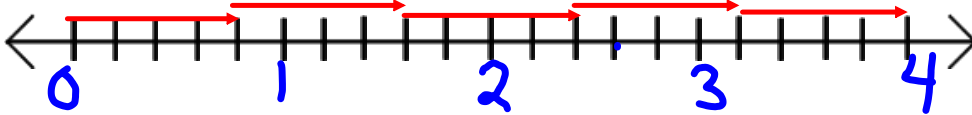


$4 \frac{4}{5}$
or $2 \frac{4}{5}$

4 pieces left but I need 5
 $\frac{4}{5}$



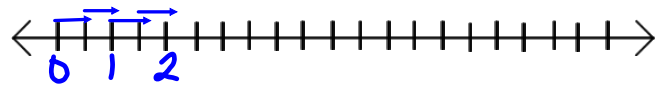
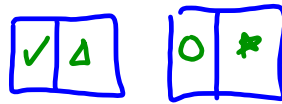
5. $4 \div \frac{4}{5}$



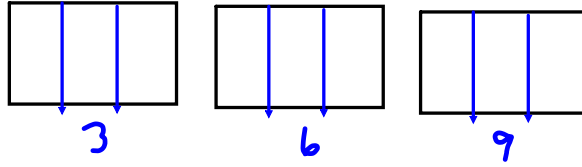
She can study 5 subjects.

6.

b a) $2 \div \frac{1}{2} = 4$

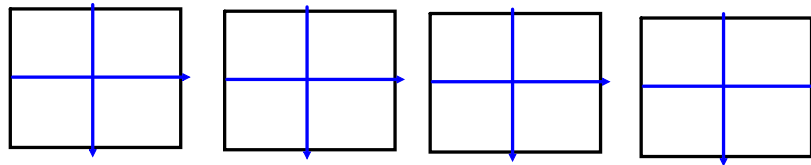


b) $3 \div \frac{1}{3}$



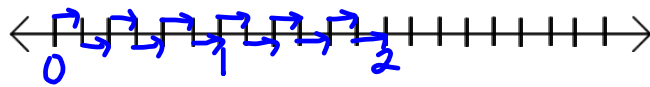
= 9

c) $4 \div \frac{1}{4}$



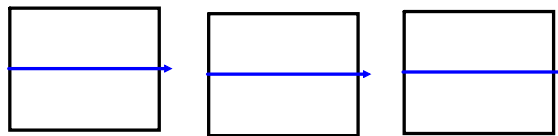
= 16

d) $2 \div \frac{1}{6}$



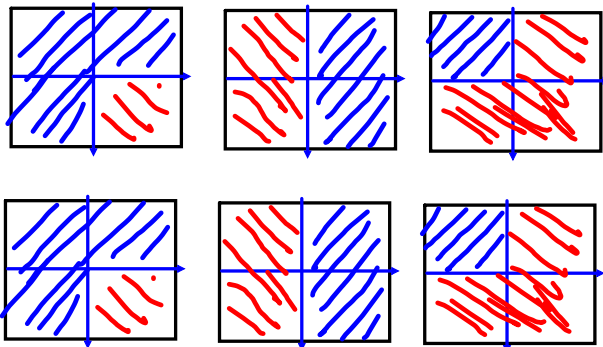
= 12

e) $3 \div \frac{1}{2}$



= 6

f) $6 \div \frac{3}{4}$



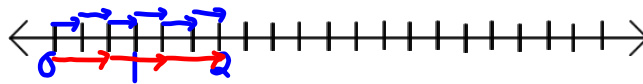
= 8

7. a) $3 \div \frac{1}{4} = 12$
 $3 \div \frac{1}{2} = 6$

b) $2 \div \frac{1}{3} = 6$

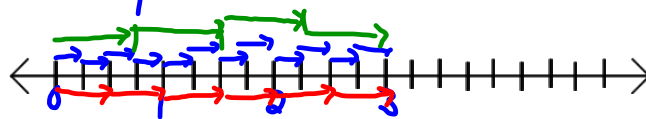
c) $4 \div \frac{1}{6} = 24$
 $4 \div \frac{1}{3} = 12$
 $4 \div \frac{1}{2} = 8$

8a) i) $2 \div \frac{1}{3} = 6$



ii) $2 \div \frac{2}{3} = 3$

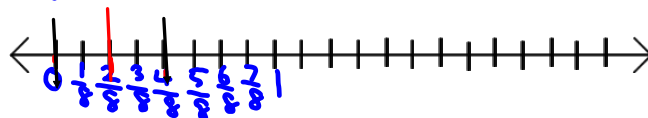
5) i) $3 \div \frac{1}{4} = 12$



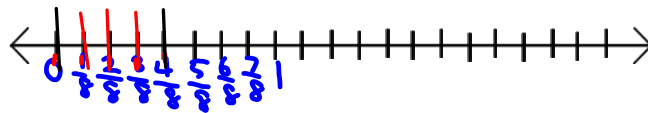
ii) $3 \div \frac{2}{4} = 6$

iii) $3 \div \frac{3}{4} = 4$

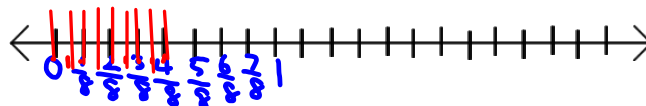
c) $\frac{4}{8} \div 2 = \frac{2}{8}$



ii) $\frac{4}{8} \div 4 = \frac{1}{8}$

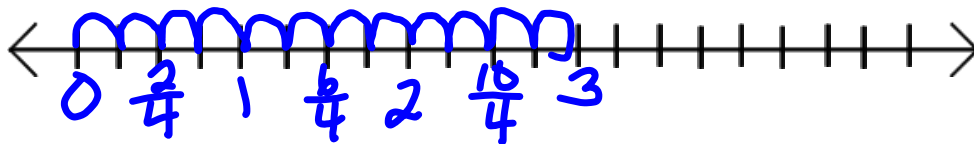


iii) $\frac{4}{8} \div 8 = \frac{1}{16}$

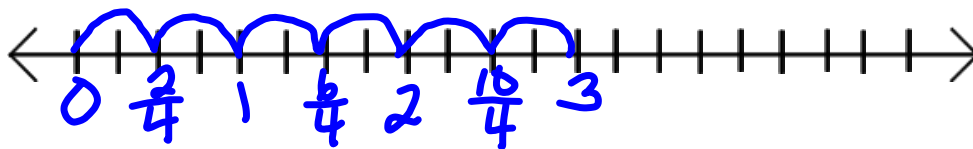


$\frac{4}{8} \div \frac{1}{16}$

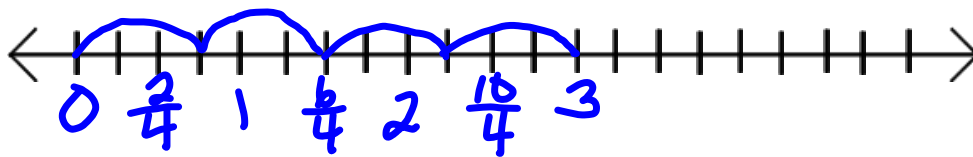
$$3 \div \frac{1}{4} = 12$$



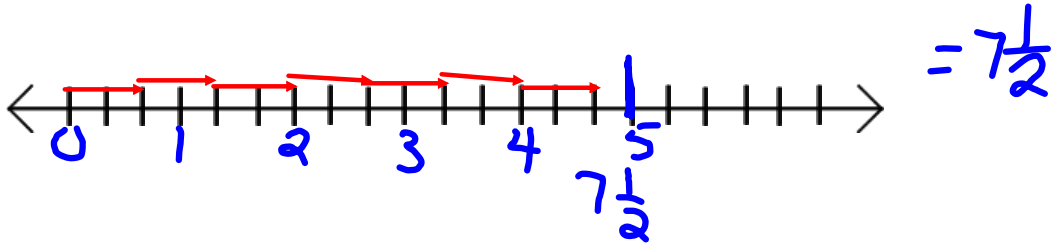
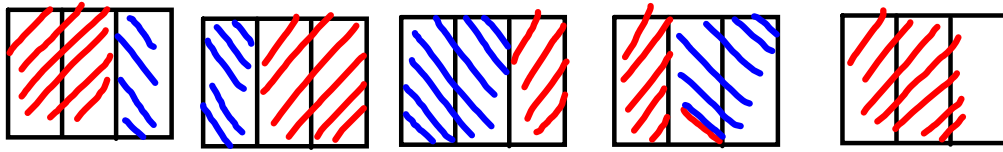
$$3 \div \frac{2}{4} = 6$$



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

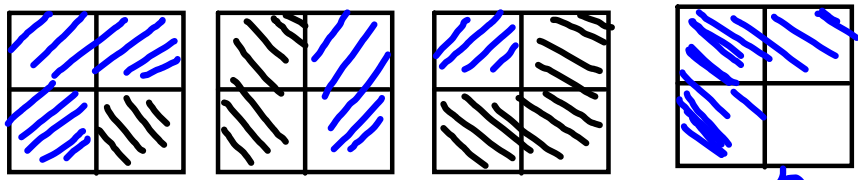


9a) $5 \div \frac{2}{3} =$



b)

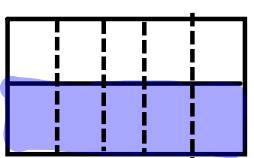
$4 \div \frac{3}{4}$



$5 \frac{1}{3}$

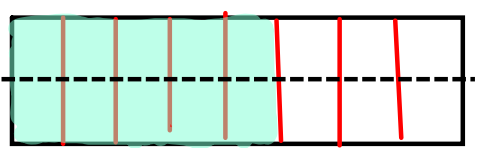
have 1 piece need 3.

c) $\frac{1}{2} \div 5$



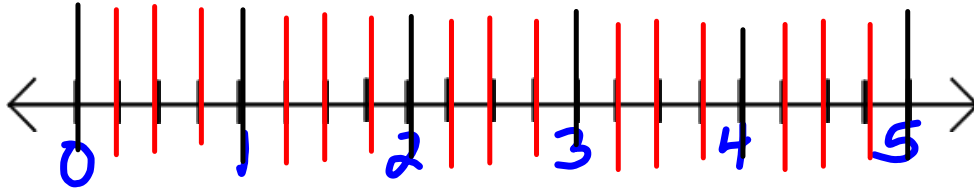
$= \frac{1}{10}$

d) $\frac{5}{8} \div 2$



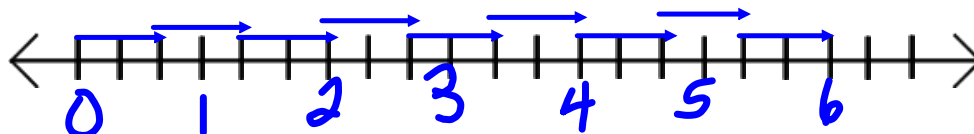
$= \frac{5}{16}$

10 a)



$$5 \div \frac{1}{4} = 20$$

$$b) 6 \div \frac{2}{3}$$

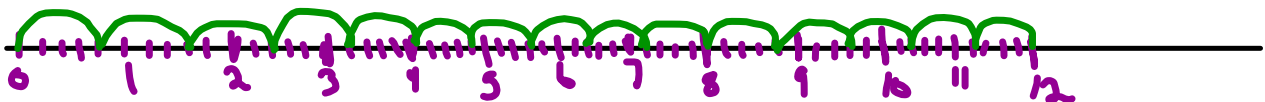


$$= 9$$

$$c) 12 \div \frac{4}{5}$$

15 days

15 Full leaps



Dividing Fractions

Strategy 1: Common Denominators



$$\frac{4}{5} \div \frac{1}{10}$$



Step 1) Find a common denominator

$$= \left(\frac{4}{5}\right) \div \left(\frac{1}{10}\right)$$

$$= \left(\frac{8}{10}\right) \div \left(\frac{1}{10}\right)$$

$8 \div 1$

 $10 \div 10 \rightarrow 1$

Now since the denominators are the same ($_ \div _$) will always equal 1.
 (Is that needed? NO)

$$8 \div 1 = 8$$

Once common denominator

now divide numerator with numerator

And

divide Denominator with denominator

Step 2) Divide Numerator by Numerator

You Try

$$\frac{3}{7} \div \frac{2}{5}$$

Let's Try another way

$$\frac{2}{5} \div \frac{3}{4} \quad \text{is the same as}$$

Let's make the denominator 1

But remember what you do to the denominator you MUST do to the numerator

$$\begin{array}{r} \frac{2}{5} \\ \hline \frac{3}{4} \end{array} \quad \left. \begin{array}{l} \text{numerator} \\ \text{denominator} \end{array} \right\}$$

↓
 need to be
 multiply
 by
 reciprocal

$$= \frac{2}{5} \times \frac{4}{3} \quad \frac{3}{4} \times \frac{4}{3} \Rightarrow \frac{12}{12} = 1$$

$$= \frac{2}{5} \times \frac{4}{3}$$

$$= \frac{8}{15}$$

=

<http://www.youtube.com/watch?v=80WArGwAjt8&feature=related>

why to flip and multiply?



<http://www.youtube.com/watch?v=05rL51flamk&feature=channel>

fraction rap

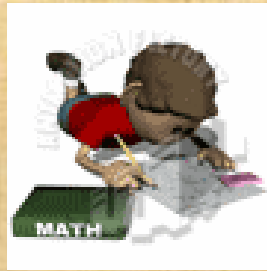


<http://www.youtube.com/watch?v=OGUaN-F80NA&NR=1>

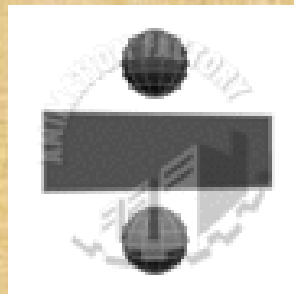


<http://www.youtube.com/watch?v=7GaeC4IPaSo>





Dividing Fractions





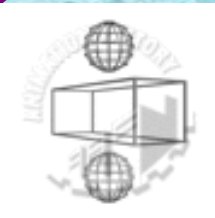
Reciprocal

- Every **non-zero** fraction has a reciprocal.
- Fractions with a denominator of "0" are undefined. $\left(\frac{6}{0}\right)$
- To find the **reciprocal** of a fraction, you simply **flip** the fraction !!

$$\frac{4}{5} \quad \curvearrowright \quad \frac{5}{4}$$

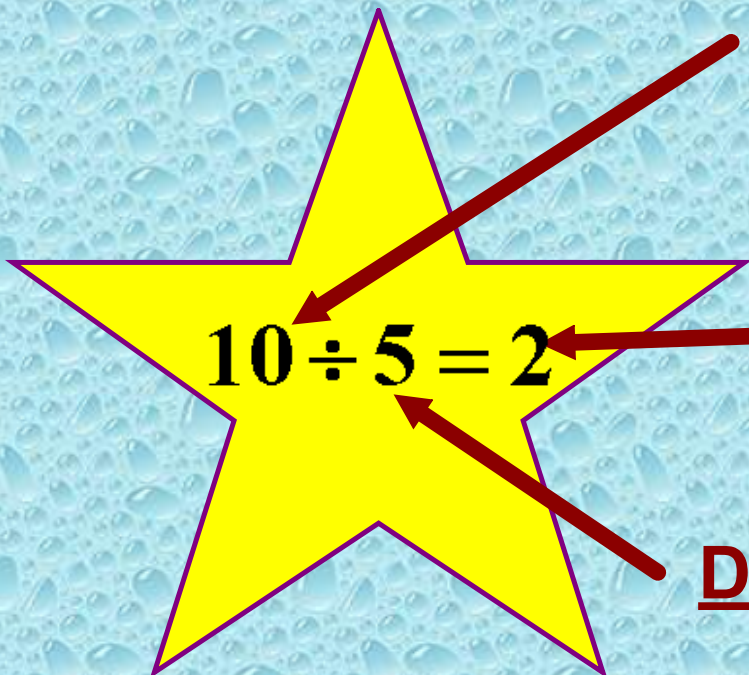


**Express each
division question as
a multiplication
question !!!!**





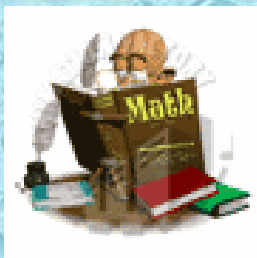
Terminology



Dividend

Quotient

Divisor

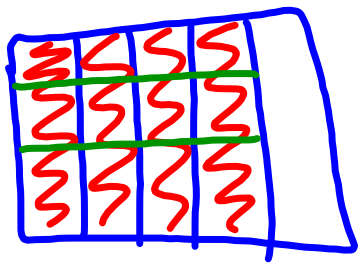


Express division as
multiplication by multiplying
the dividend by the reciprocal

of the divisor !!

Flip and multiply

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



So what have you discovered about dividing fractions?
Is there a way to divide fractions without modeling?

Rule for Dividing Fractions

To divide a fraction, the number before the division sign stays the same, the division sign changes to multiplication and the number after the division sign changes to its reciprocal, then multiply the fractions. Or in other words, invert and multiply.

Reciprocal is when you invert the fraction, the numerator moves to the denominator and the denominator moves up to the numerator.

examples $\frac{5}{4}, \frac{4}{5}$ $\frac{10}{7}, \frac{7}{10}$ $\frac{1}{8}, \frac{8}{1}$ $\frac{6}{11}, \frac{11}{6}$

Examples: *flip and multiply*

(a) $\frac{3}{5} \div \frac{4}{7}$

= $\frac{3}{5} \times \frac{7}{4}$

= $\frac{21}{20}$

(b) $\frac{2}{10} \div \frac{8}{15}$

= $\frac{2}{10} \times \frac{15}{8}$

= $\frac{2}{2} \times \frac{3}{8}$

= $\frac{27}{16}$

Always Reduce

Reduce

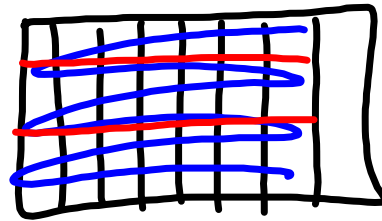
Rule for Dividing Fractions is:

Flip second fraction and Multiply

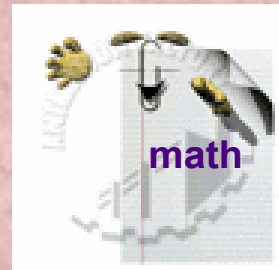
$$\frac{7}{8} \div \frac{1}{3} \rightarrow$$

$$\frac{7}{8} \times \frac{3}{1}$$

$$= \frac{21}{8}$$



Try These !!



#1

$$\frac{4}{5} \div \frac{7}{8}$$
$$= \frac{4}{5} \times \frac{8}{7}$$
$$= \frac{32}{35}$$

#2

$$\frac{1}{8} \div \frac{-6}{5}$$

$$\frac{1}{8} \times \frac{5}{-6}$$

$$= \frac{5}{-48}$$



Class / Homework

~~Page 133, Model #10(a,b)~~

Page 139

#8, #9, #10, #11, #12, #14, #15(a,b), #16

b
a

a
b

Test

Friday, Feb. 22



When the division involves mixed numbers, change the mixed numbers to improper fractions first.

Try the following on your own:

$$(a) \frac{4}{5} \div \frac{7}{12}$$

$$(b) 1 \frac{2}{3} \div \frac{7}{8}$$

$$(c) 6 \div \frac{2}{7}$$

$$(d) 2 \frac{1}{6} \div \frac{5}{9}$$

$$(e) \frac{11}{15} \div 3 \frac{2}{3}$$

$$(f) 5 \frac{2}{5} \div 2 \frac{1}{8}$$

#3



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

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

$$\frac{1}{2} \Rightarrow \frac{2}{1}$$

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

$$\frac{1}{2} \Rightarrow \frac{2}{1}$$

$$3 \div \frac{2}{3} \Rightarrow 3 \times \frac{3}{2} = \frac{9}{2}$$

$$\frac{2}{3} \Rightarrow \frac{3}{2}$$

$$5 \div \frac{2}{3} \Rightarrow 5 \times \frac{3}{2} = \frac{15}{2}$$

$$\frac{2}{3} \Rightarrow \frac{3}{2}$$

$$2 \div \frac{3}{2} \Rightarrow 2 \times \frac{2}{3} = \frac{4}{3}$$

$$\frac{3}{2} \Rightarrow \frac{2}{3}$$

4

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

$$\frac{3}{2} \Rightarrow \frac{2}{3}$$

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

$$\frac{2}{1} \Rightarrow \frac{1}{2}$$

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

$$\frac{3}{1} \Rightarrow \frac{1}{3}$$

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

$$\frac{2}{1} \Rightarrow \frac{1}{2}$$

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

$$\frac{4}{1} \Rightarrow \frac{1}{4}$$

$$\frac{3}{5} \div 4 \Rightarrow \frac{3}{5} \times \frac{1}{4} = \frac{3}{20}$$

$$\frac{4}{1} \Rightarrow \frac{1}{4}$$

$$\frac{3}{5} \div 6 \Rightarrow \frac{3}{5} \times \frac{1}{6} = \frac{3}{30}$$

$$\frac{6}{1} \Rightarrow \frac{1}{6}$$

