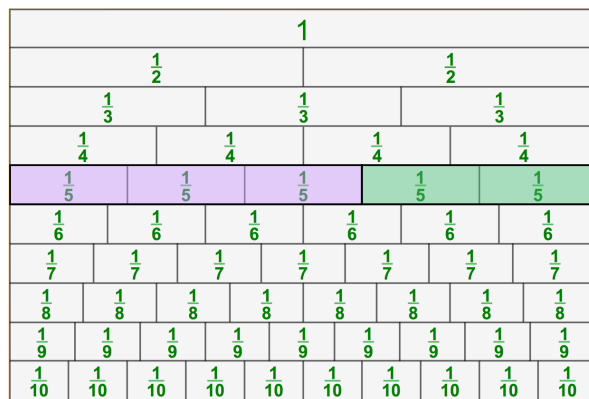


Fractions: You've Tried Everything— Now Let's Do What Works



info@RightStartMath.com

based on the work of Dr. Joan A. Cotter

Fractions

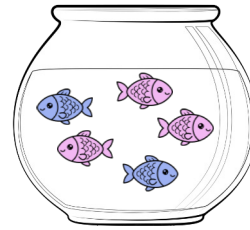
- Fractions are often viewed as challenging.
- The rules seem chaotic and confusing.
- Fractions can cause apprehension among students — and adults.

PEANUTS CHARLES SCHULZ



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Common Fraction Model

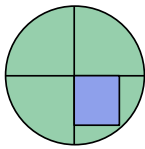


What fraction of the fish are blue?

count the blue fish → $\frac{2}{5}$
 count all the fish → $\frac{5}{5}$

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Common Fraction Model



This is fourths.

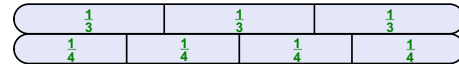


This is thirds.

One-fourth is not bigger than one-third!

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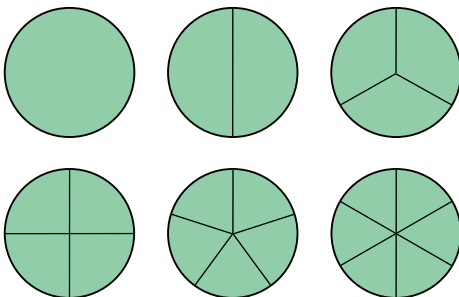
Common Fraction Model



The middle fractions are greater than the fractions at the ends!

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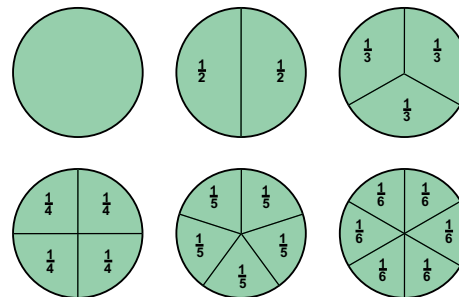
Common Fraction Model



Are we comparing angles, arcs, or area?

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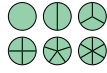
Common Fraction Model



Try to compare $\frac{4}{5}$ and $\frac{5}{6}$ with this model.

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Common Fraction Model



- Experts in visual literacy say that comparing quantities in pie charts is difficult because most people think linearly. It is easier to compare along a straight line than compare pie slices. askoxford.com
- Specialists also suggest refraining from using more than one pie chart for comparison. statcan.ca

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So how should we
teach fractions?

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Fraction Naming

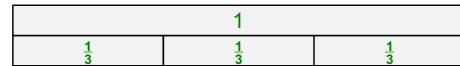


One divided into 3 equal parts.

$\frac{1}{3}$ One whole
divided into
three equal parts

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Fraction Naming

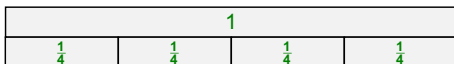


One divided into 3 equal parts.

$\frac{1}{3}$ Read as “one-third.”

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Fraction Naming



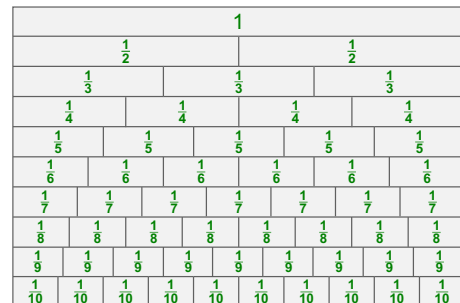
Read as “one-fourth.”

- Quarter of an hour;
- Quarter of a dollar;
- Quarter of a gallon;
- Quarter Pounder;

Use “one-fourth” during math time.

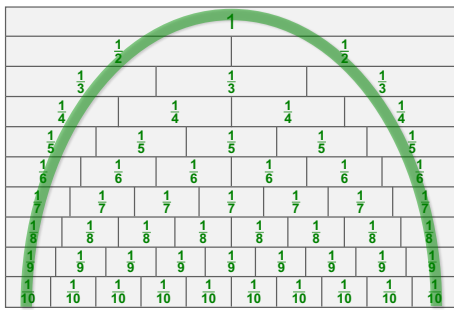
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Fraction Chart



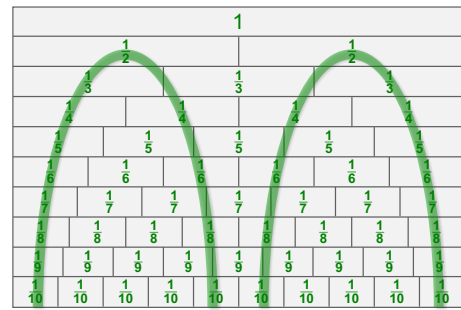
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Fraction Chart



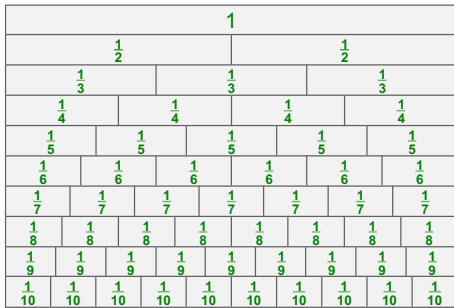
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Fraction Chart



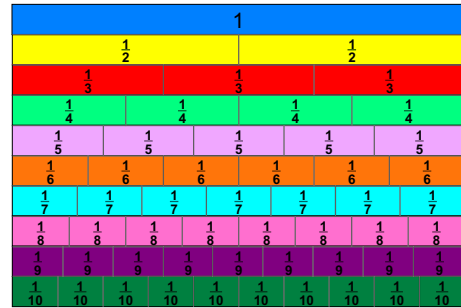
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Fraction Chart



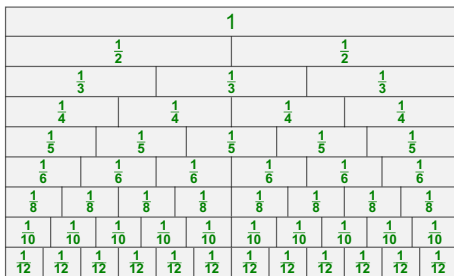
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Common Fraction Model



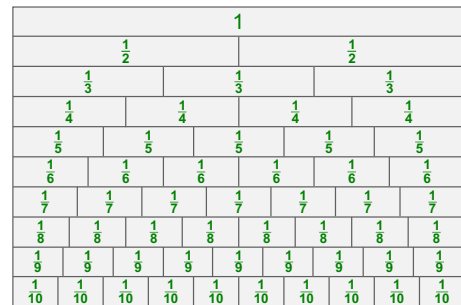
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Common Fraction Model

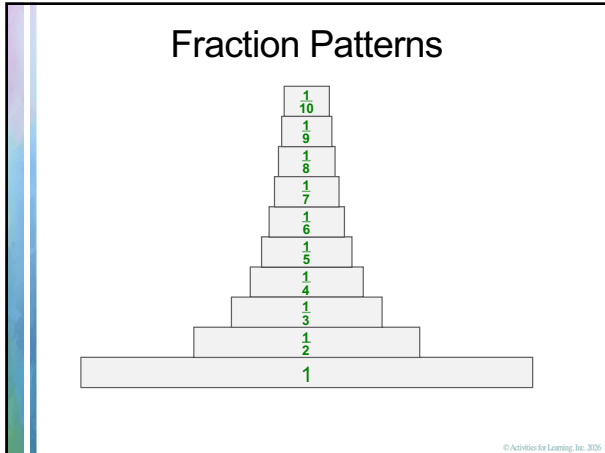
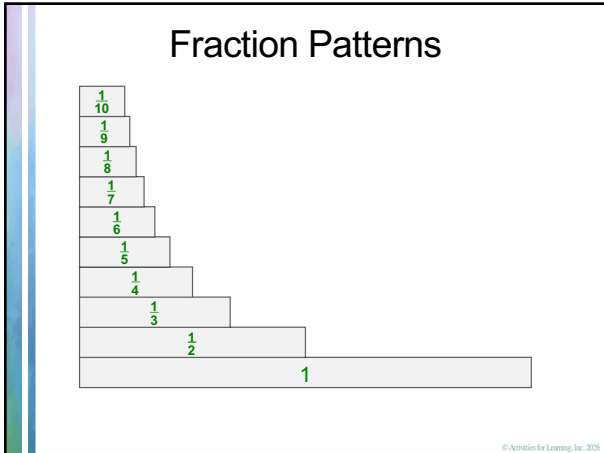
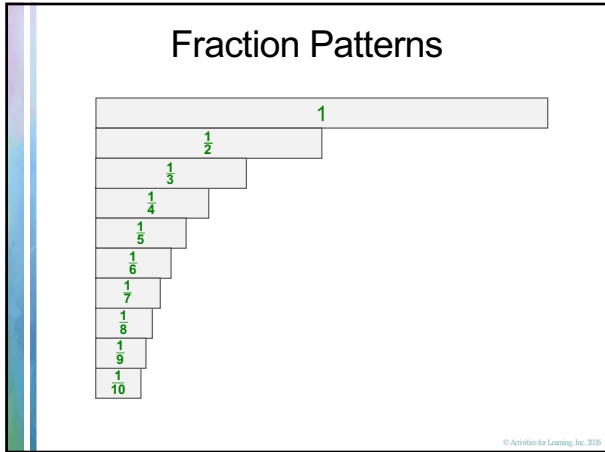
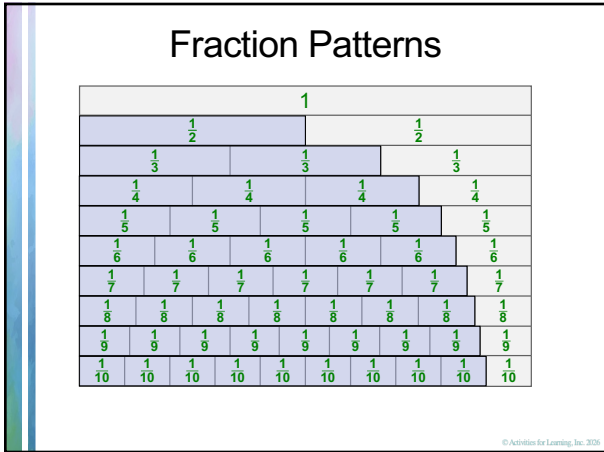


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Fraction Chart



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How should we practice
what we learned?

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Games

$$\frac{\text{Games}}{\text{Math}} = \frac{\text{Books}}{\text{Reading}}$$

Games provide instant feedback.

Games provide interesting repetition needed for automatic responses in a social setting.

More importantly, games provide an application for the new information!

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Unit Fraction War

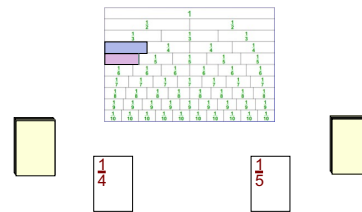
Purpose: Practice for naming and comparing unit fractions.

To help the children realize a unit fraction decreases as the denominator increases.

Goal: To collect all, or most, of the cards by comparing unit fractions.

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Unit Fraction War



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Fraction Chart

1											
1/2					1/2						
1/3			1/3			1/3			1/3		
1/4		1/4		1/4		1/4		1/4		1/4	
1/5		1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10		1/10	

How many fourths in a whole?

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Fraction Chart

1											
1/2					1/2						
1/3			1/3			1/3			1/3		
1/4		1/4		1/4		1/4		1/4		1/4	
1/5		1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10		1/10	

How many fourths in a whole?

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Fraction Chart

1											
1/2					1/2						
1/3			1/3			1/3			1/3		
1/4		1/4		1/4		1/4		1/4		1/4	
1/5		1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10		1/10	

How many fourths in a whole? How many fifths? Eighths?

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Concentrating on One

Purpose: To help the children realize that 5 fifths, 8 eighths, and so forth, make a whole.

Goal: To find the pairs that make a whole.

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Concentrating on One

© Activities for Learning, Inc. 2020

Concentrating on One

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Let's begin to compare fractions....

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Fraction Chart

1									
1/2					1/2				
1/3			1/3				1/3		
1/4		1/4			1/4		1/4		
1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10	

Which is more, 3/4 or 4/5?

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Fraction Chart

1									
1/2					1/2				
1/3			1/3				1/3		
1/4		1/4			1/4		1/4		
1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10	

Which is more, 3/4 or 4/5?

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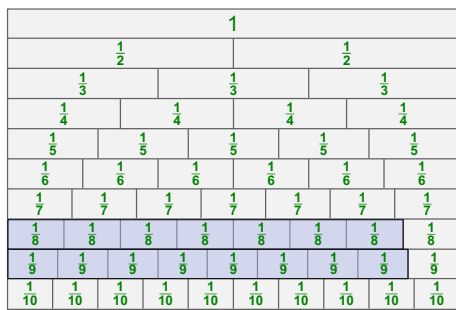
Fraction Chart

1									
1/2					1/2				
1/3			1/3				1/3		
1/4		1/4			1/4		1/4		
1/5		1/5		1/5		1/5		1/5	
1/6		1/6		1/6		1/6		1/6	
1/7		1/7		1/7		1/7		1/7	
1/8		1/8		1/8		1/8		1/8	
1/9		1/9		1/9		1/9		1/9	
1/10		1/10		1/10		1/10		1/10	

Which is more, 7/8 or 8/9?

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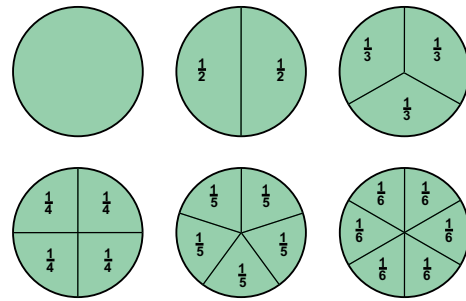
Fraction Chart



Which is more, $7/8$ or $8/9$?

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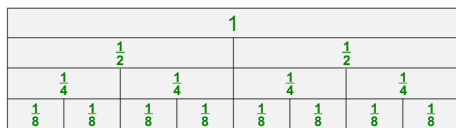
Fraction Circles



Which is more, $4/5$ or $5/6$? Which model is easier?

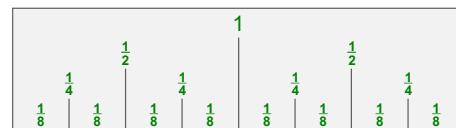
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Partial Chart



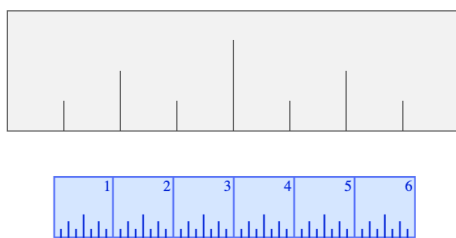
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Partial Chart



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Partial Chart



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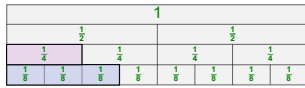
Fraction War

Purpose: To practice comparing ones, halves, fourths, and eighths in preparation for reading a ruler.

Goal: To capture all the cards.

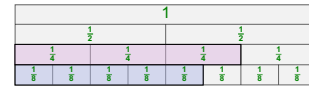
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Fraction War



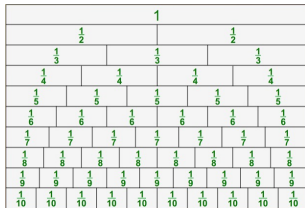
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Fraction War



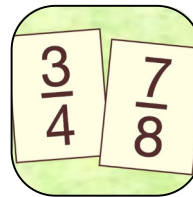
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Advanced Fraction War



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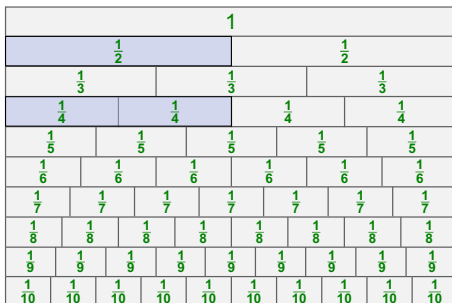
Game App



Fraction War	
1/2	Beginner 2/8
3/4	Easy 1/6
4/5	Medium 2/5
20%	Hard 1/4

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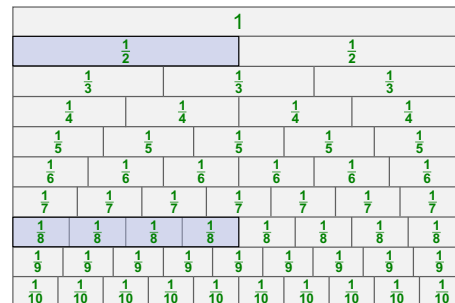
Equivalent Fractions



How many fourths equal a half?

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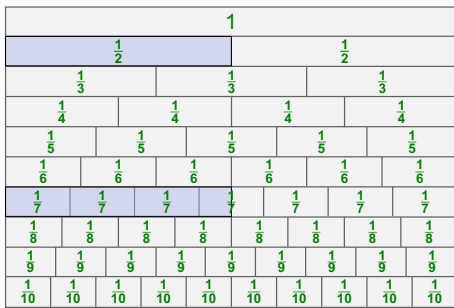
Equivalent Fractions



How many fourths equal a half? Eighths?

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Equivalent Fractions



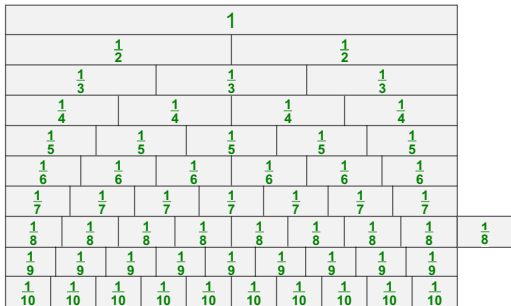
How many fourths equal a half? Eighths? Sevenths?

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What about fractions
greater than 1?

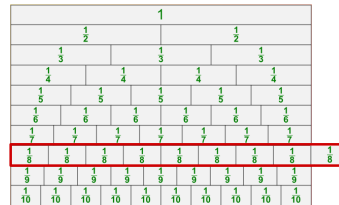
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Fractions Greater Than 1



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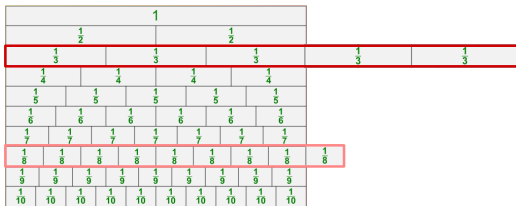
Proper and Improper Fractions



8/8

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Proper and Improper Fractions

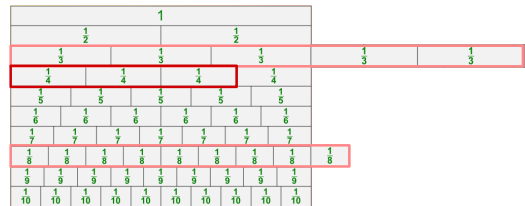


3/3

8/8

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Proper and Improper Fractions



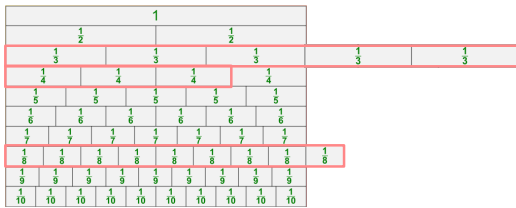
2/2

4/4

8/8

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Proper and Improper Fractions



$$\frac{9}{8}$$

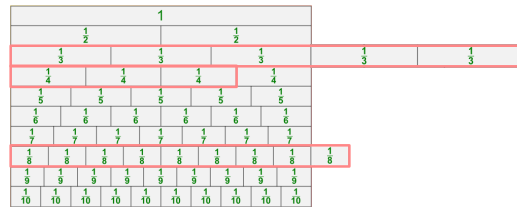
$$\frac{5}{3}$$

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

Which fraction(s) are proper?

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Proper and Improper Fractions



$$\frac{9}{8}$$

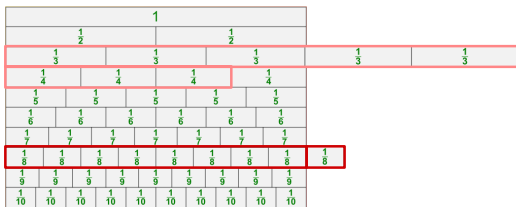
$$\frac{5}{3}$$

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

Which fraction(s) are improper?

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Proper and Improper Fractions



$$\frac{9}{8} = 1\frac{1}{8}$$

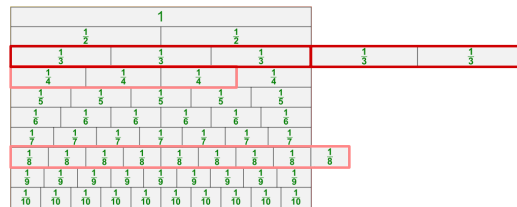
$$\frac{5}{3}$$

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

Rewrite the improper fractions using a whole number.

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Proper and Improper Fractions



$$\frac{9}{8} = 1\frac{1}{8}$$

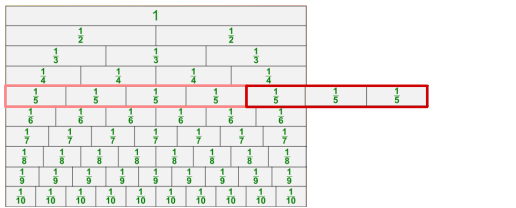
$$\frac{5}{3} = 1\frac{2}{3}$$

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

Rewrite the improper fractions using a whole number.

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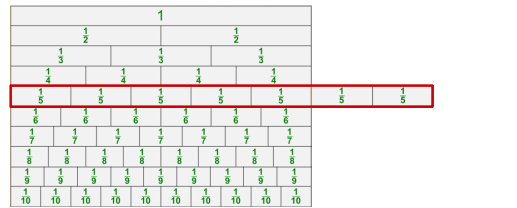
Proper and Improper Fractions



$$\frac{4}{5} + \frac{3}{5} =$$

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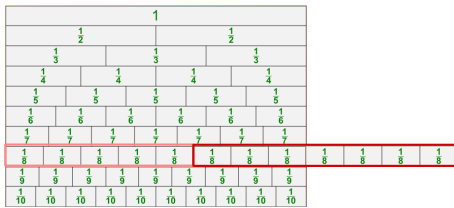
Proper and Improper Fractions



$$\frac{4}{5} + \frac{3}{5} = \frac{7}{5} = 1\frac{2}{5}$$

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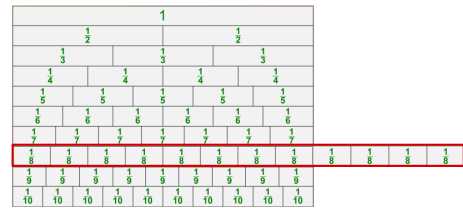
Proper and Improper Fractions



$$\frac{5}{8} + \frac{7}{8} =$$

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Proper and Improper Fractions



$$\frac{5}{8} + \frac{7}{8} = \frac{12}{8} = 1\frac{4}{8}$$

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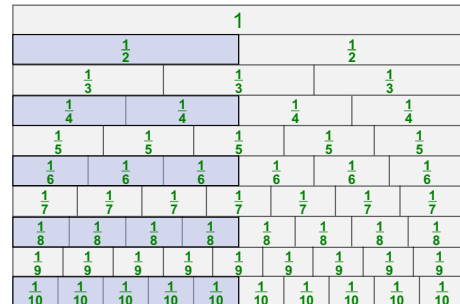
Help your child
discover the algorithm.

“What you have been obliged to discover by yourself
leaves a path in your mind which you can use again
when the need arises.”

– G.C. Lichtenberg
18th century physicist

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Simplifying Fractions



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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

$$\frac{21}{28}$$

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

$$\frac{45}{72}$$

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

$$\frac{45}{72}$$

Why does this work?

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

$$\frac{12}{16}$$

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Simplifying Fractions

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

$$\frac{12}{16}$$

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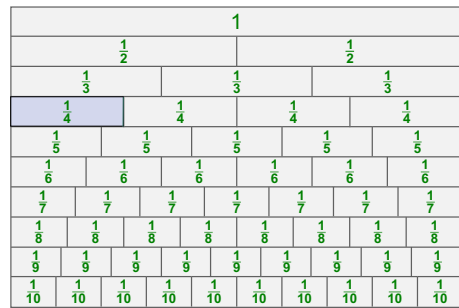
Remember, let your child
discover the algorithm.

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Let's look at adding fractions....

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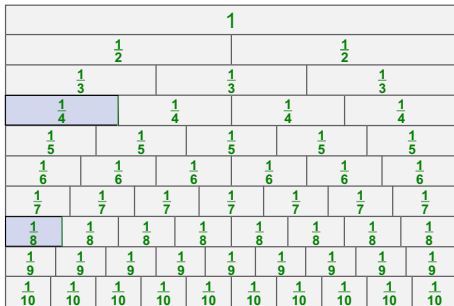
Fraction Chart



What is $\frac{1}{4} + \frac{1}{8}$?

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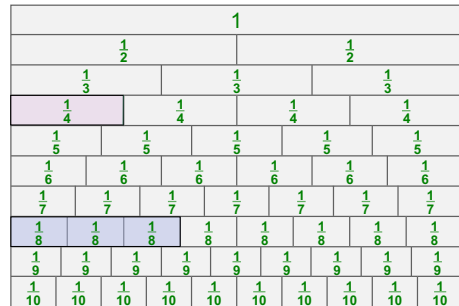
Fraction Chart



What is $\frac{1}{4} + \frac{1}{8}$?

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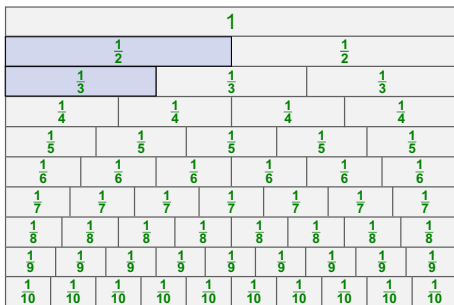
Fraction Chart



What is $\frac{1}{4} + \frac{1}{8}$? $\frac{3}{8}$

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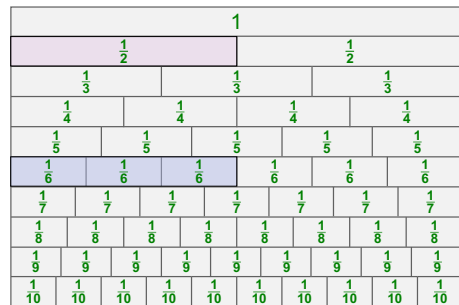
Fraction Chart



What is $\frac{1}{2} + \frac{1}{3}$?

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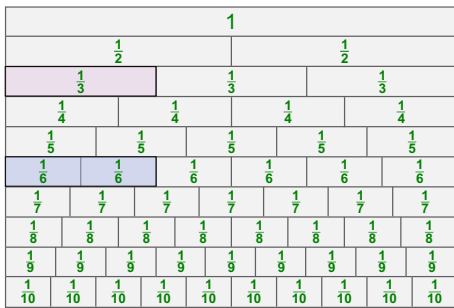
Fraction Chart



What is $\frac{1}{2} + \frac{1}{3}$?

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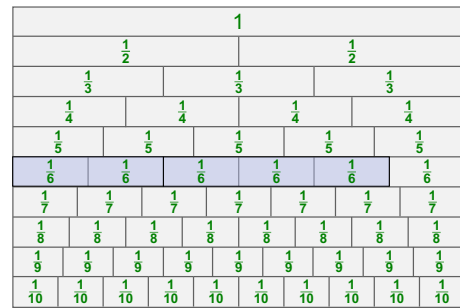
Fraction Chart



What is $\frac{1}{2} + \frac{1}{3}$?

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Fraction Chart



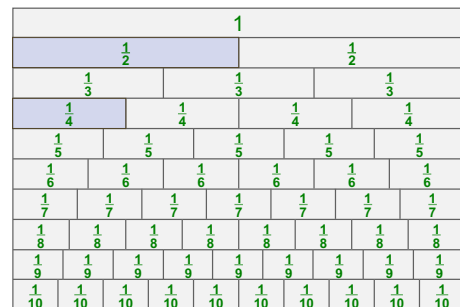
What is $\frac{1}{2} + \frac{1}{3}$? $\frac{5}{6}$

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So how does multiplying
fractions work?

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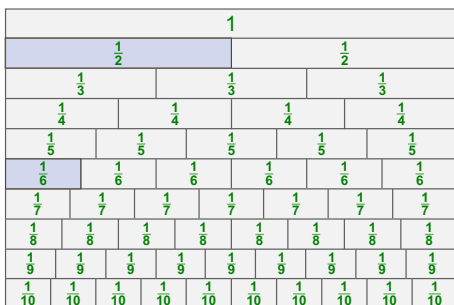
Fraction Chart



What is $\frac{1}{2}$ of $\frac{1}{2}$?

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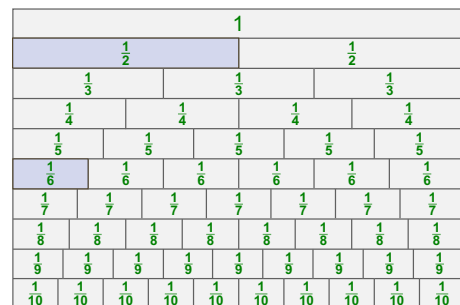
Fraction Chart



What is $\frac{1}{3}$ of $\frac{1}{2}$?

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Fraction Chart



What is $\frac{1}{3}$ of $\frac{1}{2}$? That's multiplying fractions!

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Multiplying Fractions

Multiplying is not exclusively repeated addition.

$$4 \times 4 = 4 + 4 + 4 + 4$$

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{2} + ?$$

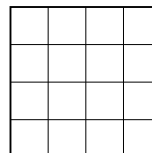
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Multiplying Fractions

Multiplying is not exclusively repeated addition.

Area is a better model.

$$4 \times 4 =$$

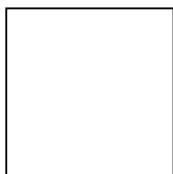


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Multiplying Fractions

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

One half
of one half

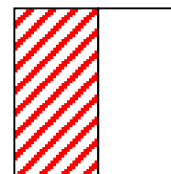


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Multiplying Fractions

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

One half
of one half

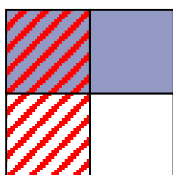


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Multiplying Fractions

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

One half
of one half

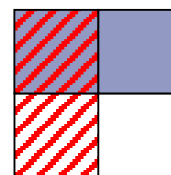


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Multiplying Fractions

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

One half
of one half

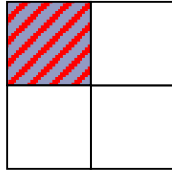


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Multiplying Fractions

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

One half
of one half

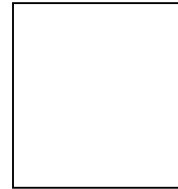


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Multiplying Fractions

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

Three fourths
of two thirds

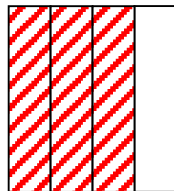


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Multiplying Fractions

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

Three fourths
of two thirds

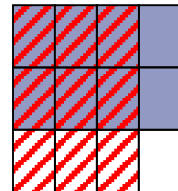


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Multiplying Fractions

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

Three fourths
of two thirds

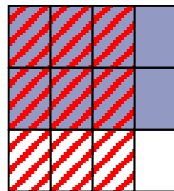


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Multiplying Fractions

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

Three fourths
of two thirds

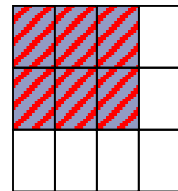


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Multiplying Fractions

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

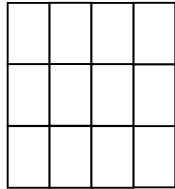
Three fourths
of two thirds



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Multiplying Fractions

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

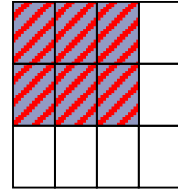


The total number of rectangles is 3×4 .

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Multiplying Fractions

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



The total number of rectangles is 3×4 .

The number of colored crosshatched rectangles is 2×3 .

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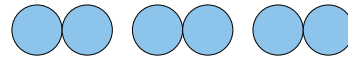
What about dividing fractions?

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What is Division?

$$6 \div 2 = \underline{\quad}$$

How many 2s in 6?

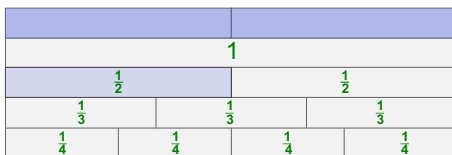


Number of groups of 2s; 3 groups

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Dividing Fractions

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

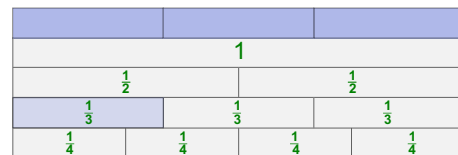


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Dividing Fractions

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

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



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Dividing Fractions

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

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

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

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

$$1 \div \frac{1}{6} = 6$$

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Dividing Fractions

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

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

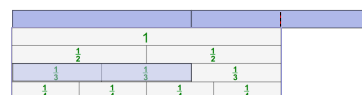
$$1 \div \frac{1}{4} = 4$$

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

$$1 \div \frac{1}{6} = 6$$

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

How many $\frac{2}{3}$ s in 1?



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Dividing Fractions

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

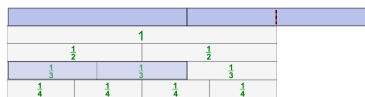
$$1 \div \frac{2}{3} = \frac{3}{2}$$

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

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

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

$$1 \div \frac{1}{6} = 6$$



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Dividing Fractions

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

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

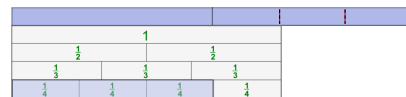
$$1 \div \frac{1}{3} = 3$$

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

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

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

$$1 \div \frac{1}{6} = 6$$



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Dividing Fractions

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

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

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

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

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

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

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

$$1 \div \frac{5}{8} = \frac{8}{5}$$

$$1 \div \frac{1}{6} = 6$$

$$1 \div \frac{4}{7} = \frac{7}{4}$$

Guide the child to making the discovery that the answers are the inverted form of the divisor.

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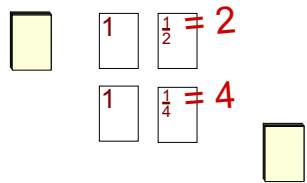
Fraction Division War

Purpose: Practice in dividing fractions.
To help the children realize the quotient is the inverted form of the divisor.

Goal: To collect all, or most, of the cards by having the greatest quotient.

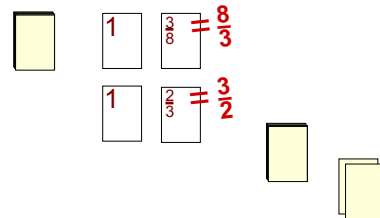
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Fraction Division War



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Fraction Division War



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More Dividing Fractions

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

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More Dividing Fractions

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

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

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More Dividing Fractions

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

$$2 \div \frac{1}{4} = 2 \times (1 \div \frac{1}{4})$$

$$= 2 \times 4 = 8$$

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More Dividing Fractions

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

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

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More Dividing Fractions

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

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

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

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More Dividing Fractions

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

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

$$\begin{aligned} 3 \div \frac{1}{4} &= 3 \times (1 \div \frac{1}{4}) \\ &= 3 \times 4 = 12 \end{aligned}$$

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More Dividing Fractions

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

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

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

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More Dividing Fractions

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

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

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

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

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More Dividing Fractions

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

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

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

$$\begin{aligned} \frac{1}{2} \div \frac{1}{4} &= \frac{1}{2} \times (1 \div \frac{1}{4}) \\ &= \frac{1}{2} \times 4 = 2 \end{aligned}$$

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More Dividing Fractions

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

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

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

$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times (1 \div \frac{1}{4}) = \frac{1}{2} \times 4 = 2$$

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More Dividing Fractions

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

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

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

$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times (1 \div \frac{1}{4}) = \frac{1}{2} \times 4 = 2$$

$$\frac{1}{3} \div \frac{1}{4} = \frac{1}{3} \times (1 \div \frac{1}{4}) = \frac{1}{3} \times 4 = \frac{4}{3}$$

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More Dividing Fractions

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

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

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

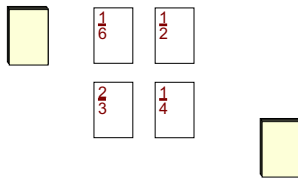
$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times (1 \div \frac{1}{4}) = \frac{1}{2} \times 4 = 2$$

$$\frac{1}{3} \div \frac{1}{4} = \frac{1}{3} \times (1 \div \frac{1}{4}) = \frac{1}{3} \times 4 = \frac{4}{3}$$

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

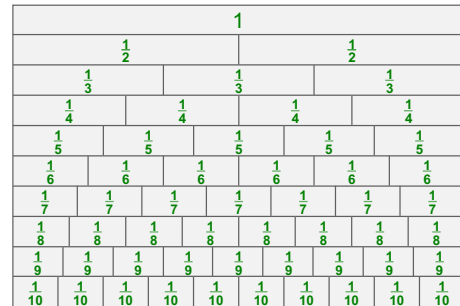
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Harder Fraction Division War



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Fraction Chart



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Fraction Chart

Allow the child to explore the whole picture and relationships within the whole using the linear perspective.

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In Conclusion ...

Math needs to be taught so
95 percent is understood and
only 5 percent memorized.

Richard Skemp
-- major pioneer in
mathematics education

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In Conclusion ...

Our goal as a teacher of mathematics
is to help our children transform,
expand, and refine these beginning ideas
into deeper mathematical thinking.

– Dr. Joan A. Cotter

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