

FLEXITABLE™

Fraction, Percentage & Decimals

Clever!!

1 (100%)											
$\frac{1}{2}$						50%					
$\frac{1}{3}$				33.33%				$\frac{1}{3}$			
$\frac{1}{4}$			25%			$\frac{1}{4}$			25%		
$\frac{1}{5}$		20%		$\frac{1}{5}$		20%		$\frac{1}{5}$		20%	
$\frac{1}{6}$		16.6%		$\frac{1}{6}$		16.6%		$\frac{1}{6}$		16.6%	
$\frac{1}{8}$		12.5%		$\frac{1}{8}$		12.5%		$\frac{1}{8}$		12.5%	
$\frac{1}{10}$		10%		$\frac{1}{10}$		10%		$\frac{1}{10}$		10%	
$\frac{1}{12}$		8.3%		$\frac{1}{12}$		8.3%		$\frac{1}{12}$		8.3%	

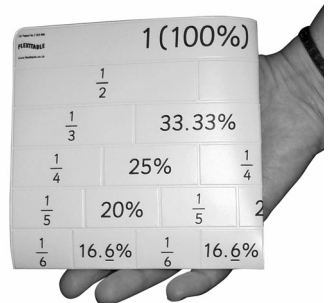
Flexible!!

Introduction

The Flexitable is an ingenious grid which has vertical & horizontal channels moulded into soft, pliable PVC plastic.

The material and design of this grid allows children to continually fold and unfold it again and again to find equivalent fraction, percentage and decimal values.

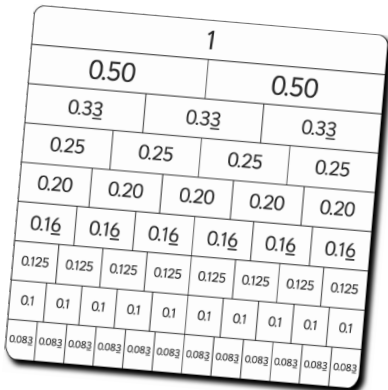
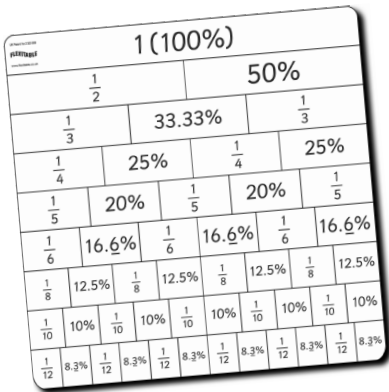
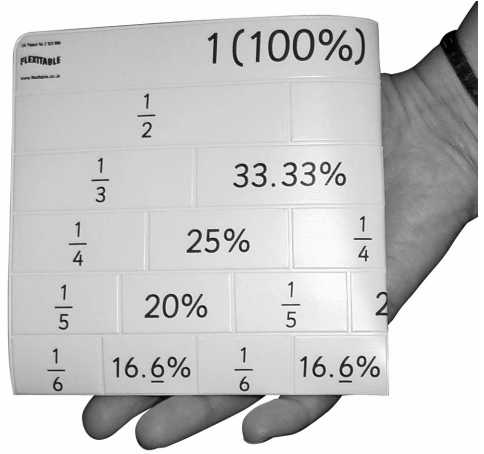
All the materials used conform to EU safety standard EN71-3 and CPSIA safety standards.



How to use the Flexitable

The Fraction Grid shows the relationship between fractions and percentages on the front face with the equivalent decimal values on the reverse.

By folding the grid down the vertical channels children can discover that $\frac{1}{4}$ is the same as 25% and 0.25 etc and by folding the grids again and again they can find the equivalent fractions, percentages and decimals that make up 1.



Learning Objectives

The student will be able to:

1. Find equivalent fractions, percentages and decimals
2. Add and subtract fractions, percentages and decimals
3. Compare fractions, percentages and decimals
4. See the relationship between fractions, percentages and decimals
5. Round and estimate fractions and decimals
6. Find the simplest form of a fraction
7. Convert fractions into decimals / decimals into fractions and relate them to percentages
8. Multiply fractions and decimals by whole numbers
9. See the relationship between decimals and percentages and coins in money

Suggested Activities

Free Play

Before the students are asked to complete any structured activities, they need to have time to explore the manipulative and make their own observations and comments. Students can discuss what they have found in their group and record these comments for a whole group discussion.

Equivalent Fractions/Percentages

Teachers could make a list $\frac{1}{2} = 50\%$, $\frac{1}{3} = 33\%$ and so on

The teacher tells the students to find a fraction or a percentage such as $\frac{1}{2}$ on their Flexitable. The students must find all the equivalent fractions and percentages using the Flexitable and record their answers.

Examples: $\frac{1}{2} = 50\%$ or $\frac{3}{6}$ or $\frac{5}{10}$ or $\frac{6}{12}$

$\frac{1}{4} = 25\%$ or $\frac{2}{8}$ or $\frac{3}{12}$

$\frac{3}{8} = ? \%$

Comparing Fractions & Percentages

The teacher shows the class two fractions or a fraction and a percentage with a circle between them.

Students use their Flexitable to compare them and write down the pair of numbers with the correct sign between them (greater than, less than or equal to.)

Examples: $\frac{3}{12} \bigcirc \frac{2}{6}$ $\frac{3}{8} \bigcirc 16.6\%$ $30\% \bigcirc \frac{2}{8}$
 $\frac{3}{12} \otimes \frac{2}{6}$ $\frac{3}{8} \otimes 16.6\%$ $30\% \otimes \frac{2}{8}$

Ordering Fractions & Percentages

The teacher displays several fractions and the students use their Flexitables to place the fractions in order from highest to lowest values or from lowest to highest. Students record their findings.

a) Teacher displays $\frac{4}{10}$ $\frac{2}{6}$ $\frac{1}{2}$ $\frac{3}{12}$

b) Teacher tells students to write them down starting with the lowest rising to the highest

This exercise can be repeated with percentages 12.5% 8.3% 50% 16.6%

Give the students a mixed set of fractions and percentages

$\frac{4}{10}$ 12.5% $\frac{2}{6}$ 33.33% (trick question)

Simplest Form

The teacher gives the students a fraction, which is not in its simplest form, but can be located on their Flexitable. The students use the Flexitable to locate the simplest equivalent form of the fraction and record their findings.

Examples: $\frac{6}{10} = \frac{3}{5}$ $\frac{2}{12} = \frac{1}{6}$ $\frac{2}{4} = \frac{1}{2}$

Rounding Off Fractions

Teacher shows students the fraction $\frac{1}{2}$ on the Flexitable and displays the following rounding rule: ***If the fraction is $\frac{1}{2}$ or greater the whole number is rounded up one digit, but if the fraction is less than $\frac{1}{2}$, the whole number stays the same.***

The teacher tells the students to use their Flexitable to determine the size of the fraction and follow the rounding rule. Finally students record the mixed number on paper with the rounded answer beside it.

Examples: $5\frac{3}{4}$ rounds up to 6 $5\frac{1}{4}$ rounds down to 5

Least Common Denominator (LCD)

The teacher gives the students two fractions. Students use their Flexitable to find the smallest denominator that both fractions share.

Example: $\frac{1}{2}$ and $\frac{1}{3}$ have the LCD of 6

Adding & Subtracting Fractions With Like Denominators

The teacher displays an addition or subtraction problem and the students use their Flexitable to find the answer.

Examples: $\frac{2}{10} + \frac{6}{10} = \frac{8}{10}$ $\frac{4}{6} - \frac{2}{6} = \frac{2}{6}$

Students can then use their Flexitable to find the simplest form of the answer they have found.

Examples: $\frac{8}{10} = \frac{4}{5}$ $\frac{2}{6} = \frac{1}{3}$

Use the percentages: $\frac{4}{5} = ?\%$ $\frac{1}{3} = ?\%$

Adding & Subtracting Fractions With Unlike Denominators

The teacher shows addition and subtraction problems and the students use their Flexitable to find the answer. Students must find the least common denominator between the fractions (see previous section.)

Examples: $\frac{3}{8} + \frac{1}{2} = ?$ $\frac{7}{12} - \frac{2}{6} = ?$

Then they must use their Flexitable to find the numerators of their fractions.

$\frac{1}{2} = \frac{4}{8}$ $\frac{2}{6} = \frac{4}{12}$

Finally the students add or subtract to find the answer and find the simplest form of the answer.

$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$ simplest form $\frac{7}{12} - \frac{4}{12} = \frac{3}{12}$ which simplifies to $\frac{1}{4}$

What are the following percentages? $\frac{7}{8}$ $\frac{1}{4}$

Money

The teacher asks the students to find the decimal form of a fraction by holding the Flexitable up to the light and looking through it to see the decimal equivalent.

Examples: $\frac{1}{4} = \text{£}0.25$ $\frac{1}{10} = \text{£}0.10$ $\frac{1}{2} = 50\text{p}$

The teacher can ask the class to name the coins we use to represent fractions, percentages and decimals of money.

What coin is worth half of a pound?

What coin is worth $\frac{1}{10}$ of a pound?

What coin is worth $\frac{1}{5}$ of a pound?

Comparing Decimals

The teacher displays a pair of decimals and the students use their Flexitables to compare decimals and write the examples and answers on paper.

Examples: $0.33 \text{ } \circlearrowleft \text{ } 0.83$ $1.25 \text{ } \circlearrowleft \text{ } 0.20$
 $0.33 \text{ } \circlearrowright \text{ } 0.83$ $1.25 \text{ } \circlearrowright \text{ } 0.20$

Have the students hold the Flexitable up to the light to compare these decimals with their percentage values.

Ordering Decimals

The teacher gives the students several decimals to put in order from highest value to the lowest or lowest value to the highest. Students use their Flexitable to order the decimals and write down their answers.

Example: 0.125 0.1 0.33 0.16
 0.33 0.16 0.125 0.1 ordered highest » lowest

Have the students hold the Flexitable up to the light to compare these decimals with their percentage values.

Multiplying Fractions By Whole Numbers

The teacher gives the students problems to solve reminding them to write their answers in simplest form by using the Flexitable.

Examples: $\frac{1}{6} \times 4 = \frac{4}{6}$ or $\frac{2}{3}$ $\frac{3}{8} \times 2 = \frac{6}{8}$ or $\frac{3}{4}$

Have the students express their answers as percentages using the Flexitable.

Dividing Fractions By Whole Numbers

The teacher displays the problems for the students to solve using their Flexitable. The students write down the problem and answers.

Examples: $\frac{6}{8} \div 2 = \frac{3}{8}$ $\frac{9}{12} \div 3 = \frac{3}{12}$ or $\frac{1}{4}$

Have the students express their answers as percentages using the Flexitable.

Multiplying Decimals

The teacher gives the students the following problem to solve using their Flexitable. Students that finish quickly can try to make up their own problems.

Examples: $0.20 \times 3 = 0.60$ $0.125 \times 3 = 0.375$

Have the students express their answers as percentages using the Flexitable.

Dividing Decimals

The teacher displays the following examples for the students to solve with their Flexitables. After students understand the concept of division of decimals the answer will make better sense to them.

Examples: $0.50 \div 2 = 0.25$ $1 \div 0.125 = 8$

*These notes have been written to give teachers some ideas on how to use the Flexitable grid with fractions, percentages and decimals in the class but these ideas are not exhaustive. If you would like to add interesting or unusual ways of using the Flexitable to these notes then please e.mail **admin@flexitable.co.uk** so that we can include them in our next print run.*

*Use the Flexitable when visiting the KS3 maths section on **bbc.co.uk/schools***

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