

ADDING FRACTIONS

PURPOSE

This Maths sheet introduces fractions and teaches how to add fractions with like denominators.

PREPARATION

You need graph paper and a pencil.

PROCEDURE

Teach or review with your child the concept of fractions and how to add them. Once your child has solved the four questions provided on the next page, create additional questions with denominators other than 4 at the appropriate level of difficulty.

Type 1: The result is correct as is, for example $1/5 + 1/5 = 2/5$.

Type 2: The result must be reduced, for example $1/4 + 1/4 = 2/4 = 1/2$.

Type 3: The result must be converted from a mixed number, for example $2/3 + 2/3 = 4/3 = 1 \frac{1}{3}$.

Type 4: The result must be converted from a mixed number and then reduced, for example $3/4 + 3/4 = 6/4 = 1 \frac{2}{4} = 1 \frac{1}{2}$.

A fraction is a part of a whole. For example, if a whole pizza is divided up into four parts and one part is eaten, the eaten part is called one fourth (we also refer to it as one quarter).

In the language of mathematics, we show one-fourth like this. We call this a proper fraction.

$1/4$	$1/4$
$1/4$	$1/4$

 $\frac{1}{4}$ Numerator (the part eaten)
Denominator (the number of pieces)

When the numerator is the same as the denominator, you always have the whole number 1.

If you ate all 4 pieces of the pizza, you would have eaten four fourths or 1 pizza.

$1/4$	$1/4$
$1/4$	$1/4$

 $\frac{4}{4}$ Numerator =

1

Denominator

If the denominators are the same, you can add the numerators. The denominator stays the same.

$1/4$	$1/4$
$1/4$	$1/4$

 +

$1/4$	$1/4$
$1/4$	$1/4$

 $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$ Numerator
Denominator

Sometimes when you add fractions, the answer needs to be **reduced**. The answer below, $\frac{2}{4}$, is actually the same as $\frac{1}{2}$, as you can readily see by imagining both small yellow squares in the same big square.

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \boxed{\frac{1}{2}}$$

You reduce fractions by dividing both the numerator and the denominator by the same number. In the above example, if you divide the numerator and the denominator by 2, the result is $\frac{1}{2}$. You may need to give your child extra practice in reducing ($\frac{2}{6}$, $\frac{4}{6}$, $\frac{2}{8}$, $\frac{4}{8}$, $\frac{6}{8}$, $\frac{2}{10}$, $\frac{4}{10}$, etc.)

Sometimes when you add fractions, the answer needs to be **converted**.

When the numerator is larger than the denominator, you have a number larger than 1. This is called an improper fraction, and mathematicians prefer to write it as a mixed number (a number composed of both whole numbers and fractions).

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{4}{4} + \frac{1}{4} = \frac{5}{4} = \boxed{1 \frac{1}{4}}$$

You convert fractions by dividing the denominator into the numerator. The number of times the denominator will go into the numerator is the whole number of the mixed number, and the remainder becomes the numerator of the fraction in the mixed number. $5 \div 4 = 1 \frac{1}{4}$
 You may need to give your child extra practice in converting ($\frac{5}{4}$, $\frac{3}{2}$, $\frac{4}{3}$, $\frac{9}{8}$, $\frac{6}{4}$, $\frac{9}{5}$, $\frac{7}{6}$, $\frac{9}{4}$, etc.)

Type 1

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{2}{4} + \frac{1}{4} = \boxed{\phantom{\frac{1}{4}}}$$

Type 2

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{1}{4} + \frac{1}{4} = \boxed{\phantom{\frac{1}{4}}} = \boxed{\phantom{\frac{1}{4}}}$$

Type 3

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{4}{4} + \frac{1}{4} = \boxed{\phantom{\frac{1}{4}}} = \boxed{\phantom{\frac{1}{4}}}$$

Type 4

$$\begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} + \begin{array}{|c|c|} \hline \frac{1}{4} & \frac{1}{4} \\ \hline \frac{1}{4} & \frac{1}{4} \\ \hline \end{array} \quad \frac{3}{4} + \frac{3}{4} = \boxed{\phantom{\frac{1}{4}}} = \boxed{\phantom{\frac{1}{4}}} = \boxed{\phantom{\frac{1}{4}}}$$