# Simplifying fractions. *Stg 6/E7   props & rats*   Name: _____

When you are doing maths with fractions you are going to come across the need to simplify fractions all the time, such as figuring out percentages or multiplying fractions. The essential idea is that fussy fractions can be shown as much simpler fractions that are easier to get your head around. E.g if you end up with **36/72** it's much easier to call it **½** (they show the same amount of the whole or set).

So let's start with the basics. The easiest fractions to simplify have both an even numerator and an even denominator (that word still cracks me up). This is because you can just divide by 2 until you get the simplest fractions.
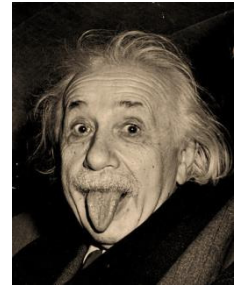
"Everything should be made as **simple** as possible, but not simpler." - Albert Einstein

E.g. $\dfrac{2}{8}$ $\begin{array}{l} 2 \div 2 = 1 \\ 8 \div 2 = 4 \end{array}$ In this example we can see that as soon as you find the simplest number in either the numerator or denominator you can stop. Usually '**1**' in the numerator or any '**prime**'* number in the denominator is as far as you can go.

*What is a **prime** number? - A prime number is a whole number that can only be divided by 1 or itself. There are quite a few below 100: **2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97**

N.B. '**2**' is the only **even** prime number.
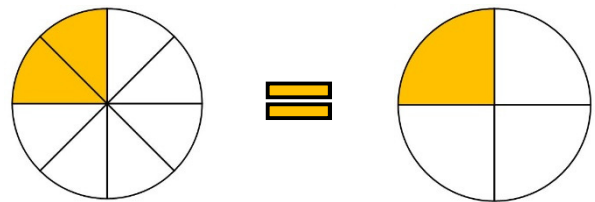
Here you can see that 2/8 covers the same area as 1/4

The trick is to find a number that you can divide both numbers by. Let's walk through a few. Simplify these:

$\dfrac{4}{6}$ $\begin{array}{l} 4 \div 2 = \underline{} \\ 6 \div 2 = \underline{} \end{array}$ $\dfrac{6}{8}$ $\begin{array}{l} 6 \div 2 = \underline{} \\ 8 \div 2 = \underline{} \end{array}$ $\dfrac{4}{16}$ $\begin{array}{l} 4 \div 4 = \underline{} \\ 16 \div 4 = \underline{} \end{array}$

Let's have a go at some odd numbers, mix it up a little, why not?

$\dfrac{3}{6}$ $\begin{array}{l} 3 \div 3 = \underline{} \\ 6 \div 3 = \underline{} \end{array}$ $\dfrac{3}{9}$ $\begin{array}{l} 3 \div 3 = \underline{} \\ 9 \div 3 = \underline{} \end{array}$ $\dfrac{5}{15}$ $\begin{array}{l} 5 \div 5 = \underline{} \\ 15 \div 5 = \underline{} \end{array}$

Let's get some interesting numbers rockin':

$\dfrac{3}{12}$ $\begin{array}{l} 3 \div 3 = \underline{} \\ 12 \div 3 = \underline{} \end{array}$ $\dfrac{7}{21}$ $\begin{array}{l} 7 \div 7 = \underline{} \\ 21 \div 7 = \underline{} \end{array}$ $\dfrac{11}{66}$ $\begin{array}{l} 11 \div 11 = \underline{} \\ 66 \div 11 = \underline{} \end{array}$

$\dfrac{10}{24}$ $\begin{array}{l} 10 \div 2 = \underline{} \\ 24 \div 2 = \underline{} \end{array}$ $\dfrac{9}{27}$ $\begin{array}{l} 9 \div 9 = \underline{} \\ 27 \div 9 = \underline{} \end{array}$ $\dfrac{14}{49}$ $\begin{array}{l} 14 \div 7 = \underline{} \\ 49 \div 7 = \underline{} \end{array}$

$\dfrac{3}{15}$ $\begin{array}{l} 3 \div \underline{} = \underline{} \\ 15 \div \underline{} = \underline{} \end{array}$ $\dfrac{14}{21}$ $\begin{array}{l} 14 \div \underline{} = \underline{} \\ 21 \div \underline{} = \underline{} \end{array}$ $\dfrac{13}{39}$ $\begin{array}{l} 13 \div \underline{} = \underline{} \\ 39 \div \underline{} = \underline{} \end{array}$

$\dfrac{3}{21}$ $\begin{array}{l} 3 \div \underline{} = \underline{} \\ 21 \div \underline{} = \underline{} \end{array}$ $\dfrac{8}{26}$ $\begin{array}{l} 8 \div \underline{} = \underline{} \\ 26 \div \underline{} = \underline{} \end{array}$ $\dfrac{45}{100}$ $\begin{array}{l} 45 \div \underline{} = \underline{} \\ 100 \div \underline{} = \underline{} \end{array}$

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Practice page. If you need a little more room, use your maths book to spread things out. You know what to do, so have a go at simplifying these:

$$\frac{2}{16} = \qquad \frac{6}{16} = \qquad \frac{8}{16} = \qquad \frac{10}{16} = \qquad \frac{14}{16} =$$

How are you doin' there? Remember to look for a common factor. Still stuck? Try the link at the bottom.

$$\frac{2}{24} = \qquad \frac{3}{24} = \qquad \frac{4}{24} = \qquad \frac{6}{24} = \qquad \frac{8}{24} =$$

$$\frac{12}{36} = \qquad \frac{9}{36} = \qquad \frac{6}{36} = \qquad \frac{3}{36} = \qquad \frac{2}{36} =$$

$$\frac{2}{48} = \qquad \frac{4}{48} = \qquad \frac{6}{48} = \qquad \frac{8}{48} = \qquad \frac{12}{48} =$$

$$\frac{50}{100} = \qquad \frac{40}{100} = \qquad \frac{35}{100} = \qquad \frac{20}{100} = \qquad \frac{18}{100} =$$

$$\frac{18}{81} = \qquad \frac{27}{72} = \qquad \frac{36}{63} = \qquad \frac{45}{54} = \qquad \frac{9}{90} =$$

$$\frac{11}{132} = \qquad \frac{22}{121} = \qquad \frac{33}{110} = \qquad \frac{44}{99} = \qquad \frac{55}{88} =$$

$$\frac{7}{84} = \qquad \frac{14}{77} = \qquad \frac{21}{70} = \qquad \frac{28}{63} = \qquad \frac{35}{56} =$$

Still a bit stuck? Try out this awesome video by **Math Antics:**
https://www.youtube.com/watch?v=AtBUQH8Tkqc