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**Fraction to Decimal Conversion****(Math | General | Fraction to Decimal Conversion)****Fraction to Decimal Conversion Tables**

**Important Note:** any span of numbers that is underlined signifies that those numbers are repeated. For example, 0.09 signifies 0.090909....

**Only fractions in lowest terms are listed.** For instance, to find  $2/8$ , first simplify it to  $1/4$  then search for it in the table below.

fraction = decimal			
$1/1 = 1$			
$1/2 = 0.5$			
$1/3 = 0.\underline{3}$	$2/3 = 0.\underline{6}$		
$1/4 = 0.25$	$3/4 = 0.75$		
$1/5 = 0.2$	$2/5 = 0.4$	$3/5 = 0.6$	$4/5 = 0.8$
$1/6 = 0.1\underline{6}$	$5/6 = 0.8\underline{3}$		
$1/7 = 0.\underline{142857}$	$2/7 = 0.\underline{285714}$	$3/7 = 0.\underline{428571}$	$4/7 = 0.\underline{571428}$
	$5/7 = 0.\underline{714285}$	$6/7 = 0.\underline{857142}$	
$1/8 = 0.125$	$3/8 = 0.375$	$5/8 = 0.625$	$7/8 = 0.875$
$1/9 = 0.1\underline{9}$	$2/9 = 0.\underline{2}$	$4/9 = 0.\underline{4}$	$5/9 = 0.\underline{5}$
	$7/9 = 0.\underline{7}$	$8/9 = 0.\underline{8}$	
$1/10 = 0.1$	$3/10 = 0.3$	$7/10 = 0.7$	$9/10 = 0.9$
$1/11 = 0.0\underline{9}$	$2/11 = 0.\underline{18}$	$3/11 = 0.\underline{27}$	$4/11 = 0.\underline{36}$
	$5/11 = 0.\underline{45}$	$6/11 = 0.\underline{54}$	$7/11 = 0.\underline{63}$
	$8/11 = 0.\underline{72}$	$9/11 = 0.\underline{81}$	$10/11 = 0.\underline{90}$
$1/12 = 0.08\underline{3}$	$5/12 = 0.41\underline{6}$	$7/12 = 0.58\underline{3}$	$11/12 = 0.91\underline{6}$
$1/16 = 0.0625$	$3/16 = 0.1875$	$5/16 = 0.3125$	$7/16 = 0.4375$
	$11/16 = 0.6875$	$13/16 = 0.8125$	$15/16 = 0.9375$
$1/32 = 0.03125$	$3/32 = 0.09375$	$5/32 = 0.15625$	$7/32 = 0.21875$
	$9/32 = 0.28125$	$11/32 = 0.34375$	$13/32 = 0.40625$
	$15/32 = 0.46875$	$17/32 = 0.53125$	$19/32 = 0.59375$
	$21/32 =$	$23/32 =$	$25/32 =$

	0.65625	0.71875	0.78125
	$\frac{27}{32} =$ 0.84375	$\frac{29}{32} =$ 0.90625	$\frac{31}{32} =$ 0.96875

**Need to convert a repeating decimal to a fraction?** Follow these examples:

**Note the following pattern for repeating decimals:**

$$0.\underline{2}2222222\dots = \frac{2}{9}$$

$$0.\underline{54}545454\dots = \frac{54}{99}$$

$$0.\underline{298}298298\dots = \frac{298}{999}$$

Division by 9's causes the repeating pattern.

**Note the pattern if zeros precede the repeating decimal:**

$$0.0\underline{2}2222222\dots = \frac{2}{90}$$

$$0.000\underline{54}545454\dots = \frac{54}{99000}$$

$$0.00\underline{298}298298\dots = \frac{298}{99900}$$

Adding zero's to the denominator adds zero's before the repeating decimal.

**To convert a decimal that begins with a non-repeating part**, such as 0.21456456456456456..., to a fraction, write it as the sum of the non-repeating part and the repeating part.

$$0.21 + 0.00\underline{456}456456456\dots$$

Next, convert each of these decimals to fractions. The first decimal has a divisor of power ten. The second decimal (which repeats) is converted according to the pattern given above.

$$\frac{21}{100} + \frac{456}{99900}$$

Now add these fraction by expressing both with a common divisor

$$\frac{20979}{99900} + \frac{456}{99900}$$

and add.

$$\frac{21435}{99900}$$

Finally simplify it to lowest terms

$$\frac{1429}{6660}$$

and check on your calculator or with long division.

$$= 0.2145645645\dots$$

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