

# Package ‘fracture’

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**Title** Convert Decimals to Fractions

**Version** 0.1.3

**Description** Provides functions for converting decimals to a matrix of numerators and denominators or a character vector of fractions. Supports mixed or improper fractions, finding common denominators for vectors of fractions, limiting denominators to powers of ten, and limiting denominators to a maximum value. Also includes helper functions for finding the least common multiple and greatest common divisor for a vector of integers. Implemented using C++ for maximum speed.

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**URL** <https://fracture.rossellhayes.com/>,  
<https://github.com/rossellhayes/fracture>

**BugReports** <https://github.com/rossellhayes/fracture/issues>

**Depends** R (>= 2.10)

**Imports** Rcpp

**Suggests** covr, testthat, withr

**LinkingTo** Rcpp

**Encoding** UTF-8

**RoxygenNote** 7.1.1

**SystemRequirements** C++11

**NeedsCompilation** yes

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**Repository** CRAN

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fracture	<i>Convert decimals to a character vector of fractions</i>
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### Description

Convert decimals to a character vector of fractions

### Usage

```
fracture(
  x,
  base_10 = FALSE,
  common_denom = FALSE,
  mixed = FALSE,
  max_denom = 1e+07
)

as.fracture(x)

is.fracture(x)
```

### Arguments

x	A vector of decimals or, for <code>as.fracture()</code> , a matrix created by <code>frac_mat()</code>
base_10	If TRUE, all denominators will be a power of 10.
common_denom	If TRUE, all fractions will have the same denominator. If the least common denominator is greater than <code>max_denom</code> , <code>max_denom</code> is used.
mixed	If TRUE, integer components will be displayed separately from fractional components for x values greater than 1. If FALSE, improper fractions will be used for x values greater than 1.
max_denom	All denominators will be less than or equal to <code>max_denom</code> . If <code>base_10</code> is TRUE, the maximum denominator will be the largest power of 10 less than <code>max_denom</code> . A <code>max_denom</code> greater than the inverse square root of <code>machine double epsilon</code> will produce a warning because floating point rounding errors can occur when denominators grow too large.

**Value**

A character vector.

**See Also**

[frac\\_mat\(\)](#) to return a matrix of numerators and denominators.

**Examples**

```
x <- (6:1) / (1:6)

fracture(x)
fracture(x, common_denom = TRUE)

fracture(x, base_10 = TRUE)
fracture(x, base_10 = TRUE, max_denom = 100)
fracture(x, base_10 = TRUE, common_denom = TRUE)
fracture(x, base_10 = TRUE, common_denom = TRUE, max_denom = 100)

fracture(x, mixed = TRUE)
fracture(x, mixed = TRUE, common_denom = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE, max_denom = 100)
fracture(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE, max_denom = 100)
```

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frac\_lcm

*Least common multiple and greatest common divisor*


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**Description**

Least common multiple and greatest common divisor

**Usage**

```
frac_lcm(..., max = 1e+07)
```

```
frac_gcd(...)
```

**Arguments**

... Integer vectors or vectors that can be coerced to integer.

max If the least common multiple is greater than max, max is returned instead.

**Value**

An integer.

**Examples**

```
frac_lcm(1, 2, 3, 4, 5, 6)
x <- 1:6
frac_lcm(x)
frac_lcm(x, 7)

frac_gcd(12, 42, 60)
y <- c(12, 42, 60)
frac_gcd(y)
frac_gcd(y, 39)
```

frac\_mat

*Convert decimals to a matrix of numerators and denominators***Description**

Convert decimals to a matrix of numerators and denominators

**Usage**

```
frac_mat(
  x,
  base_10 = FALSE,
  common_denom = FALSE,
  mixed = FALSE,
  max_denom = 1e+07
)

as.frac_mat(x)

is.frac_mat(x)
```

**Arguments**

x	A vector of decimals or, for <code>as.frac_mat()</code> , a character vector created by <a href="#">fracture()</a>
base_10	If TRUE, all denominators will be a power of 10.
common_denom	If TRUE, all fractions will have the same denominator. If the least common denominator is greater than <code>max_denom</code> , <code>max_denom</code> is used.
mixed	If TRUE, integer components will be displayed separately from fractional components for x values greater than 1. If FALSE, improper fractions will be used for x values greater than 1.
max_denom	All denominators will be less than or equal to <code>max_denom</code> . If <code>base_10</code> is TRUE, the maximum denominator will be the largest power of 10 less than <code>max_denom</code> . A <code>max_denom</code> greater than the inverse square root of <a href="#">machine double epsilon</a> will produce a warning because floating point rounding errors can occur when denominators grow too large.

**Value**

A matrix with the same number of columns as the length of `x` and rows for integers (if `mixed` is `TRUE`), numerators, and denominators.

**See Also**

[fracture\(\)](#) to return a character vector of fractions.

**Examples**

```
x <- (6:1) / (1:6)

frac_mat(x)
frac_mat(x, common_denom = TRUE)

frac_mat(x, base_10 = TRUE)
frac_mat(x, base_10 = TRUE, max_denom = 100)
frac_mat(x, base_10 = TRUE, common_denom = TRUE)
frac_mat(x, base_10 = TRUE, common_denom = TRUE, max_denom = 100)

frac_mat(x, mixed = TRUE)
frac_mat(x, mixed = TRUE, common_denom = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE, max_denom = 100)
frac_mat(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE, max_denom = 100)
```

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frac\_style

*Style a fracture with superscripts and subscripts*


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**Description**

Uses Unicode superscripts and subscripts to format a fracture.

**Usage**

```
frac_style(fracture, ...)
```

**Arguments**

`fracture`      A [fracture](#) or a vector to be passed to [fracture\(\)](#).  
`...`            Additional arguments passed to [fracture\(\)](#).

**Value**

`fracture` with numerators formatted with Unicode superscripts and denominators formatted with Unicode subscripts.

**Examples**

```
frac_style(fracture(0.5))  
frac_style(fracture(c(0.5, 1.5), mixed = TRUE))
```

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