

## 13.1.11 Editors - Shader Editor - Header - Add Menu - Utilities - Math

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### Detailed table of content

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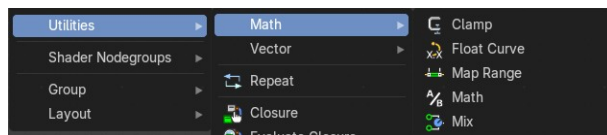
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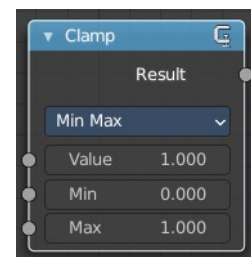
## Add menu - Utilities - Math

This menu contains nodes that deals with Math data.



### Clamp

The Clamp node clamps a value between a minimum and a maximum.



### Inputs

#### Value

The input value to be clamped.

#### Min

The minimum value.

#### Max

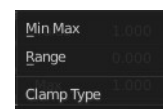
The maximum value.

### Properties

#### Clamp Type

#### Min Max

Clamp values using Min and Max values.



#### Range

Clamp values between Min and Max range.

### Outputs

#### Result

The input value after clamping.

## Float Curve

Generates a curve. This curve can then be used for profiles for example.

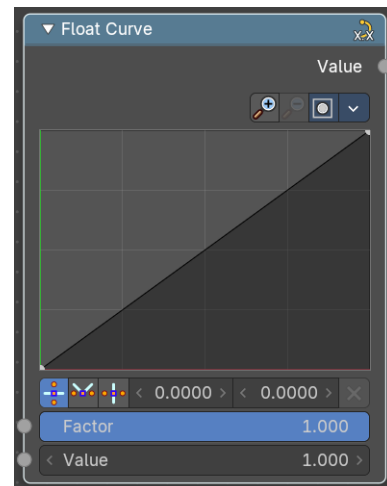
### Inputs

#### **Factor**

The input factor.

#### **Value**

The input value.



### Properties

#### **Curve Widget**

#### **Navigation elements**

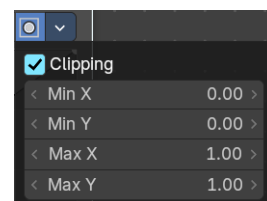
The navigation elements at the top are described from left to right.

#### **Zoom in and out**

The two buttons with the magnifying glass at it zooms in and out in the curve window.

#### **Clipping**

Clipping options.

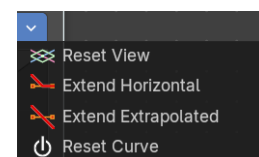


#### **Tools**

Tools is a menu where you can find some curve related tools.

#### **Reset View**

Resets the curve windows zoom.



#### **Extend Horizontal**

Extends the curve before the last point and after the last point horizontally.

#### **Extend Extrapolation**

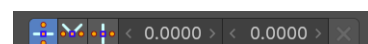
Extends the curve before the last point and after the last point extrapolated.

#### **Reset Curve**

Resets the curve to the initial shape.

#### **Vector Handle**

Set handle type to Vector.



### Auto Handle

Set handle type to Auto.

### Auto Clamped Handle

Set handle type to Auto Clamped.

### X / Y

The x and y position of the currently selected curve point.

### Delete Points

Delete the currently selected curve point.

---

## Map Range

The Map Range node remaps a value from a range to a target range.

### Inputs

#### Value

The input value to be remapped.

#### From Min

The lower bound of the range to remap from.

#### From Max

The higher bound of the range to remap from.

#### To Min

The lower bound of the target range.

#### To Max

The higher bound of the target range.

### Properties

#### Data Type

The data type to calculate.

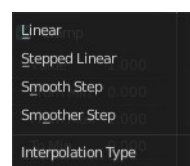
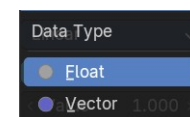
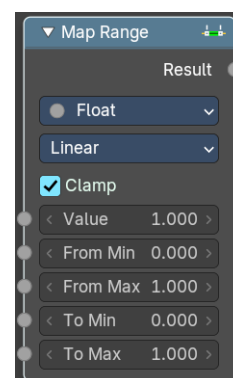
#### Interpolation Type

##### Linear

Linear interpolation between From Min and From Max values.

##### Stepped Linear

Stepped linear interpolation between From Min and From Max values.



## Smooth Step

Smooth Hermite edge interpolation between From Min and From Max values.

## Smoother Step

Smoother Hermite edge interpolation between From Min and From Max values.

## Clamp

If enabled, the output is clamped to the target range.

## Outputs

### Result

The input value after remapping.

## Math

The Math Node performs math operations.

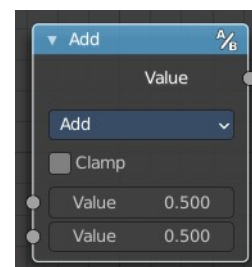
## Inputs

### Value

First numerical value. The trigonometric functions accept values in radians.

### Value

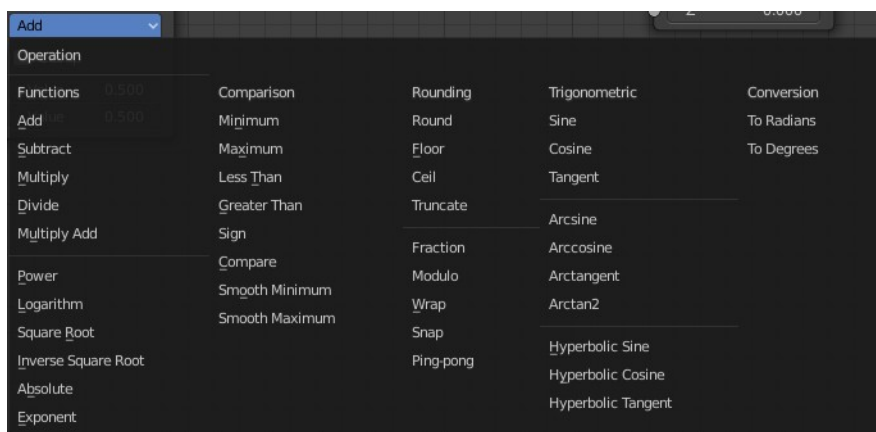
Second numerical value. This value is not used in functions that accept only one parameter like the trigonometric functions, Round and Absolute.



## Properties

### Operation

Here you can choose what mathematical operation to perform.



## Clamp

Limits the output to the range (0 to 1). See clamp.

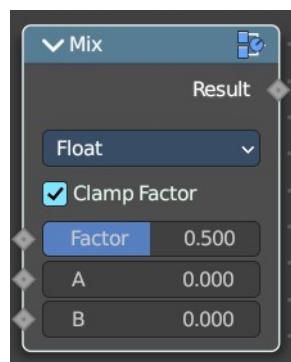
## Outputs

### Value

Numerical value output.

## Mix

Allows to mix values and vectors in various ways. The node has three different modes. Float, Vector and Color



## Input

### Float

#### Factor

The mix factor.

#### A

Float value A input.

#### B

Float value B input.

### Vector

#### Factor mode Uniform

#### Factor

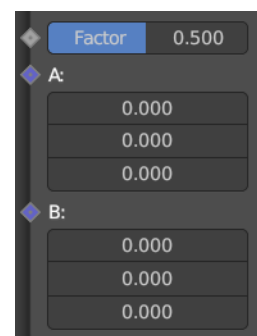
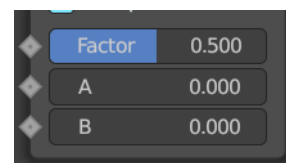
The mix factor.

#### A

Vector A input.

#### B

Vector B input.



## Factor mode Non Uniform

### **Factor**

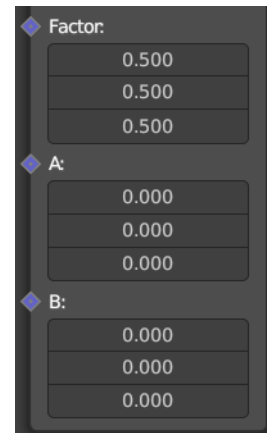
The vector mix factor.

### **A**

Vector A input.

### **B**

Vector B input.



### **Color**

### **Factor**

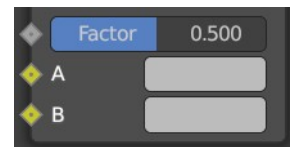
The mix factor.

### **A**

Color A input.

### **B**

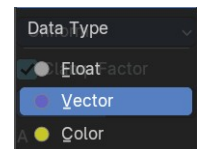
Color B input.



## Properties

### **Data Type**

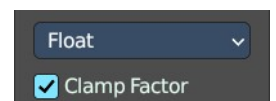
Which mode to use.



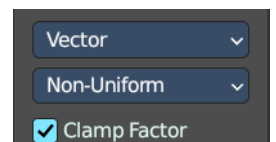
### **Float mode**

### **Clamp Factor**

Clamp the factor to 0-1 range.

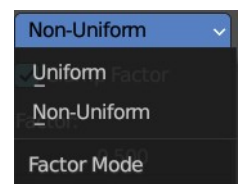


### **Vector mode**



### **Factor mode**

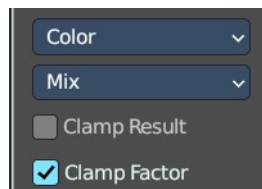
Uniform or non uniform factor.



### **Clamp Factor**

Clamp the factor to 0-1 range.

## Color mode



## Blending mode

What blending mode to use for the color.

## Clamp Result

Clamp the result to 0-1 range.

## Clamp Factor

Clamp the input factor to 0-1 range.

## Output

## Result

The output value or vector.