

# External Triangle (iPhone/iPad/iPod touch application)

## Operation manual Ver 1.5 (2019/ 1/29)

**At the beginning:** Please touch the numeric location "where you want to input or change" in the sheet. Numeric is entered. And calculation result is automatically displayed when you fill desired value. No explanation is necessary for basic calculations, I think. This manual includes only the minimum functional description.

**Attention:** This application is intended to modify numeric easily. Conversely, numeric may be changed by unintentionally touch. Please check by yourself carefully any value, if you use it to practical purpose. I make no warranty and can't respond to claims of any kind of damage.

## **Contents**

P.3 Calculation Sheet

P.4 Numerical input

P.5 Interest calculation sheet

P.6 Keyboard

P.7 System settings

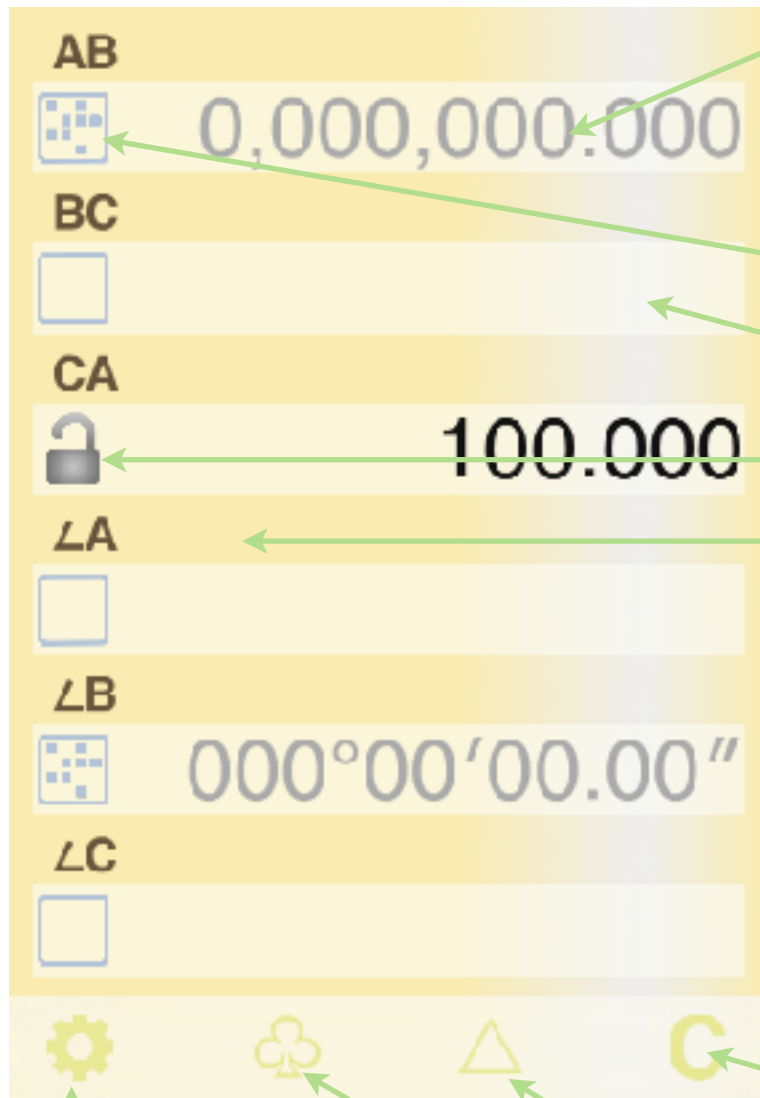
P.8 Attached calculations in this Application

P.9 Modification history

(All figures in this manual is iPhone 3.5inch, iOS9.x)

## Calculation Sheet

It provides 5 sheets and contents differ.(See P.8)  
Below indicated is the common operation of each.



**Numeric part:** Thin color squares are for numerical input or calculation result display. Input guide numeric is dimmed before entering numeric in the input section.  
**Touch directly** the most significant digit of the numeric. The digit changes by the following action. Adjust each digit to necessary numerical values by repeatedly similar touch actions. (See P.4)

**Keyboard** appears if you press the left side button. (Before numeric input. See P.6)

Where it is not the input section, a touch changes it to the input section. However, if the combination is impossible to calculate, touch is no operation.

Button becomes 'lock' when numeric exist. You can lock the numeric by it.

**Label part:** Dark color behind includes label for each value. Below operations are attached.

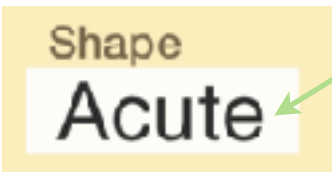
**Sheet Change:** Touch and move right or move left.

**Copy/Paste a sheet:** Touch and select from balloon.

(Selector is available in the case it works.)

Sheet text is stored in pasteboard. You can paste it into another application like E-mail. When pasting, all numerical is fit to setting of the field.

But locked field is skipped.



**Selector:** Thin colored square of the 2nd triangle sheet bottom is a selector. You can choose by the touch(up or down) from the defined content.

**Clear** this sheet numerical (excluding memory) or selected one numerical/memory.

System Settings (See P.7)

Memory

Triangle shape display

## Numerical Input

The touch operation differs whether in blank or on numeric.



**On numeric**, value of below table is added to or subtracted from the touched digit .  
When moving up or down, continuous operation is allowed, to adjust the value.  
Only the touched digit is affected and other digits are kept.

**In blank**, right table functions are attached. However, no function except Copy/Paste works to fraction/irrational number.

	Add 1 in front of highest digit	
Insert 1 digit '0' last	Copy/Paste (See below)	Delete last 1 digit
	Switch plus and minus*	

	+2(-8)	
Insert 1 digit right	+1(-9)	Delete 1 digit right
	+9(-1)	

\* mark function works only with values possible to be negative, such as coordinates.

### Copy/Paste a numeric

- (1) Touch blank in front of the numeric you want to copy. It becomes thin color.
  - (2) Touch destination numeric field. The value (1) is copied. Or touch again same (1). The value is stored in pasteboard.
  - (3) At no input situation on the input field, by a touch blank in front of numeric guide, the value in pasteboard is pasted.
- The memory button is possible to use instead of numeric.

## Calculation contents

2 yellow sheet is a sheet of the triangle. After entering three numerics, other values are automatically calculated.

\* 3 sides

\* 2 angles and one except angle

\* 2 sides and one except inscribed circle radius/circumscribed circle radius

\* 1 side, 1 angle and altitude or area (Some combination are impossible to calculate.)

Triangle general shape can be seen by pressing the triangle button on toolbar.

The ratio is automatically adjusted as large as possible within the screen.

(Right figure)

If no triangle calculation exists, the sample triangle is displayed.

A green sheet is points coordinate of triangle. When following numeric is entered, triangle (yellow sheet) is calculated automatically.

\* 3 points coordinates

\* 2 points coordinates and 1 side 1 angle from either point

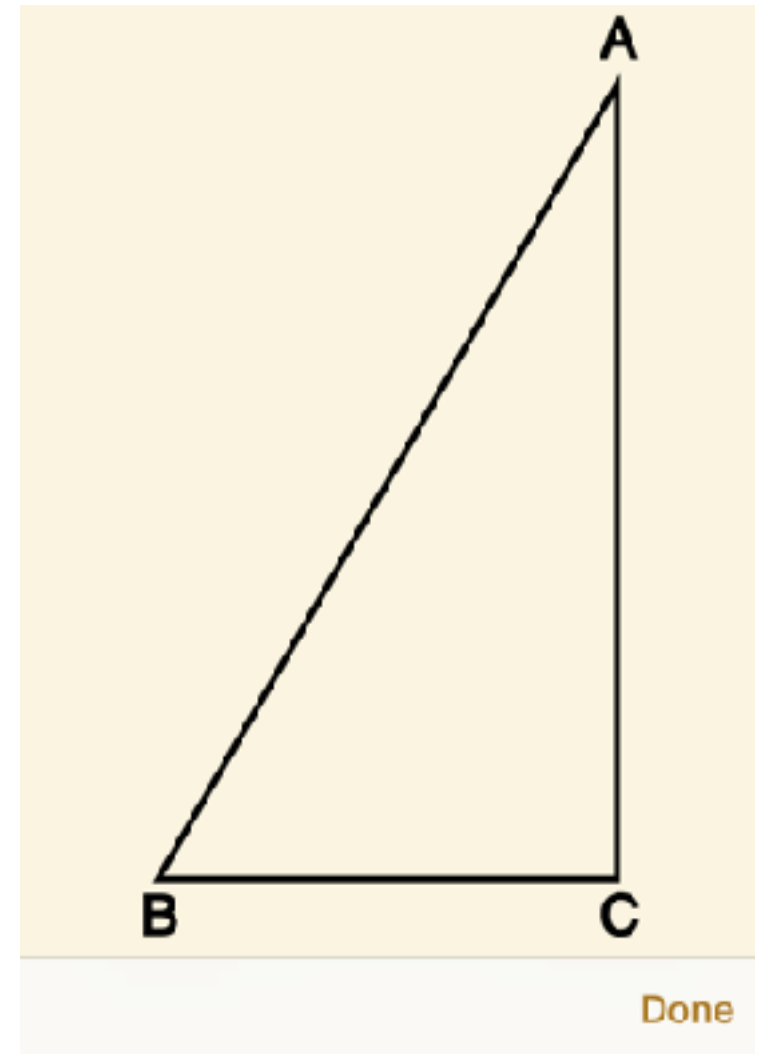
\* 2 points coordinates and 2 angles

Point coordinates are calculated in clockwise. (Right figure order)

Yellow sheet numeric calculated from green sheet input is fixed even if it is input field.

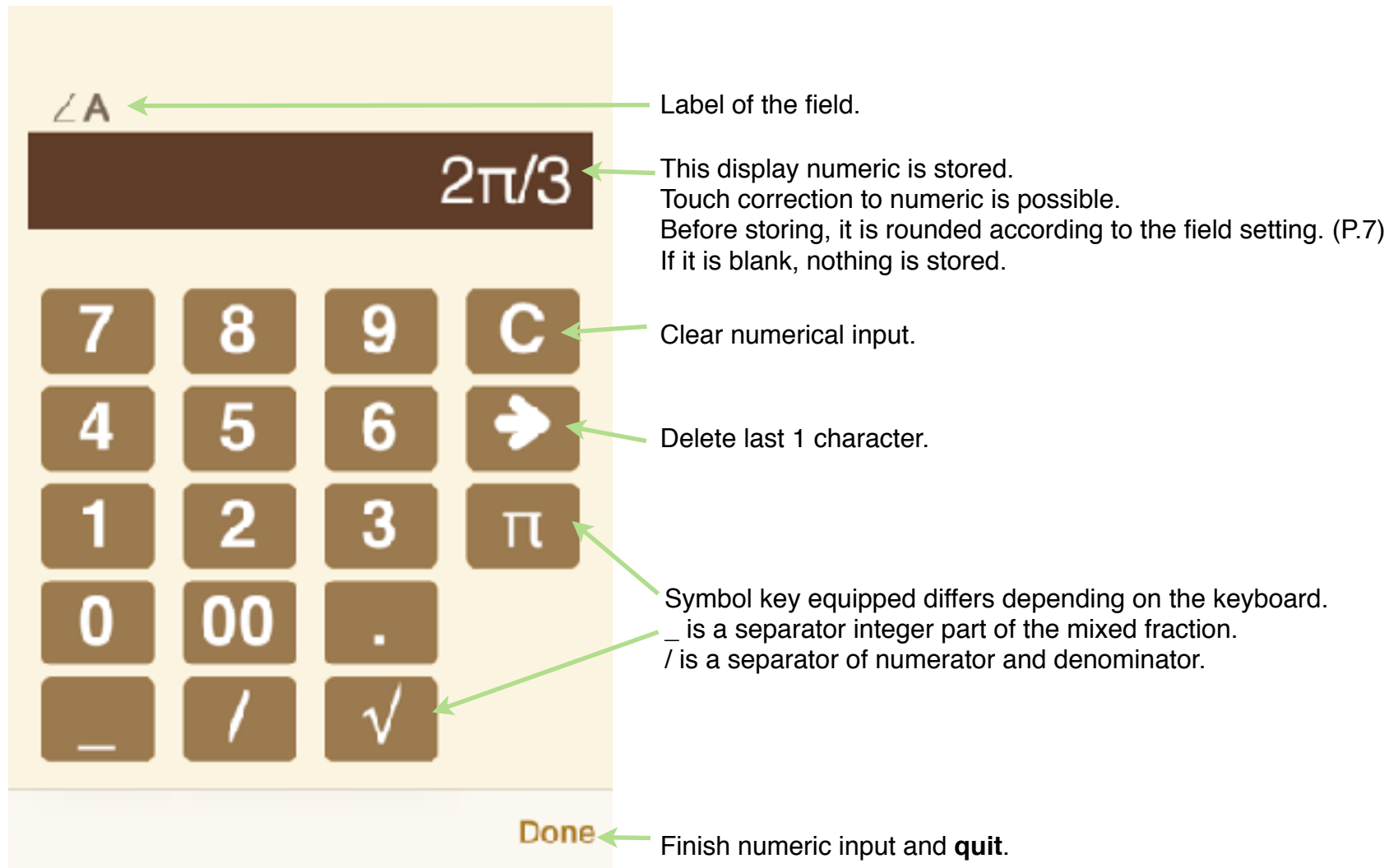
Blue sheet is a sheet of the circle. After entering one numeric, other values are automatically calculated.

Purple sheet is a total sheet. Total sheet calculation is done when that can be calculated.



## Keyboard

4 Keyboards (degree/minute/second, coordinate, yard/feet, other) are equipped and suitable keyboard is automatically selected corresponding to the content. (Below is 'other' keyboard.)



# System Settings



Numeric is classified 3 kinds (Length/Area/Angle). Choose **rounding digit** for each. At '.' setting, fraction/irrational number is displayed as it is. Decimal number is displayed with full length.

**Length** has 3 types (Normal, Feet/Inch, Yard/Inch).

**Angle** has 4 types (Degree/Minute/Second, Degree Decimal, Radian, Gradian).

**Rounding rule** is same in all numeric. (Round down/Round off/Round up)

### Decimal point/separator type

Blank: default of the unit

,. : 1,234,567,890.

., : 1.234.567.890,

. : 1 234 567 890.

, : 1 234 567 890,

' : 1'234'567'890.

### Separator location

- : 1234567890.

3-3-3 : 1,234,567,890.

2-2-3 : 1,23,45,67,890.

4-4-4 : 12,3456,7890.

### Number type

20 type numerics are available and switch by touch.

Finish this setting screen and **quit**.

**Reset:** Use it only when you want to initialize this application.

**Reload:** Return to the situation this application starts.

## Attached calculations in this Application

This application is specialized to triangle solver calculation.  
By scrolling right and left, you can switch the sheet to other sheet.

### 1. Triangle main

AB	2.
BC	1.
CA	$\sqrt{3}$
$\angle A$	$30^\circ 0' 0."$
$\angle B$	$60^\circ 0' 0."$
$\angle C$	$90^\circ 0' 0."$

### 2. Triangle sub

Altitude	$\sqrt{3}$
Area	$\sqrt{3}/2$
Perimeter	$3 + \sqrt{3}$
Incircle Radius	$-1/2 + \sqrt{3}/2$
Circumcircle Radius	1.
Classifying	Right

### 3. Triangle coordinate

Point A x-coordinate	0.
Point A y-coordinate	0.
Point B x-coordinate	2.
Point B y-coordinate	0.
Point C x-coordinate	$1\frac{1}{2}$
Point C y-coordinate	$\sqrt{3}/2$

### 4. Circle

Radius	3.
Diameter	6.
Perimeter	$6\pi$
Area	$9\pi$

### 5. Total calculation (2items)

9.
×
18.
+
4.
×
12.
↓
210.



## **Modification history**

### **Modifications → Ver1.2.0**

- Whole review and modification. (Mainly visual problems and some bugs.)
- Add twitter button. (And Landscape view after tweet. Twin screen on i-Pad, or enlarge number on i-Phone)

### **Modifications → Ver1.3.0**

- Multi-language and customize of guidance.
- Available all numeric code in iOS.

### **Modifications → Ver1.4.0**

- iOS8/9 adaptation.
  - Rise Landscape view to basic function (+ i-Pad multitask).
  - Handoff.
- The function after tweet changes. (Left-handed keyboard and customize of guidance.)
- Right/left operations on numeric change to delete/insert.
- Touch operation on keyboard numeric is allowed.
- Add yard/feet/inch in length.
- Improvement of some operation.
- Some bug fix.

### **Modifications → Ver1.4.1**

- Add yard/feet/inch to coordinate.
- Bug fix of result display at error situation.
- Improvement operation with coordinate.
- Arabic/Hebrew label message.
- iPad Pro icon
- Some improvement of usability.

### **Modifications → Ver1.4.2**

- Bug fix of 0 round up of Degree/Minute/Second.

### **Modifications → Ver1.5**

- Delete twitter button because iOS11 or after doesn't support it.
- iPhoneX/XR/XS display.
- Adjustment of operator label location.