



Workshop: Using Meclib in STACK Questions

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2023 STACK Community Meeting


Give the general formula for [Tidy STACK question tool](#) |  Question is missing tests or variants.
 the length of the hypotenuse c of a right-angled triangle with sides a and b .

$\sqrt{a^2}$

 Missing variable: b (b).


What is the exact length of the hypotenuse if the grid width is L ?

$2 \cdot \sqrt{5}$

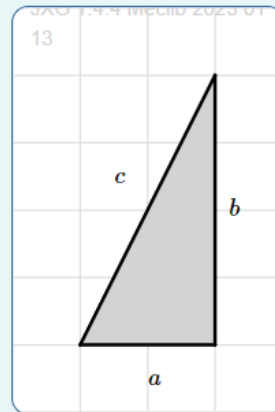
 Missing variable: L (L).

What is the length of the hypotenuse if the grid width is 1 cm ?

2 cm

 The absolute value is at least 50% too small.

Check





Outline

- Ressources
- Task
- Creating a static Meclib image
- Randomize the question
- Add formative feedback
- Add interactivity
- Add teachers solution for the graphics



Ressources

Meclib Wiki on Github <https://github.com/mkraska/meclib/wiki>

- Primary handbook for Meclib
- Description of objects and functions

Demo Moodle Course at TH Brandenburg <https://extmoodle.th-brandenburg.de/course/view.php?id=138§ion=1>

- Set of Meclib interactive demo questions
- Set of interactive and automatic tests for feedback functions
- Publications

Jsfiddle <https://jsfiddle.net/gbt7y8cw/1/>


- Site for rapid prototyping
- Uses JSXGraph 1.4.4 (as of STACK 4.4.2)
- Limitation: No variables in object definitions



Task

Compute the length of the hypotenuse in the given rectangular triangle and interactively specify the center of gravity.

Meclib Demo

Tidy STACK question tool |  Question is missing tests or variants.

Indicate the center of gravity using the blue crosshair.

✓ The distance to the actual CG is 0.00 grid units.

Give the general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .



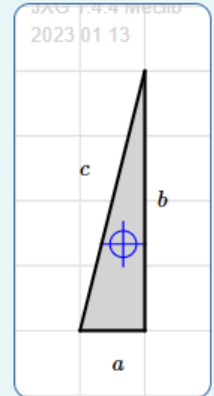
What is the exact length of the hypotenuse if the grid width is L ?



What is the length of the hypotenuse if the grid width is 1 cm?



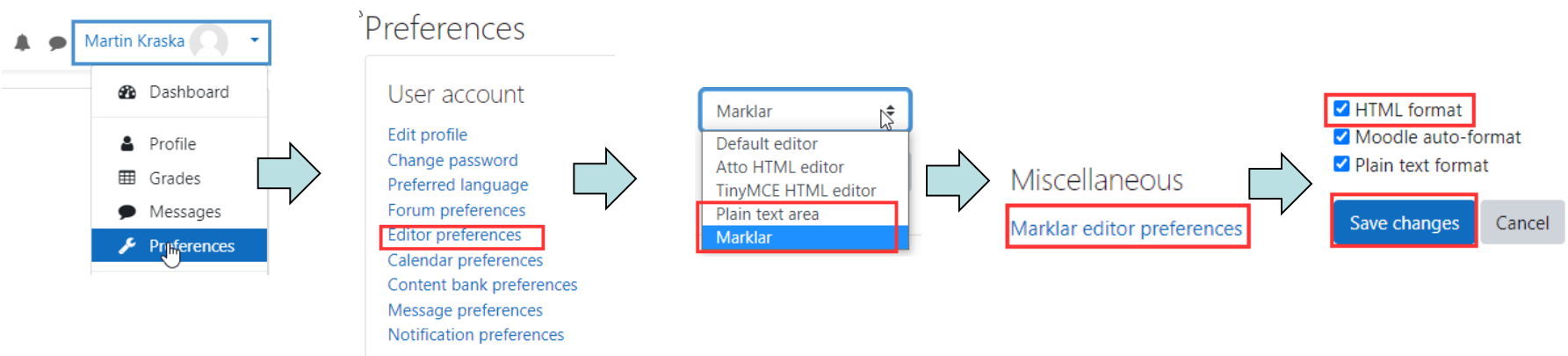
Check





Moodle Editor Settings

- In your profile, select „Preferences“
- Select „Editor preferences“
- Select „Marklar“ or „Plain text area“, Save changes.
- If you selected Marklar, you get a link to it's preferences.
 - Make sure that HTML format is checked
 - Save changes





Creating The Quiz

- Enter a moodle course where you are trainer with editing rights.
- Turn editing on
- Add a quiz activity
- Name it „Meclib Demo by <your name>“
- Set Question behaviour to „Adaptive mode“
- Save and display

The screenshot shows the Moodle course editing interface. At the top right, the user 'Martin Kraska' is logged in. A 'Turn editing off' button is visible. Below it, there are three 'Edit' buttons. A red box highlights the '+ Add an activity or resource' button. An arrow points from this button to the 'Quiz' activity icon. Another arrow points from the 'Quiz' icon to the 'Adaptive mode' dropdown menu under the 'Question behaviour' section. The 'Question behaviour' section also includes 'Shuffle within questions' (Yes) and 'How questions behave' (Adaptive mode).



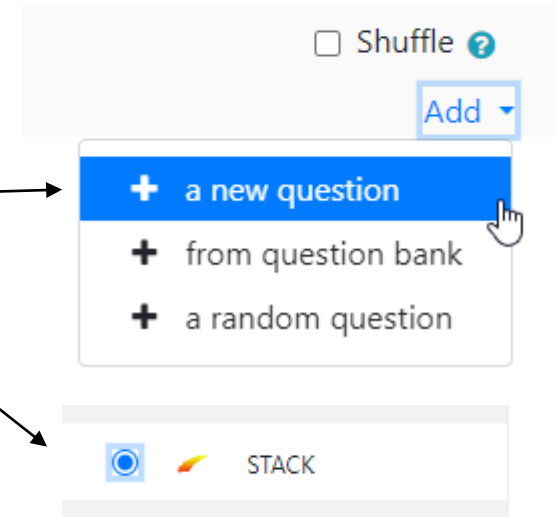
Creating The Question

Maximum grade 10.0

Save

Total of marks: 0.00

- Quiz administration > Edit quiz
- Add > a new question
- Choose a question type to add > STACK
 - Press button „Add“
- Next, we make the minimal edits which allow us to save the question.





Creating The Question

- **Category:** Select category (optional, question bank allows limiting of lists to categories)
- **Question name:** Enter a question name (appears in the question bank list)
- **Question text**
`<p>[[input:S_Ha]] [[validation:S_Ha]] [[feedback:Ha]]</p>`
- **Specific feedback:** Remove contents

Press button „Verify the question text and update the form“

- **Input ans1:** Confirm removal
- **Input S_Ha:** Set model answer to Ha
- **Potential response tree: prt1:** Confirm removal
- **Potential response tree: S_Ha:**
 Enter SAns and TAns (S_Ha and Ha)

Input: ans1

This input is no longer referred to in the question text. If you sa you want to do this. Alternatively edit the question text to put b

☒ I confirm that I want to remove this input from this question.

▼ Input: S_Ha

Input type

Model answer

Node 1	?	Answer test	AlgEquiv	SAns	S_Ha	TAns	Ha
		Test options	Quiet	No			

- Press button „Save changes and continue editing“



Creating The Question

Now the lower part of the question should look like this:

Press „Preview“

Make sure the question behaviour is set to „Adaptive mode!“ in the preview window

Verify the question text and update the form

Input: S_Ha

Potential response tree: Ha

Options

Tags

Created / last saved

Save changes and continue editing

Preview

Fix dollars

☐ Replace \$...\$ with \(...\), \$\$...\$\$ with \[...\] and @...

Save changes

Cancel

Question 1
Not complete

Tidy STACK question tool | Question is missing tests or variants.

Check

Start again

Save

Fill in correct responses

Submit and finish

Close preview

Attempt options

How questions behave


Adaptive mode



Save Point 1

Import this question to start over from here:

MK Meclib workshop P1 minimum version

Tidy STACK question tool |  Question is missing tests or variants.

Ha

Your last answer was interpreted as follows:

$$Ha$$

The variables found in your answer were: $[Ha]$

Correct answer, well done.

Check



Creating The Question

Verify the question text and update the form

Close the preview and save the question (Button „Save changes“)

- ▶ Input: S_Ha
- ▶ Potential response tree: Ha
- ▶ Options
- ▶ Tags
- ▶ Created / last saved

Save changes and continue editing

Preview

Fix dollars

☐ Replace \$...\$ with \(...\), \$\$...\$\$ with \[...\] and @...

Save changes

Cancel

In the quiz editing page press „Save“

Editing quiz: Meclib Demo by Martin Kraska?

Questions: 1 | This quiz is open

Maximum grade 10.0

Save

Repaginate

Select multiple items

Total of marks: 1.00



☐ Shuffle ?

Page 1

Add ▾

1

MK: Meclib worksho...



1.00



Add ▾



Adding Solution and Question text

Question variables: $Ha: \sqrt{a^2+b^2};$

Question text: add this at the beginning

<p>Give the general formula for the length of the hypotenuse \sqrt{c} of a right-angled triangle with sides \sqrt{a} and \sqrt{b} .</p>

Give the [Tidy STACK question tool](#) | ! Question is missing tests or variants.

general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .

Your last answer was interpreted as follows:

$$\sqrt{b^2 + a^2}$$

The variables found in your answer were: $[a, b]$

Correct answer, well done.

Check

Next step:
Compact validation
Compact feedback




Compact Validation and Feedback

Input S_Ha


- Insert stars: Insert stars for spaces only
- Show the validation: Yes, compact

Potential response tree: Ha:

- PRT feedback style: Compact

Give the [Tidy STACK question tool](#) |  Question is missing tests or variants.

general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .




Next step: Meclib image



Save Point 1b

Import this question to start over from here:

MK Meclib workshop P2b extended version

Give the [Tidy STACK question tool](#) |  Question is missing tests or variants.

general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .



Check



Meclib image

- Goto Meclib Wiki <https://github.com/mkraska/meclib/wiki>
- Goto Page Meclib Question Setup
- Find the template for meclib objects for the question variables.
- **Question variables:** Copy the template to the question variables and remove the dummy line including the comma at the end of the second line:

```
initdata: [  
    [ "grid", "x", "y", -5, 5, -5, 5, 50 ]  
];
```
- Find the text block for Meclib image in section Question text, Non-interactive mode
- **Question text:** Copy the block to the question text between text and input definition



Meclib image

Should look like this (Marklar editor)

```
Ha: sqrt(a^2+b^2);

initdata: [
  [ "grid", "x","y", -5,5,-4,5, 50 ]
];
init: stackjson_stringify(initdata);
```

<p>Give the general formula for the length of the hypotenuse \sqrt{c} of a rectangular triangle with cathedes \sqrt{a} and \sqrt{b} .</p>

```
<div style="float:right">
[[jsxgraph width='250px' height='250px' ]]
var mode = "STACK";
var stateRef;
const initstring = {#init#};
const centeredLabelStyle = {size:0, showInfobox:false, label:{offset:[-6,0],
  anchorX:'left', anchorY:'middle'}};
// End of STACK header
[[include src="https://raw.githubusercontent.com/mkraska/meclib/main/meclib.js" /]]
[[/jsxgraph]]</div>
```

<p>[[input:S_Ha]] [[validation:S_Ha]] [[feedback:Ha]]</p>

HTML format



[Show syntax](#)

Insert image

Insert file

Preview

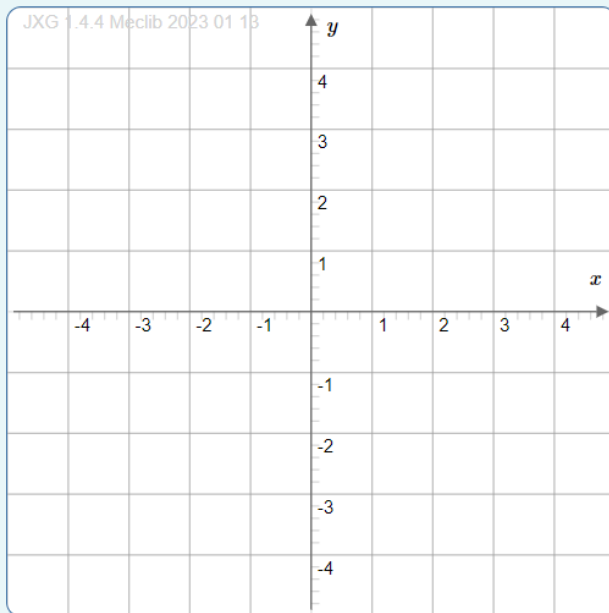


Meclib image

Save changes and continue editing, Preview. The appearance depends on the width of the window.

Tidy STACK question tool | ! Question is missing tests or variants.

Give the general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .





Congratulation, this is your first STACK question with a Meclib image. We are going to adjust the canvas and add objects.



Meclib image

Add a triangle with edges at B at $[0,0]$, C at $[a,0]$ and A at $[a,b]$

- Goto Wiki, find the List of Objects page (link in the bottom line) and look for appropriate objects.
- Candidates are „polygon“ and „line“. We want a solid triangle, so we go to the „polygon“ page

"line"		0	
"polygon"	Switch	state	

- A polygon without a hole is defined by the vertex points
["polygon", "",], [2,3], [3,2], [2.5,1],
[1.5,1]]
- We will define the polygon using some helper variables, which later also facilitate randomization.



Meclib image

Question variables:

- Add some definitions, adjust the grid and add a line for the polygon

```
Ha: sqrt(a^2+b^2);
```

Use aa and bb in order to keep a and b free for symbolic input

```
aa:4; bb: 3;
```

```
pB: [0,0]; pC: [aa,0]; pA: [aa,bb];
```


```
initdata: [  
  [ "grid", "", "", -1,aa+1,-1,bb+1, 40 ],  
  [ "polygon", "", pA, pB, pC ]  
];  
init: stackjson_stringify(initdata);
```

- Save changes and continue editing,
- Switch to the preview Window and refresh (Ctrl-R)



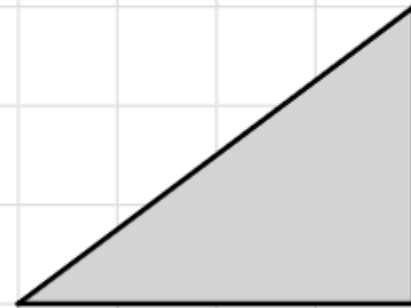
Meclib image

Give the general formula for the length of the hypotenuse c of a right-angled triangle with sides a and b .

Tidy STACK question tool |  Question is missing tests or variants.

Check

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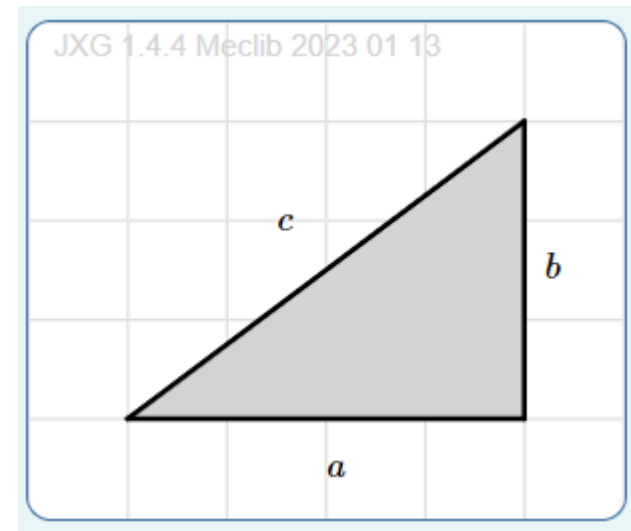




Meclib image

Question variables:

- Add labels. Position them at the center of the edges plus a manually adjusted offset.
- Text of „label“ objects is not in TeX mode by default.
- ```
initdata: [
 ["grid", "", "", -1, aa+1, -1, bb+1, 40],
 ["polygon", "", pA, pB, pC],
 ["label", "\\(a\\)", (pB+pC)/2 + [0, -0.5]],
 ["label", "\\(b\\)", (pA+pC)/2 + [0.2, 0]],
 ["label", "\\(c\\)", (pA+pB)/2 + [-0.5, 0.5]]
];
init: stackjson_stringify(initdata);
```
- Save changes and continue editing,
- Switch to the preview Window and refresh (Ctrl-R)






## Save Point 2

Import this question to start over from here:

### MK Meclib workshop P2 Meclib image

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

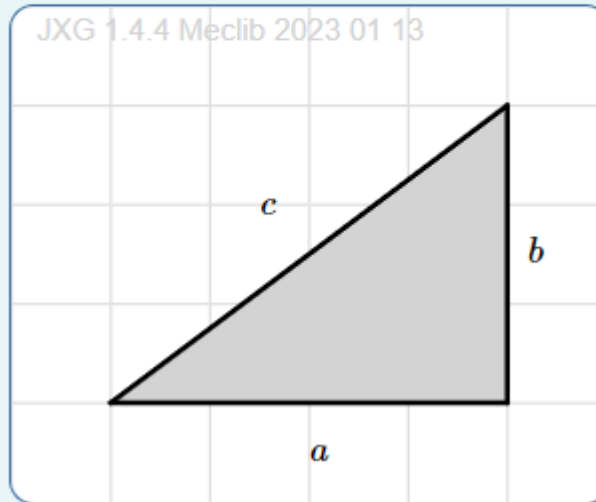
[Tidy STACK question tool](#) |  Question is missing tests or variants.

$\text{sqrt}(b^2+a^2)$

$\sqrt{b^2 + a^2}$



Check





# Randomization

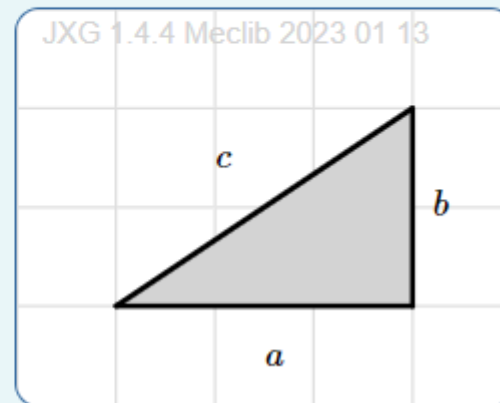
**Question variables:** add symbolic and numeric reference values for the length of  $c$

```
[aa,bb]: rand([[1,4], [1,3], [2,4], [2,3], [2,2],
[3,3], [3,2], [3,1], [4,2], [4,1]]);
```

**Question note:**  $\{ @ ' a=aa@ \}, \{ @ ' b=bb@ \}$

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

Check





## Save Point P3

Import this question to start over from here:

### MK Meclib workshop P3 Randomization

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

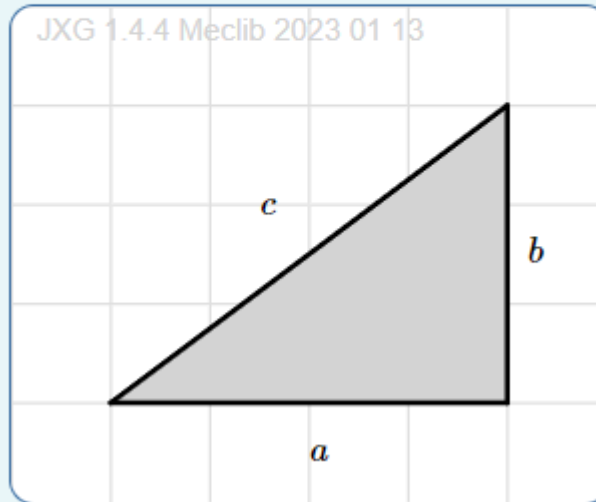
Tidy STACK question tool | ! Question is missing tests or variants.

$\text{sqrt}(b^2+a^2)$

$\sqrt{b^2 + a^2}$



Check







## Add Input for Exact Length

**Question variables:** add referenc values for exact and numeric result

```
Ha: sqrt(a^2+b^2);
```

```
aa:4; bb: 3;
```

```
[aa,bb]: rand([[1,4], [1,3], [2,4], [2,3], [2,2],
[3,3], [3,2], [3,1], [4,2], [4,1]]);
```

```
H: sqrt(aa^2+bb^2)*L;
```

```
Hnum: float(sqrt(aa^2+bb^2));
```

We will need that for the numeric input

**Question text:** add input field for exact length:

<p>What is the exact length of the hypotenuse if the grid width is  $\backslash(L\backslash)$ ?

<p>[[input:S\_H]] [[validation:S\_H]]  
[[feedback:H]]</p>

Press button „Verify question text and update the form“



# Add Input for Exact Length

## Input H:

- Model answer: H
- Insert stars: Insert stars for spaces only
- Syntax hint: `expression`
- Hint attribute: Placeholder
- Show the validation: Yes, compact

**Input Ha:** add syntax hint (could have been done earlier)

- Syntax hint: `expression`
- Hint attribute: Placeholder

## Potential response tree: H:

- PRT feedback style: Compact

|             |          |   |      |     |      |   |
|-------------|----------|---|------|-----|------|---|
| Answer test | AlgEquiv | ↕ | SAns | S_H | TAns | H |
|-------------|----------|---|------|-----|------|---|



# Save Point P4

Import this question to start over from here:

## MK Meclib workshop P4 Input 2

Give the general [Tidy STACK question tool](#) | ! Question is missing tests or variants.

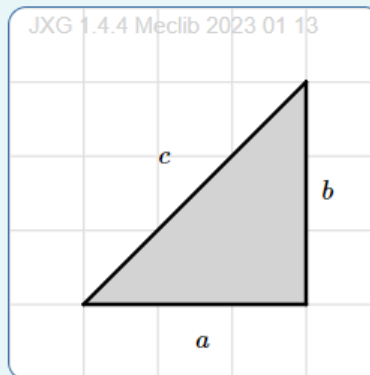
formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

 $\sqrt{b^2 + a^2}$ 

What is the exact length of the hypotenuse if the grid width is  $L$ ?

 $3 \cdot \sqrt{2} \cdot L$ 

Check





## Add Input for Numeric Length

**Question text:** add input field for numeric length:

<p>What is the numeric value of the length of the hypotenuse if the grid width is  $\backslash(1\backslash,\backslash\mathrm{cm}\backslash)$ ?

<p>[[input:S\_Hnum]] [[validation:S\_Hnum]]  
[[feedback:Hnum]]</p>

Press button „Verify question text and update the form“



# Add Input for Numeric Length

## Input Hnum:

- Input type: Units
- Model answer:  $\text{Hnum} * \text{cm}$
- Insert stars: Insert stars for spaces only
- Syntax hint: `number with unit`
- Forbidden words: `+, -, sqrt`
- Hint attribute: Placeholder
- Forbid floats: No
- Show the validation: Yes, compact

## Potential response tree: Hnum:

- PRT feedback style: Compact

|              |               |       |        |      |         |
|--------------|---------------|-------|--------|------|---------|
| Answer test  | UnitsRelative | SAAns | S_Hnum | TAns | Hnum*cm |
| Test options | 0.05          | Quiet | No     |      |         |



# Add Input for Numeric Length

Parallel use of Units and Algebraic input fields has unintended cross effects. The validation of the Algebraic input checks for unknown units but should not do that.

Mitigation is by explicitly allowing the variables  $a$  and  $b$  in the input.

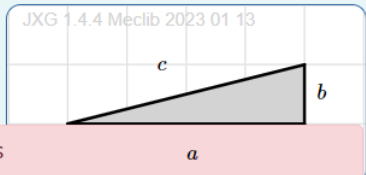
## Input Ha:

- Allowed words:  $a, b$

Give the general [Tidy STACK question tool](#) | ! Question is missing tests or variants.

formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

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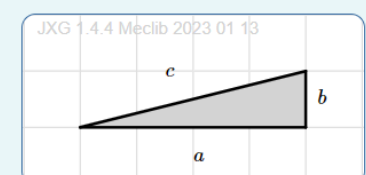
This answer is invalid. Input of units is case sensitive: **b** is an unknown unit. Did you mean one from the following list **[B]**? Input of units is case sensitive: **a** is an unknown unit. Did you mean one from the following list **[A]**?

Give the general [Tidy STACK question tool](#) | ! Question is missing tests or variants.

formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

✓

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What is the exact length of the hypotenuse if the grid width is  $L$ ?

✓

What is the length of the hypotenuse if the grid width is 1 cm?

✓



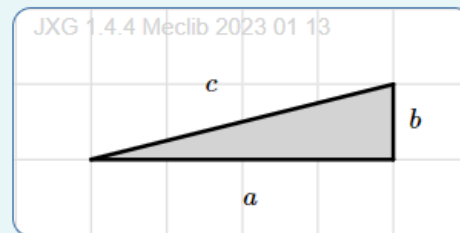
# Save Point P5

Import this question to start over from here:

## MK Meclib workshop P5 Input 3

Give the general [Tidy STACK question tool](#) | ! Question is missing tests or variants.

formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .



What is the exact length of the hypotenuse if the grid width is  $L$ ?



What is the length of the hypotenuse if the grid width is 1 cm?



Check



## Add Feedback

- Goto Meclib Wiki <https://github.com/mkraska/meclib/wiki>
- Goto Page [Meclib Question Setup](#)
- Find the command for inclusion of feedback functions (English version)
- **Question variables:** Copy the command as last line.  
`stack_include("https://raw.githubusercontent.com/mkraska/meclib/main/Maxima/fb_value_EN.mac");`





# Add Feedback

## Potential response tree: Hnum:

- Change Quiet to Yes
- Change Text format to HTML
- Add `{@fb_unit(S_Hnum, Hnum*cm, 0.05)@}` to the false feedback

|                                                                                                                                           |               |             |          |         |         |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|----------|---------|---------|
| Answer test                                                                                                                               | UnitsRelative | SAns        | S_Hnum   | TAns    | Hnum*cm |
| Test options                                                                                                                              | 0.05          | Quiet       | Yes      |         |         |
| Mod                                                                                                                                       | =             | Score       | 1        | Penalty |         |
| Next                                                                                                                                      | [stop]        | Answer note | Hnum-1-T |         |         |
| <div>HTML format</div> <div>Show syntax Insert image Insert file Preview</div>                                                            |               |             |          |         |         |
| Mod                                                                                                                                       | =             | Score       | 0        | Penalty |         |
| Next                                                                                                                                      | [stop]        | Answer note | Hnum-1-F |         |         |
| <div><code>{@fb_unit(S_Hnum, Hnum*cm, 0.05)@}</code></div> <div>HTML format</div> <div>Show syntax Insert image Insert file Preview</div> |               |             |          |         |         |



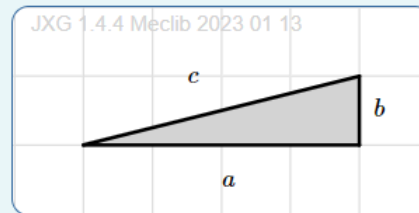
# Save Point P6

Import this question to start over from here:

## MK: Meclib workshop P6 Feedback on unit input

Give the general [Tidy STACK question tool](#) | ! Question is missing tests or variants.

formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .



What is the exact length of the hypotenuse if the grid width is  $L$ ?



What is the length of the hypotenuse if the grid width is 1 cm?

✗ The mantissa is correct, yet the value is off by at least one order of magnitude. Check your unit conversions.

Check



# Add More Feedback

## Potential response tree: Ha:

- Change Text format to HTML
- Add `{@fb_vars(S_Ha, Ha)@}` to the false feedback

## Potential response tree: H:

- Change Text format to HTML
- Add `{@fb_vars(S_H, H)@}` to the false feedback

The image displays three screenshots of a quiz configuration interface, likely from a learning management system. Each screenshot shows the settings for a specific question, including the answer test, test options, and feedback configuration.

**Top Screenshot (Question Ha):**

- Answer test:** AlgEquiv
- SAns:** S\_Ha
- TAns:** Ha
- Test options:** Quiet, No
- Mod:** =
- Score:** 1
- Penalty:** (empty)
- Next:** [stop]
- Answer note:** Ha-1-T
- Feedback configuration:** The text format is set to HTML (highlighted with a red box). The false feedback (Ha-1-F) contains the code `{@fb_vars(S_Ha, Ha)@}` (highlighted with a red box).

**Middle Screenshot (Question H):**

- Answer test:** AlgEquiv
- SAns:** S\_H
- TAns:** H
- Test options:** Quiet, No
- Mod:** =
- Score:** 1
- Penalty:** (empty)
- Next:** [stop]
- Answer note:** H-1-T
- Feedback configuration:** The text format is set to HTML (highlighted with a red box). The false feedback (H-1-F) contains the code `{@fb_vars(S_H, H)@}` (highlighted with a red box).

**Bottom Screenshot (Question H):**

- Answer test:** AlgEquiv
- SAns:** S\_H
- TAns:** H
- Test options:** Quiet, No
- Mod:** =
- Score:** 1
- Penalty:** (empty)
- Next:** [stop]
- Answer note:** H-1-T
- Feedback configuration:** The text format is set to HTML (highlighted with a red box). The false feedback (H-1-F) contains the code `{@fb_vars(S_H, H)@}` (highlighted with a red box).



# Save Point P7

Import this question to start over from here:

**MK: Meclib workshop P6 More Feedback**

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

✗ Missing variable:  $b$  ( $b$ ).

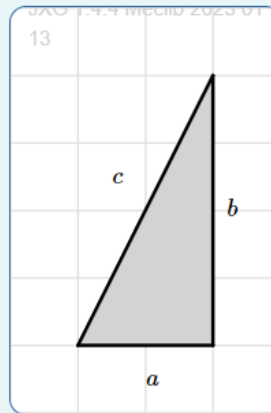
What is the exact length of the hypotenuse if the grid width is  $L$ ?

✗ Missing variable:  $L$  ( $L$ ).

What is the length of the hypotenuse if the grid width is 1 cm?

✗ The absolute value is at least 50% too small.

Check



Another glitch if mixing Algebraic and Units input in a single question.  $L$  is taken as unit and not written italic.



# Interactive Input

Objective: Interactive input of the center of gravity and feedback on the error.

**We have to switch to interactive use of Meclib.**

- Goto Meclib Wiki <https://github.com/mkraska/meclib/wiki>
- Goto Page Meclib Question Setup
- Find the text block for Meclib image in section Question text, interactive mode
- **Question text:**
  - Replace the existing Meclib block with the new one (move it to the top of the question text.
  - Add instruction and feedback definition for the center of gravity  
`<p>Indicate the center of gravity using the blue crosshair.</p>`  
`<p>[[feedback:CG]]</p>`



# Interactive Input

- Two hidden input definitions are added. They need some settings later.
- Also, the `[[jsxgraph]]` block has different contents.

```
<p hidden>[[input:objects]] [[validation:objects]]</p>
<p hidden>[[input:names]] [[validation:names]] </p>
<div style="float:right">
[[jsxgraph width='500px' height='400px' input-ref-objects="stateRef" input-ref-
names="fbd_names"]]
var mode = "STACK";
const initstring = {#init#};
const centeredLabelStyle = {size:0, showInfobox:false, label:{offset:[-6,0],
 anchorX:'left', anchorY:'middle'}};
// End of STACK header
[[include src="https://raw.githubusercontent.com/mkraska/meclib/main/meclib.js" /]]
[[/jsxgraph]]</div>
```



# Interactive Input

Push button „Verify the question text update the form“

## Input objects

- Input type:
- Model answer:
- Students must verify:
- Show validation:

String

tans

no

no

Stores the state of the Graphics  
Initialized with variable init and is modified by interactive input

## Input names

- Input type:
- Model answer:
- Forbid float:
- Students must verify:
- Show validation:

algebraic

[]

no

no

no

Conveys data for feedback generation



# Interactive Input

- Add the crosshair to the Meclib objects and store the object index of the crosshair for use in the feedback tree.

- **Question variables:**

```
initdata: [
 ["grid", "", "", -1, aa+1, -1, bb+1, 40],
 ["crosshair", "", [0, bb], [0, 0], [1, 1], [2, 2]],
 ["polygon", "", pA, pB, pC],
 ["label", "\\(a\\)", (pB+pC)/2 + [0, -0.5]],
 ["label", "\\(b\\)", (pA+pC)/2 + [0.2, 0]],
 ["label", "\\(c\\)", (pA+pB)/2 + [-0.5, 0.5]]
];
init: stackjson_stringify(initdata);
ic: 2;
```

- Save and preview...





# Interactive Input

Inspection of the names field

## Question text:

- Remove the „hidden“ attribute from the names input field

```
<p hidden>[[input:objects]]
[[validation:objects]]</p>
```

```
<p >[[input:names]] [[validation:names]] </p>
```

**Input names:** Make the field wide

- Input box size: 40

0, [1.99724524912208, 1.00275475087792], "locked", 0, 0, 0

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

Expression

What is the exact length of the hypotenuse if the grid width is  $L$ ?

Expression

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„crosshair“ returns the coordinates  $[x,y]$  (second entry in the names list).

The infobox display shows rounded values (two decimal places, as specified in the definition)



# Interactive Input

## Question text:

- Add a title to the text

```
<p>Meclib Demo</p>
```

- Restore the „hidden“ attribute in the names input definition

```
<p hidden>[[input:objects]] [[validation:objects]]</p>
```

```
<p hidden>[[input:names]] [[validation:names]] </p>
```

- and add instruction and feedback definition for the center of gravity below the graphics (any other location would also do)

```
<p>Indicate the center of gravity using the blue crosshair.</p>
```

```
<p>[[feedback:CG]]</p>
```

- Push button „Verify the question text update the form“



# Interactive Input

## Potential response tree: CG

- PRT feedback style: Compact

- Feedback variables:

CG:  $[2/3*aa, 1/3*bb]$ ;

S.CG: names[ic];

vec: CG-S.CG;

dist:  $\sqrt{\text{vec}[1]^2 + \text{vec}[2]^2}$ ;

Actual CG

Crosshair location

Distance vector

Distance

- Feedback text

The distance to the actual CG is  $\{@\text{dispdp}(\text{dist}, 2)\@}$  grid units.

Must be smaller than 0.05.

The screenshot shows the interactive input interface with two feedback states. The top state, labeled 'CG-1-T', shows a successful answer with a score of 1. The bottom state, labeled 'CG-1-F', shows a failed answer with a score of 0. Both states display the feedback text: 'The distance to the actual CG is  $\{@\text{dispdp}(\text{dist}, 2)\@}$  grid units.' and 'Must be smaller than 0.05.' The interface includes fields for 'Answer test' (NumAbsolute), 'SAns' (dist), and 'Ans' (0). It also has 'Test options' (0.05, Quiet, No) and 'Mod' (Score, Penalty, Next, [stop]). The 'HTML format' button is highlighted in red in both states.



# Save Point P8

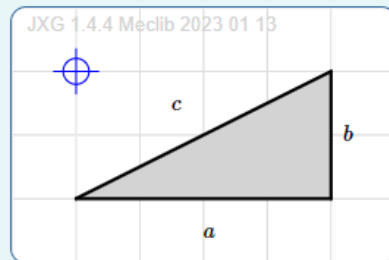
Import this question to start over from here:

## MK: Meclib workshop P8 Interactive

### Meclib Demo

Tidy STACK question tool | ! Question is missing tests or variants.

Indicate the center of gravity using the blue crosshair.



✖ The distance to the actual CG is 2.98 grid units. Must be smaller than 0.05.

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

What is the exact length of the hypotenuse if the grid width is  $L$ ?

What is the length of the hypotenuse if the grid width is **1 cm**?

Check



# Convenience Stuff

Add a reference solution for the graphics for „Fill in correct responses“ in the preview.

Question variables: below definition of initdata

```
CG: [2/3*aa, 1/3*bb];
tansdata: initdata;
tansdata[ic]: ["crosshair", "", CG, [0,0], [1,1], [2,2]];
tans: stackjson_stringify(tansdata);
```

The definition of CG can be removed from the Feedback variables in the CG-PRT.

**Meclib Demo** Tidy STACK question tool | Question is missing tests or variants.

Indicate the center of gravity using the blue crosshair.

✓ The distance to the actual CG is 0.00 grid units.

Give the general formula for the length of the hypotenuse  $c$  of a right-angled triangle with sides  $a$  and  $b$ .

✓

What is the exact length of the hypotenuse if the grid width is  $L$ ?

✓

What is the length of the hypotenuse if the grid width is 1 cm?

✓

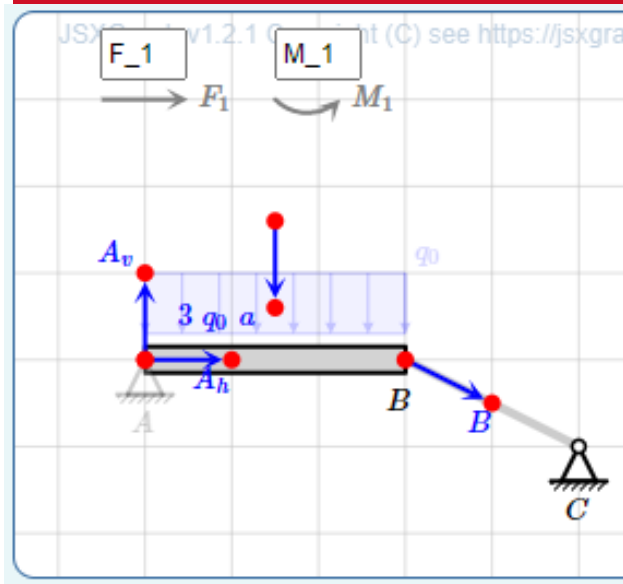


# Cleanup

## Question text:

- Restore the „hidden“ attribute in the names input definition

Thank you for your attention!



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