

# STACK question type

<p>Please simplify this formula:</p> $\int_2^7 49x dx$ <p>Answer:</p> <input type="text"/>	<p>Please simplify this formula:</p> $\int_2^6 36x dx$ <p>Answer:</p> <input type="text"/>
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An example of STACK question type

## Overview:

This guide will show you how to create a STACK question type.

## What to know:

The features of STACK question type are listed below.

1. It supports random variables into the questions. (As can be seen from the example above, one student sees the question as the first picture, while another student sees the question as the second picture. It is this question uses random variables.)
2. It supports variables defined by other expressions.
3. It supports variables with pre-defined values.
4. It supports answer tolerance and the use of units.

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### Step 1: Access the Quiz activity where you want to create the question

In your module area/course, click the link of the Quiz activity where you want to create a question.

## ▼ Topic 5



Example Quiz

Receive a grade

**Opened:** Wednesday, 8 November 2023, 1:31 PM

Note: If an appropriate Quiz activity doesn't exist in your module area/course, please see [Add a quiz](#) for details of how to create one.

### Step 2: Open the 'Questions' tab.

1. Open the 'Questions' tab.

**Example Quiz**

[Quiz](#) [Settings](#) [Questions](#) [Results](#) [Question bank](#) [More ▼](#)

Receive a grade

**Opened:** Wednesday, 8 November 2023, 1:31 PM

Preview quiz

Attempts allowed: 1

### Step 3: Add a new question

1. On the following page, click the 'Add' link.
2. Click the 'a new question' link in the dropdown menu.

Example Quiz

Quiz

Settings

Questions

Results

Question bank

More ▾

Questions

Questions: 1 | This quiz is open

Maximum grade 100.00

Save

Repaginate

Select multiple items

Total of marks: 1.00

Page 1

1

The Loch Ness Monster is a type of?

The Loch Ness Monster ...

Always

Add ▾

+ a new question

+ from question bank

+ a random question

## Step 4: Choose a question type

1. Locate and select the STACK question type from the pop-up window.
2. Click the 'Add' button.

Choose a question type to add

$2+2=?$

Calculated simple

$2+2=?$

Calculated multichoice

$x^2$

Variable numeric

$\{1,2\}$

Variable numeric set

$\{1\}m$

Variable numeric set with units

STACK

VPL Question

CodeRunner

OTHER

Description


STACK provides mathematical questions for the Moodle quiz. These use a computer algebra system to establish the mathematical properties of the student's responses.

Add

Cancel

## Step 5: Give a question name

Give a question name in the 'Question name' setting.

Question name 

Variable numeric

## Step 6: Set up variables

Give a question name in the 'Question variables' setting.

Hints:

1. Random variables can be defined by `rand(n)`. Then the random values will be generated from 0 to n. If you want the random values to start from 1, then write `rand(n)+1`.
2. It also supports the variables to be defined by other variables.

Question variables 

```
a1: 1+rand(6);  
a2: 1+rand(7);  
a3: 2+rand(3);  
exp: a1*(x-a2)^(-a3);  
ta: int(exp, x)+c;  
ta2: int(exp, x);
```

## Step 7: Write the question text

Type in the question in the 'Question text' box, such as the example in the screenshot below.

The special Mathematical formulas and symbols can be written in Latex/Tex. You either edit the formula in Latex editors or click the icon on the top left of the text box and click the icon highlighted icons in the screenshot to edit the Latex formula.

Hint:

1. The random variables, such as variable `exp`, need to be covered with '@' and '@' so that the system knows it is a variable.
2. The whole formula is written by Latex.
3. '`[[input:ans1]] [[validation:ans1]]`' is a default text in this area. Please do not delete it. It means the input correct answer is named as 'ans1'.

Question text  

Find the intergrations of  $\int \int @exp@ \mathrm{d}x \backslash$

`[[input:ans1]] [[validation:ans1]]`

## Step 8: Set up the full mark and general feedback (optional)

If you do not need to change the full mark and give general feedback, you can skip this step.

1. Under the 'Default mark', you can change the full mark of this question from 1 mark to another mark.
2. Under the 'General feedback', you can add feedback that every student will see.

The screenshot shows two sections of a question editor. The 'Default mark' section has a red warning triangle icon and a text input field containing the number '10'. The 'General feedback' section has a help icon and a rich text editor. The rich text editor's toolbar includes icons for text alignment, font color, background color, bold, italic, underline, bulleted list, numbered list, decrease indent, increase indent, link, and unlink. The text area contains the sentence: 'This question checks the use of knowledge related to . You can check the Lecture 10.'

## Step 9: 'Input: ans1' section

The section 'input:ans1' defines the input answer.

This question type supports plenty of input types in 'input type'.

The screenshot shows the 'Input type' dropdown menu open. The 'Input type' label is highlighted with a red box. The dropdown list contains the following options: Algebraic input (selected with a checkmark), Checkbox, Drop down list, Equivalence reasoning, Matrix, Matrix of variable size, Notes, Numerical, Radio, Single character, String, Text area, True/False, and Units. Other settings like 'Model answer', 'Input box size', 'Insert stars', and 'Syntax hint' are visible but not selected.

Then, define the correct answer in 'model answer'. You can write down the correct answer here. If the correct answer is complex, you can use the correct answer by a variable, such as 'ta', as shown below. Then define the variable 'ta' in the 'Question variables' setting in Step 6.

The screenshot shows the 'Model answer' field with a help icon. The text 'ta' is entered in the input field.

## Step 10: 'Potential response tree' section

STACK question type allows teachers to define a potential response tree to check partially correct answers and give marks and feedbacks accordingly automatically.

By default, there is only one node in the response tree. It is to define whether the student input answer is right or not.

1. In 'SAns' (student answer) setting, please define the student answer by writing down 'ans1'. This is the default student input, as described in Step 7 (Hint 3).
2. In 'TAns' (teacher answer) setting, please define the correct answer. It is the same with the answer defined in 'model answer' in Step 9.
3. Then, please define the score. The green area is to define the score of the correct answer. So the 'score' is '1' and the penalty is '0'. Feedback can also be given in the feedback area below.
4. Then, the red area is to define the score of the wrong answer. The 'score' can be '0', etc.

**Node 1**

Answer test: AlgEquiv

SAns: ans1

TAns: ta

Test options: Quiet No

Node 1 when true

Mod: =

Score: 1

Penalty: 0

Next: [stop]

Answer note: prtl-I-T

Node 1 true feedback

Node 1 when false

Mod: =

Score: 0

Penalty:

Next: [stop]

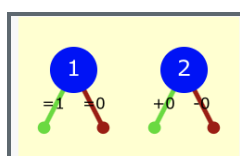
Answer note: prtl-I-F

Node 1 false feedback

Add another node

## Step 11: Add more nodes (optional)

1. You can click the 'Add another node' to expand the answer tree. After clicking the button, one more node will appear.



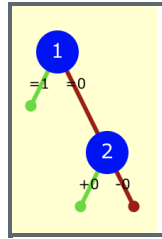
2. Link the nodes together. If the student answer is not fully correct (checked by Node 1), then more checking can be done to give scores to the partially correct answer by Node 2. To do it, please set the 'Next' setting to 'Node 2' in the red area. Then the two nodes are linked.

Node 1 when false

Mod = Score 0 Penalty

Answer note prt1-1-F

Next [stop] ✓ Node 2



3. In Node 2:

- 1) 'SAns' need to be 'ans1', means the student input.
- 2) 'TAns' is a predefined partially correct answer. If this answer is complex, it can be defined in 'Question variables' in Step 6.
- 3) Define the score of the partially correct answer in the green area, and the score of the wrong answer in the red area.

<b>Node 2</b>

Node 2

Answer test AlgEquiv SAns ans1

TAns ta2 Test options Quiet No

Node 2 when true

Node 2 when true

Mod + Score 0.6 Penalty Next [stop]

Answer note prt1-2-T

Node 2 true feedback

Node 2 when false

Node 2 when false

Mod - Score 0 Penalty Next [stop]

Answer note prt1-2-F

Node 2 false feedback

Delete node 2

## Step 12: Save the question

Click 'save changes and continue editing' or 'save changes' button to save the question.

Save changes and continue editing

Save changes

Cancel

### Tips:

The random variables, such as variable a and b, need to be covered with '[[ ]]', the whole formula needs to be covered with '\$\$' before and after, so that the system knows it is a random variable.

### Note:

For more information about Variable Numeric question type, please access the official documentation: <https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=52747&section=2.1.2>

Online URL: <https://knowledgebase.xjtlu.edu.cn/article/stack-question-type-183.html>