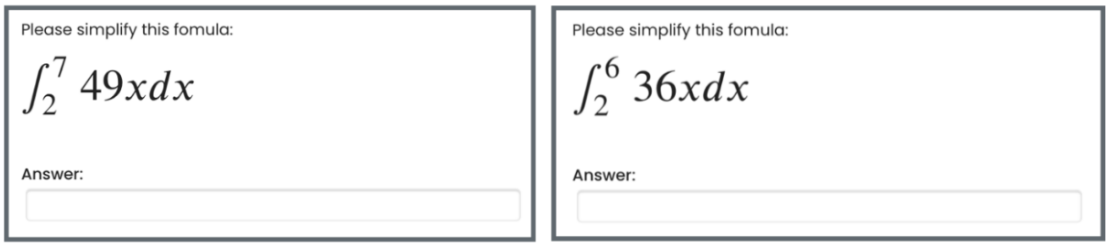
Variable Numeric question type

178 Yezi Yang Tue, Nov 21, 2023 STEM 2187 0



An example of Variable Numeric question type

Overview:

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

What to know:

The features of Variable Numeric question type is listed below.

1. It supports random variables into the questions. (As can be seen from the example above, one student sees the question as shown in the first picture, while another student sees the question as shown in the second picture. It is because 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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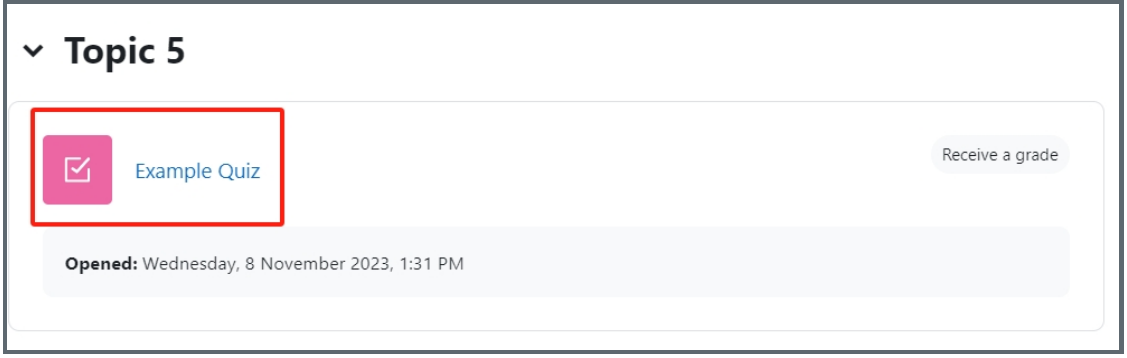
Step 1: Access the Quiz activity where you want to create the question

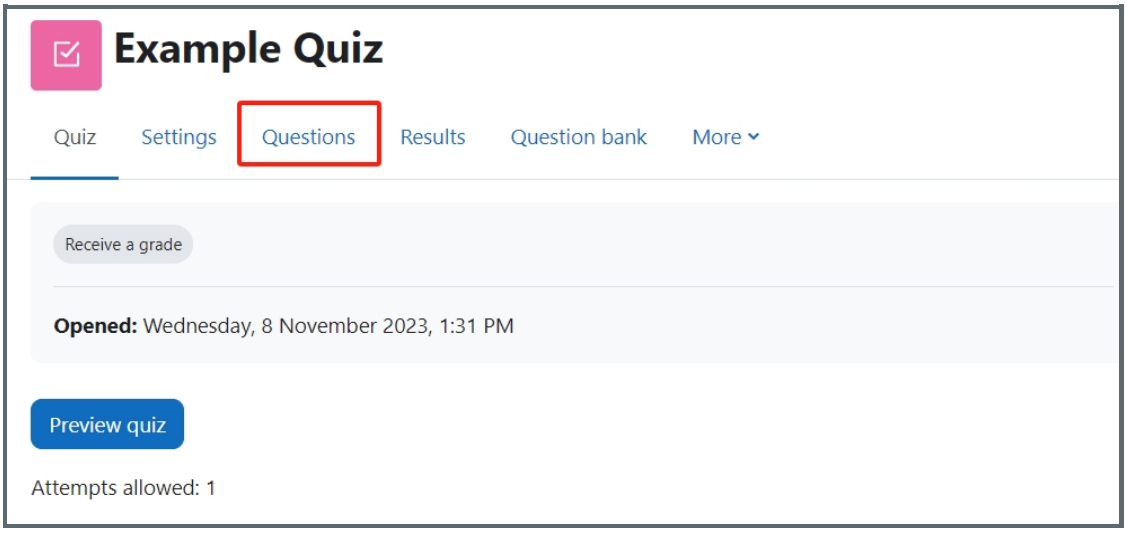
In your module area/course, click the link of the Quiz activity where you want to create a question.



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.

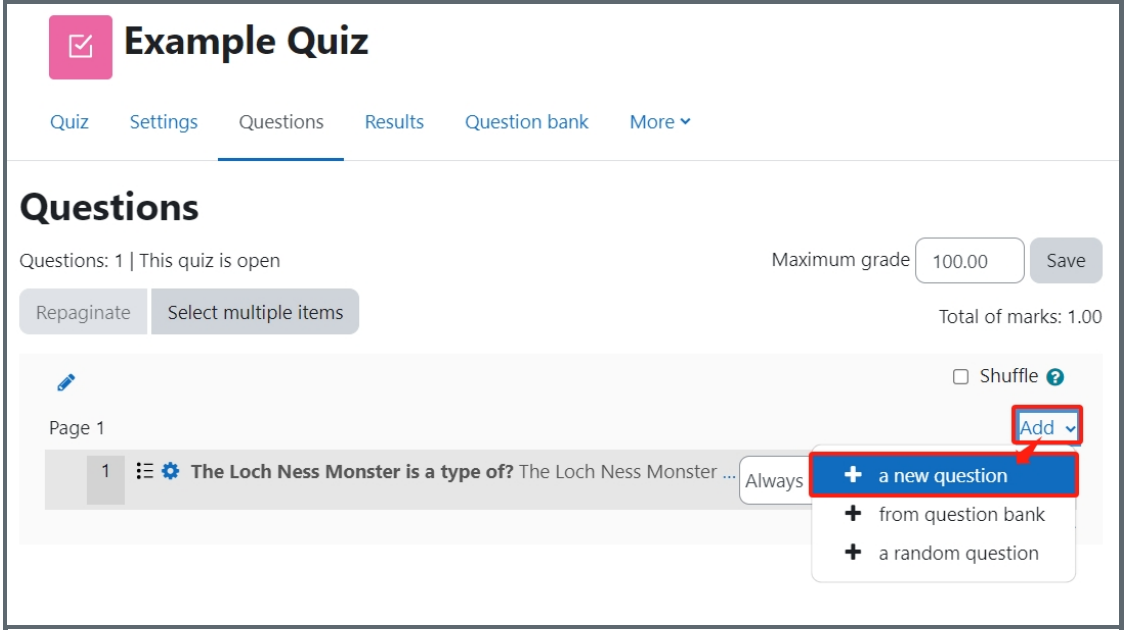
Step 2: Open the 'Questions' tab

1. Open the 'Questions' tab



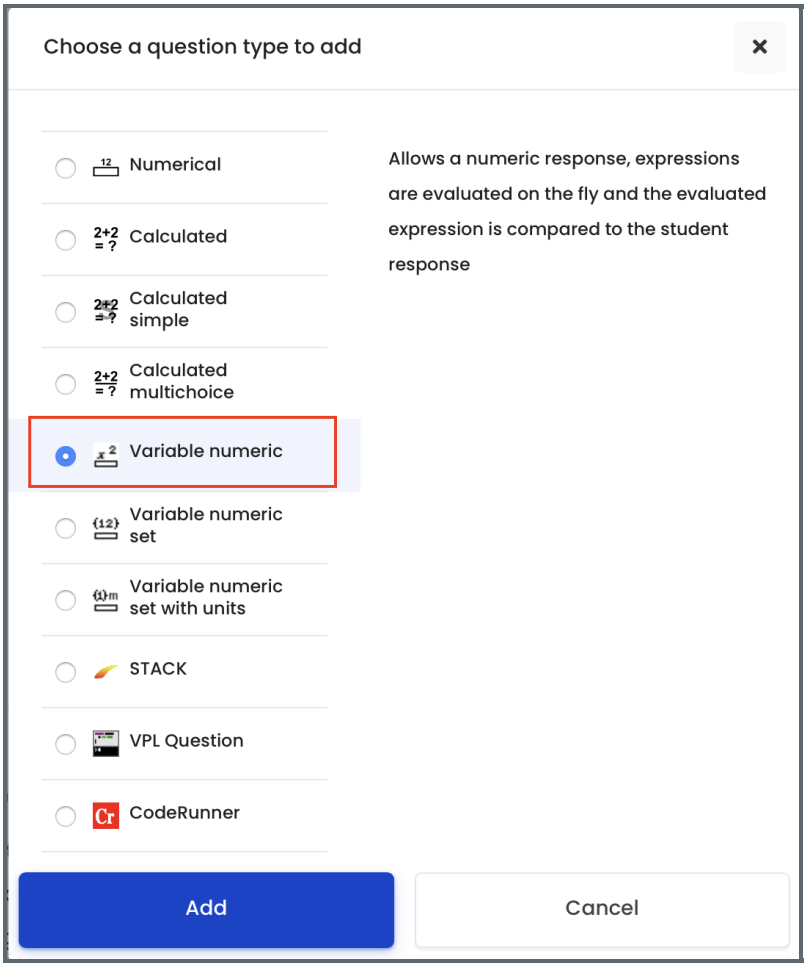
Step 3: Add a new question

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



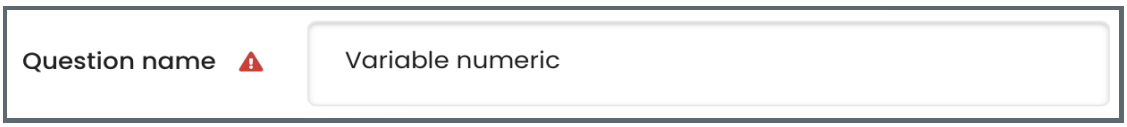
Step 4: Choose a question type

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



Step 5: Give a question name

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



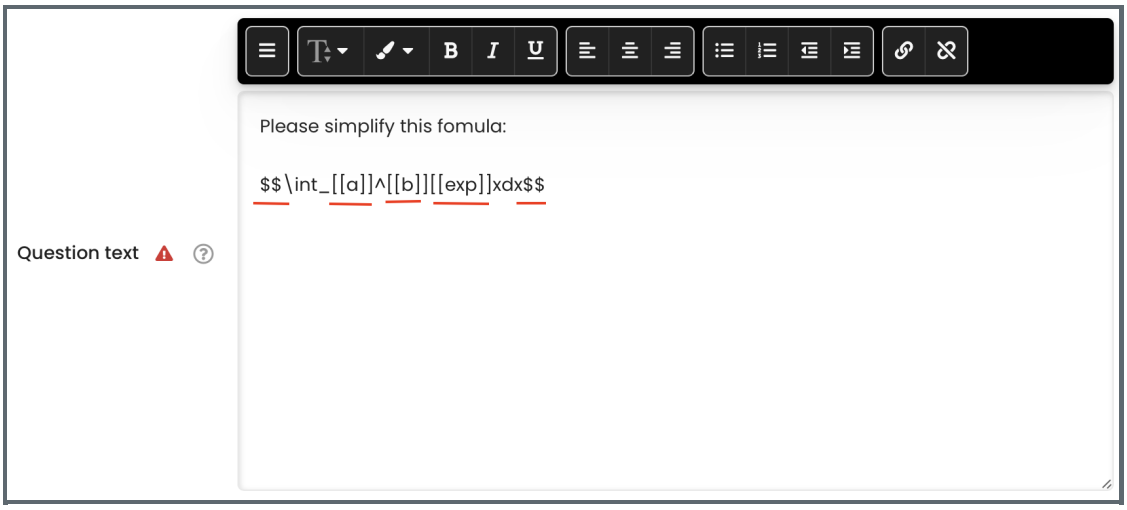
Step 6: Give the question text

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 Latex formula.

Hint:

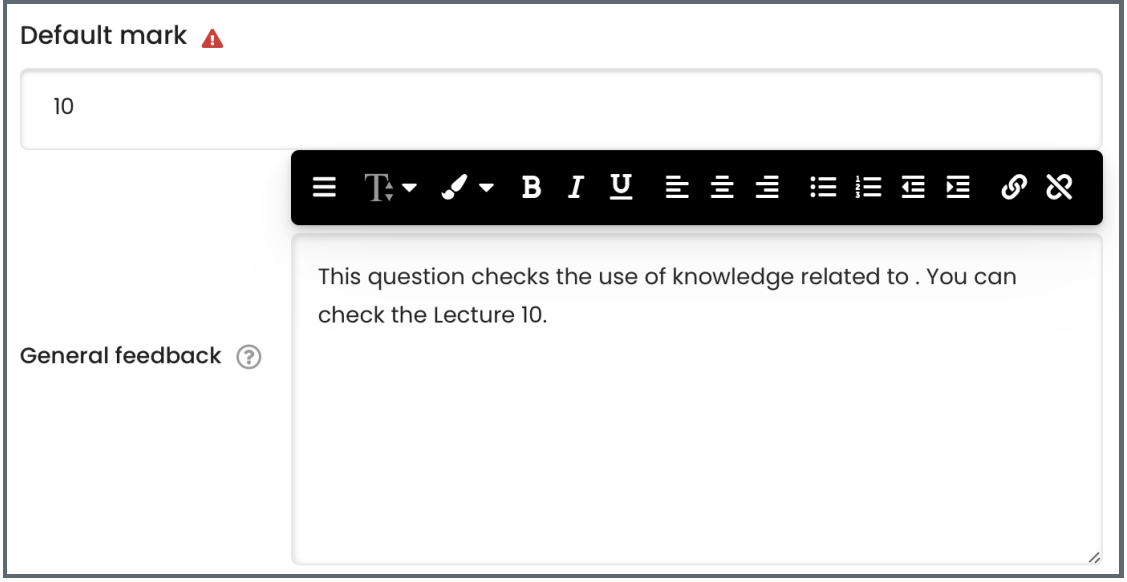
1. The random variables, such as variable a and b, need to be covered with '[[' and ']]' so that the system knows it is a variable.
2. The whole formula needs to be covered with '$$' before and after.



Step 7: Set up the full mark and the 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.



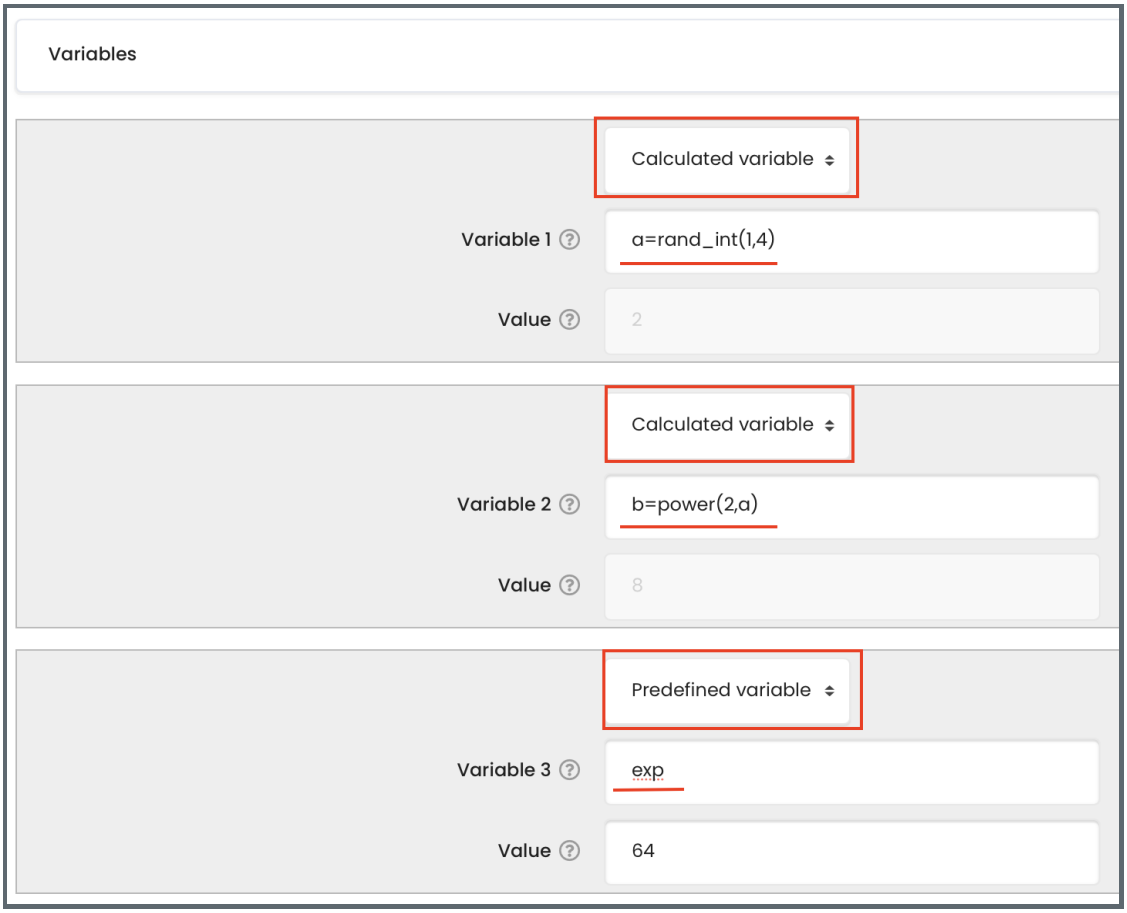
Step 8: Set up variables

There are two types of variables:

1. Calculated variables: random variables. e.g. variables *a* and *b* in the screenshot below.
2. Predefined variables: variables with pre-defined values. e.g. variable *exp* in the screenshot below.

Define variables:

1. To define a random variable , please write 'rand_int()', which means random integer. Then, in the bracket, please write the range of the random integers. e.g. rand_int(1, 4) means random integer between 1 and 4.
2. This question type supports most of the commonly used expressions. Please follows the expressions that this question type supports to define your variables as the following image.
3. To define a predefined variable, the teacher needs to define the values that can be given to this variable.



average(a, b…): Returns the average of a list of arguments.

max(a, b...): Returns the maximum value in a list of arguments

min(a,b...): Returns the minimum value in a list of arguments

mod(dividend, divisor): Calculates the remainder of a division.

ln(number): Returns the natural logarithm of number.

log(number): Returns the natural logarithm of number.

pi(): Returns the value of the number Pi.

power(base,exponent): Calculates the value of the first argument raised to the power of the second argument.

round(number, count): Rounds a number to a predefined accuracy.

sqrt, abs, exp

sin, sinh, arcsin, asin, arcsinh, asinh

cos, cosh, arcos, acos, arccosh, acosh

tan, tanh, arctan, atan, arctanh, atanh

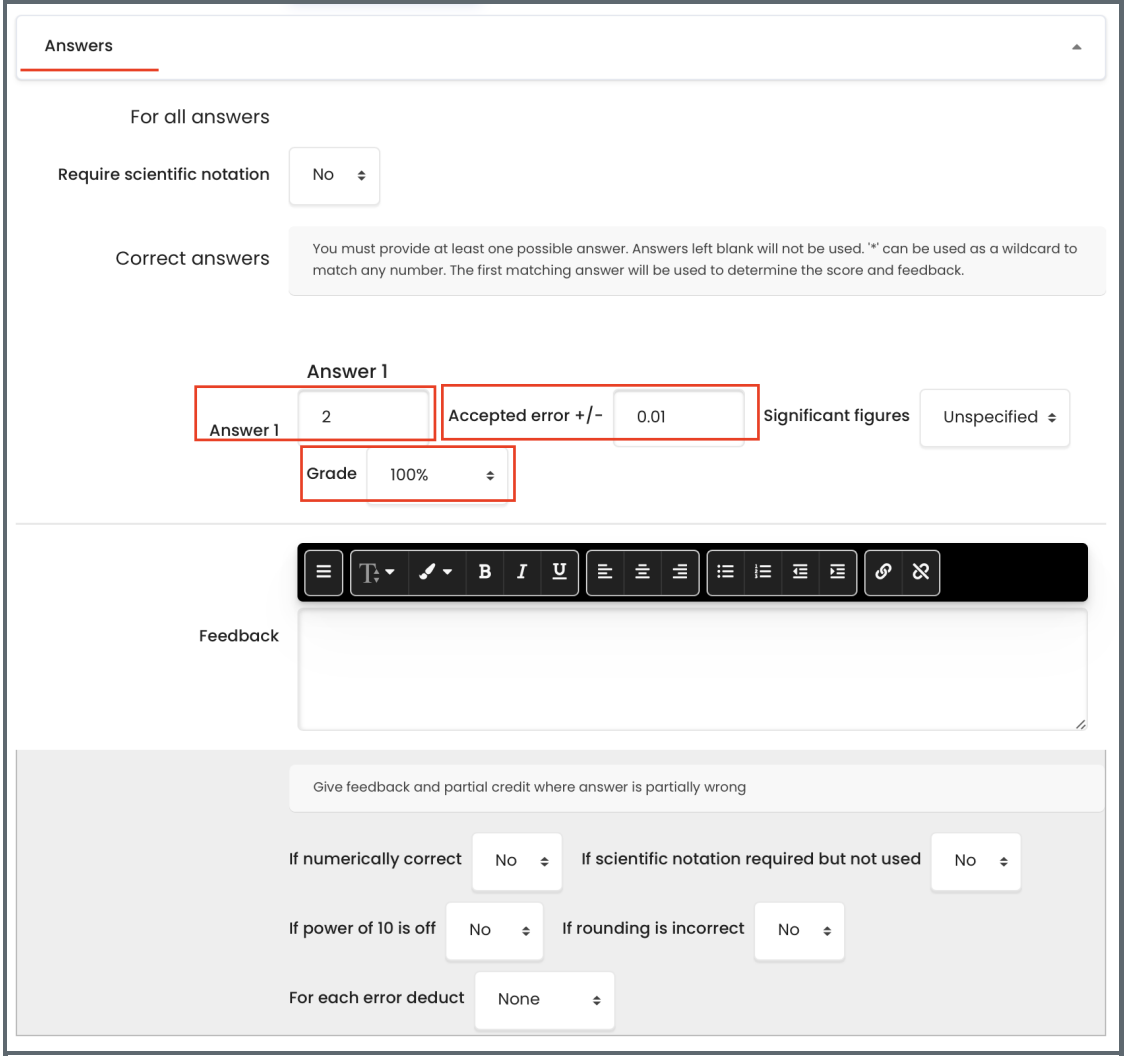
Step 9: Give the correct answer

1. You can type in the correct answer in the 'Answer' setting.

For variables with random values, such as variable 'a' and 'b' here, it needs to be covered within '[[ ]]', so that ICE recognizes them as variables.

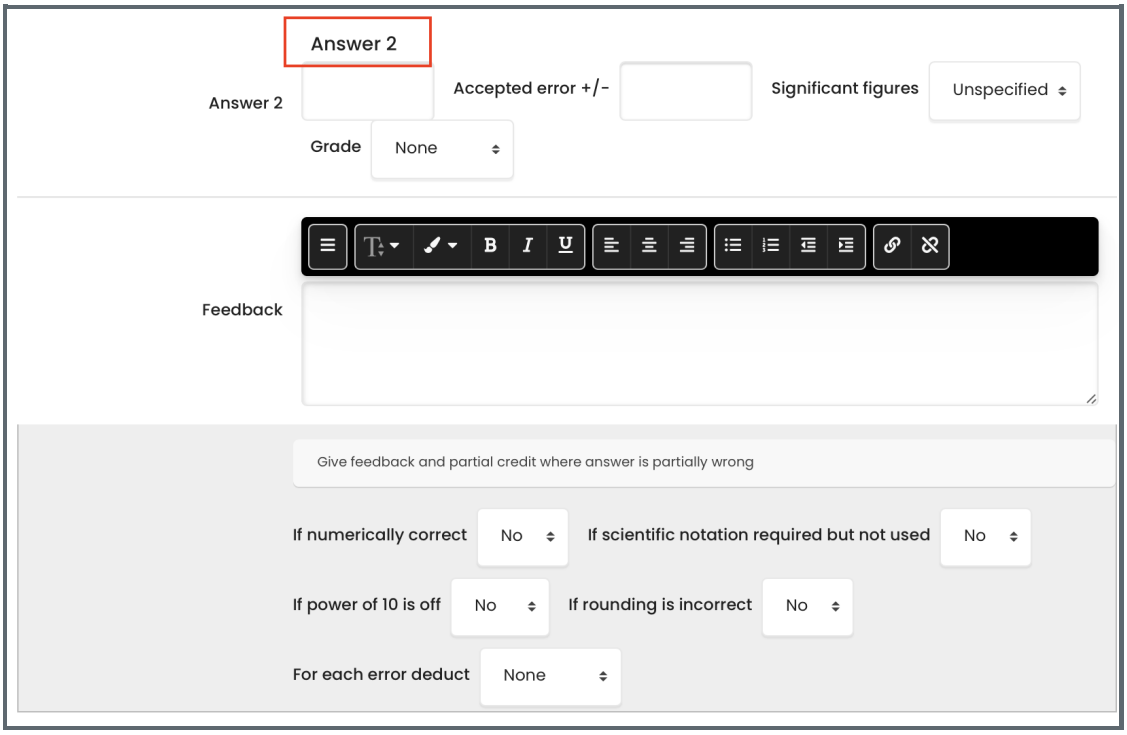
2. You also need to add error (so-called 'tolerance') and a grade to this answer.

3. Define the grade of this answer. If it is the correct answer, it is 100% in grade.



Step 10: Give partially correct answers (optional)

You can also add partially correct answers with the relevant grades and feedback in 'Answer 2' and 'Answer 3' part (optional). (If you do not need to do it, you can skip this step.)



Step 11: Save the quest ion

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

Tips:

The random variables, such as variable a and b, need to be covered with ’[[ ]]’, t he 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