Creating Arithmetic Questions in D2L – D2L Tutorial

This tutorial is for faculty who have previous experience using the Quizzes tool and Question Library in D2L. For further information or assistance, go to our Team Dynamix Support portal and click the appropriate Category to submit a ticket.

Scenario

This tutorial will describe how to create **Arithmetic** questions for use in the Quizzes tool in D2L. Note that this question type uses an older creation interface that is different from the Multiple Choice question creation interface, and is a bit more complicated to navigate.

Steps

1. Go to the **Quizzes** tool in your course.

2. Click **Question Library**.

3. Create a **New ➔ Section** or click on the title of an existing **Section** (folder) in which to save your Arithmetic question.

4. Click **New** and select **Arithmetic Question (2 + 2)** (you may need to scroll down in the list).

5. Leave the **Title** box blank. Give your question a **Points** value, and feel free to leave the **Difficulty** at 1 (use the **Difficulty** level feature to help you sort your questions for a quiz, so change the value if you like).

    Add your question to the **Question Text** box. Because this will be what students will need to answer, include all variables for the system to generate. Each variable must be enclosed in curly brackets **{}**. Arithmetic questions are random for each student by default, and the system will use your input in the **Question Text** box to determine the variables.

    For our example, there are two variables, **x** and **y**, and the **Question Text** is: If you purchase **{x}** kg(s) of fruit at $**{y}** per kg, how much will your fruit cost?

New Arithmetic Question

General

Title

[   ] (optional)

Points *

[1]

Difficulty

[1 ⌄]

Question Text *

| Paragraph ⌄ | **B** | *I* | U ⌄ | A⁄ | ≡ ⌄ | ☰ ⌄ | ▶‖ | ∂° | 🖾 | Σ ⌄ | ▦ ⌄ | + ⌄ | Lato (Recom... ⌄ | ⋯ | ⤢ |
| 17.1px ⌄ | ᴘ | ✎ | ≝ | 🔍 | </> | ↺ | Ⅽ |

If you purchase {x} kg(s) of fruit at ${y} per kg, how much will your fruit cost?|

Image

[Insert an Image]

[**Save**] [Save and Copy] [Save and New] [Preview] [Cancel]

6. Scroll down to add any required images using **Insert an Image**, or to select **Allow attachments to support answers** if the students will be uploading their work as an attachment. Then scroll to the **Formula** box and enter the formula that will be calculated using the variables in your Question Text.

   In our example we have added the formula **{x} * {y}** with each variable in curly brackets. Note that the basic math operators used here are ***** for multiplication, **/** for division, **+** for addition, and **–** for subtraction) as well as those listed at the end of this tutorial.

7. From the **Answer Precision** drop-down menu, select the number of acceptable decimal places allowed in a response, and select **enforce precision** to require correct answers to contain this specific number of decimal places. In this example, we have set the precision to **2** decimal places because we are dealing with money.

   Use **Tolerance** levels to accept near-accurate, estimated, or rounded answers. Set the **Tolerance** for how close you want the answer to be to the correct answer. Select either Units or percent but not both. For this example, we have chosen a **Tolerance** in units at plus or minus 0.02.

8. The **Units** box contains a written expression if required for the answer, for example amps, dollars, lbs, kg, etc. Anything entered here will need to be exactly matched in the student answer and can be assigned points. You will also need to select an **Evaluation Option** (case insensitive, case sensitive, or regular expression) to go with your units. For this example, we are leaving **Units** blank.

Units

Worth: 0 ⌄ % of Points

Evaluation Options:
- ⦿ Case Insensitive
- ◯ Case Sensitive
- ◯ Regular Expression

9. In the **Variables** section, enter the variables required for the question. This is the range of numbers the computer can pick from to generate each new question. Each variable in your question must have a set of values assigned. Variables are **Name**, **Min**, **Max**, **Decimal Places**, and **Step** (the **Step** being how D2L will move through the values to display).

In our example, **x** is the weight and **y** is the price. For x (weight), the **Min** is 0.5 and the **Max** is 10 with the **Step** of 0.5. Therefore, the values generated for the students for x will be between 0.5 and 10 and go up by .5 (0.5, 1.0, 1.5, and so on) so you won't get anything that isn't 0 or 0.5.

For the price, or y, the values generated will be anything within a .01 cent value between 1 and 6 dollars. Note that you can leave the **Step** fields blank. Click **Add Variable** to add more variable, or click the trashcan at the right to delete a variable.

Variables

+ **Add Variable** 1

#	Name	Min	Max	Decimal Places	Step	Remove
1	x	0.5	10	2 ⌄	0.5	🗑
2	y	1	6	2 ⌄	0.01	🗑

10. To verify your formula, click **Test**. A dialogue box will appear with an example of the entry.

Formula *

{x}*{y}   Test   ?

Answer Precision

2   ✔ enforce precision

Tolerance

● units +/- 0.02
○ percent +/-

Units

Worth: 0   % of Points

11. Based on our example, the **Test** generated has the variables assigned values of **x=5.5** and **y=3.95**. The **Original Formula** is shown as **{x}*{y}**, the **Actual Formula** is the formula containing the assigned variable values (**5.50*3.95**), the **Solution** (**21.73**), and the **Range** (here, **21.71 to 21.75**) which is the range of accepted correct answers based on the tolerance that was set of plus or minus 0.02. Click **Done** to close the view.

Test Arithmetic Question

Variables

Name	Value
x	5.5
y	3.95

Original Formula

{x}*{y}

Actual Formula

5.50*3.95

Solution

21.73

Range

21.71 - 21.75 (21.73 ± 0)

Done

12. Click **Preview** to see a sample of your question, and click **Save** when done.

New Arithmetic Question

General

Title

[   ] (optional)

Points *

[1   ]

Difficulty

[1 ˅]

Question Text *

| Paragraph ˅ | **B** | *I* | U ˅ | A⁄ | ☰ ˅ | ☰ ˅ | ▤ | 𝒫 | ▨ | Σ ˅ | ▦ ˅ | + ˅ | Lato (Recom... ˅ | ••• | ⤢ |

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If you purchase {x} kg(s) of fruit at ${y} per kg, how much will your fruit cost?|

Image

[Insert an Image]

| Save | Save and Copy | Save and New | Preview | Cancel |

Formula Information

All variables **must be enclosed** in curly braces, i.e. 2 * {x} + {y} - {z}. Here are some of the supported functions:

Enumerations	Description
+, -, *, /, \, ^	Basic mathematical operators
%	Modulo (remainder) operator
{x}^{y}	x to the power of y
abs({n})	Absolute value of n
cos({n})	The cosine of n (in radians)
sin({n})	The sine of n (in radians)
sqr({n})	The square root of n
tan({n})	The tangent of n (in radians)
log({n})	The log base 10 of n
ln({n})	The log base e of n
atan({n})	The inverse tangent of n
sec({n})	The secant of n
cosec({n})	The cosecant of n
cotan({n})	The cotangent of n
Factorial	Factorial of n, or (n!)
exp	The power of natural log (e)
pi	pi 3.14159 (accurate up to 50 decimal places)
e	e 2.71828 (accurate up to 50 decimal places)

Things to Remember

Ensure you enclose all your variables in **curly brackets {}** in both the questions text and the formula.
Double check the order of your formula and that you have used the correct variables in the correct order.
Any letter (A-Z) can be used as a variable.