

Using Calculated Multichoice Questions (CMQs)

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Objectives

- What are **calculated multichoice** questions?
- Advantages and disadvantages
- Provide an illustration
- Share a “real” example
- Summary and some notes

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What are calculated multichoice questions?

- **Multiple choice**
 - Easy to grade. **Automatic** by Moodle.
 - Saves the time grading. Improves **productivity**.
 - Randomized **re-attempts** easily implemented.
 - One **exact** answer. No student data entry errors.
 - Students typically **explore** wrong answers, too.
- **Calculated multichoice**
 - Uses **variables** in question and in answers.
 - “**Algorithmically**” generated questions.
 - Easily provides **many versions** of the question.
 - Avoids students **sharing answers** (cheating).
 - Variables can be **synchronized** across multiple questions

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Calculated MultiChoice Characteristics

- **Advantages**
 - Can create the “**correct**” answer
 - Can have “**constant**” answers
 - Can have “**text**” answers, like “**none of these**”
 - Can create calculated **incorrect** answers
 - Can include **words, after or before**
 - Can have many choices (many more than 4)
 - **Many functions** are available
 - Can include “**bogus**” variables
 - Multiple questions can “**share**” variables!!!
- **Disadvantages**
 - More complex to set up

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An Example – Geometry **Area** and **Perimeter** of Rectangle

- Two variables: length (**x**) and width (**y**)

Two problems:

1. Calculate the **area** of a rectangle
2. Calculate the **perimeter** of a rectangle
 - Purposely use the **same** x and y letters
 - To demonstrate **private** and **shared** datasets

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Let's get started!

1. Create a quiz (framework)
2. Create a quiz category
3. Create the first question (use most defaults)
 - Variables in curly brackets {=...}
4. Create a second question (using defaults)
5. Add the questions to the quiz
6. Observe via previews

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Add the Second Question

- If it makes sense, just duplicate the first question
- **Synchronized Questions**, three conditions:
 1. The questions are kept in the **SAME** question bank category
 2. The questions must have the same number of **versions**
 3. We have to instruct Moodle to **synchronize** the datasets

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My Course Quiz Example

- Course: Business Analytics
- Exam Topic: Descriptive Statistics
 - Mean, Mean Deviation, Median, Mode, Standard Deviation, Range, Minimum, Maximum, Variance
- 40-45 Students
- Unique "Dataset"

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Summary

- CMQs are a powerful question type
- CMQs are a bit complex
- CMQs take time to learn and master
- CMQs are great for avoiding "cheating"
- CMQs do not exist in other LMSs, giving Moodle a **powerful** question type

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Limitations and Notes

- This is **not Excel**. More functions are needed.
- Going backwards between setup screens is tricky. Start at beginning and step forward.
- Removing one specific "set" is difficult.
- It would be nice to be able to use a "**Description**" question type with variables.
- Better **documentation** is needed.
- Requires **experimentation and practice**.

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The End

- I hang out in the Moodle.org forums, if you need me.
- For **more support**, including this video, go to

www.rjerz.com



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