

# 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

# 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

# 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

# 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

# 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**

# 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

# 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”**



# 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

# 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**.

# 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](http://www.rjerz.com)

