Mastery Skill Quizzes
Make the Difference

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Rationale

- Conceptual understanding comes first.
- As students progress in mathematics, they are expected to be “fluent” in certain skills and algorithms and are expected to recall fundamental properties and definitions.
- Students often come to us with critical “holes,” despite having passed previous courses.
Mastery Skill Quizzes

- Identify the skills, algorithms, properties, or definitions that are fundamental for success in this course and in the next course(s).
- Write short (5 min) quizzes that assess performance on these skills. Prepare a bank of 10 different forms of each quiz. Specify technology.
Mastery Skill Quizzes

- Students must pass each skill quiz without error or they fail the course (no matter what their other performance might be.)
- Skill quizzes are now part of the culture of developmental mathematics at LCSC.
Mastery Skill Quizzes

- Give new skill quiz at end of class.
- Give two or three retakes at end of class. Retakes also during office hours.
- A skill quiz may be taken only once on a given day.
- Announce the retakes to be given in the next class; have students sign up for retakes they plan to take.
- Regular grade reports are essential.
Elementary Algebra

SQ C  F2008
NO CALCULATOR. Show your work.

1. \[ -2 - (-3 + 4 \cdot 2) - 20 \]
2. \[ 12 - 8 \div 2 \cdot 3^2 \]
3. \[ -3^2 - 7(2 - 6) \]
4. \[ 16 \div 2 \cdot 4 - 50 \]
You may use a calculator. Show your work.


\[ \frac{3}{5}x + \frac{4}{3} = \frac{2}{9} \]
State the rule in words or using variables.
1. Product rule of exponents
2. Power rule of exponents
3. Quotient rule of exponents

Simplify.
4. \[ \frac{45x^{11}y^3z^{-4}}{72x^9y^{-11}z} \]
5. \[ (3x^{-4}y^7z)^2 \left( 4x^{-7}y^8z \right) \]
Intermediate Algebra

SQ14A    F2008

1. Define: zero of a function

2. Use your graphing calculator to find any real zero(s) of \( f(x) = -3x + 4 \)
   Sketch the graph in a rectangle; describe the window.

3. Use an algebraic method to find the zero(s) of \( f(x) = x^2 + 8x + 15 \)
Intermediate Algebra

SQ17A F2008

Solve. If necessary, round to the ten-thousandths place. Scientific calculator only.

1. \( \log_4 x = 2.9 \)

2. \( 3^x = 24 \)

3. State the power rule of logarithms.
Intermediate Algebra

SQ30 RETAKE  F2008

Use interval notation to describe the domain of each function.

1. \( y = 3x + 10 \)

2. \( y = \frac{x - 1}{x^2 - 9x - 22} \)

3. \( y = \sqrt{6x - 12} \)

4. \( y = 5^x \)

5. \( y = \log_3(x) \)

6. \( y = |3x + 1| - 8 \)
Finite Mathematics

Skill Quiz 14  Standard Deviation

Find the standard deviation for the sample. You may use a four function calculator on this skill quiz. Show your thinking.

47, 51, 80, 91, 85
Calculus I

Skill Quiz 8
Using the graph of $f(x)$ shown, approximate the following limits:

- $\lim_{x \to 0} f(x)$
- $\lim_{x \to -2} f(x)$
- $\lim_{x \to 2} f(x)$
- $\lim_{x \to -4^+} f(x)$
- $\lim_{x \to -4^-} f(x)$
- $\lim_{x \to -4} f(x)$
Mastery Skill Quizzes

- Identify the main skill of the quiz skill. Identify other skills that can mask mastery of the main skill. Sometimes you want to include them, sometimes not.
- You can’t test every “type” of problem on a skill quiz. 5 minutes; random selection by form.
Advantages

- Students are aware of their current skill level and skill deficits. No magic thinking.
- Early warning of misplacement.
- Students cannot skip skills and still pass.
- Students tend to pay more attention to homework which means they are better prepared to learn in class.
- Excellent for Accreditation; course and program assessment.
Disadvantages

- Faculty workload
- Extra Stress at end of term