



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.
$$\frac{16 \div 2 \cdot 4 - 50}{2}$$



Elementary Algebra

SQ H RETAKE F2008

You may use a calculator. Show your work.

1. Clear the fractions. Solve. Check.

$$\frac{3}{5}x + \frac{4}{3} = \frac{2}{9}$$

Intermediate Algebra

SQ2A F2008 Scientific calculator only.

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.
$$(3x^{-4}y^7z)^2(4x^{-7}y^8z)$$



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

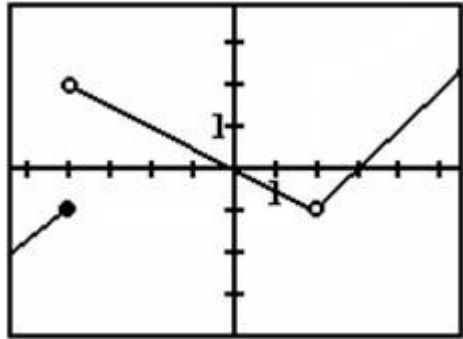
Find the standard deviation for the sample. You may use a four function calculator on this skill quiz. Show your thinking.

47, 51, 80, 91, 85

Calculus I

Skill Quiz 8

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



$$\lim_{x \rightarrow 0} f(x)$$

$$\lim_{x \rightarrow -2} f(x)$$

$$\lim_{x \rightarrow 2} f(x)$$

$$\lim_{x \rightarrow -4^+} f(x)$$

$$\lim_{x \rightarrow -4^-} f(x)$$

$$\lim_{x \rightarrow -4} f(x)$$



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



Disadvantages

- Faculty workload
- Extra Stress at end of term