After studying, place a checkmark next to those outcomes you feel you understand and/or are proficient with. Place a question mark next to those outcomes which you feel your skills/understanding is questionable. Turn in with your test.

To be successful in Mth 85 you should be able to …

Basics

1. Know the basic vocabulary of mathematics at the pre-algebra level. e.g. radius, tenths, tens, etc

2. Know the common abbreviations in mathematics at the pre-algebra level. e.g. LCD, $\approx$, $\neq$, π, ft, in, rpm, etc

3. Perform basic calculations ($+, -, \times, \div, a^n, \sqrt{x}$) with real numbers, decimals and fractions.

4. Solve basic applications involving real numbers, decimals and fractions.

5. Use *order of operations* to perform extended calculations with parentheses, exponents, radicals.

6. Substitute values into formulas and evaluate the expression. e.g. $c = \sqrt{a^2 + b^2}$; a = 3, b = 4 → c = 5

7. Compute the area and perimeter of: circles, triangles, rectangles, trapezoids and parallelograms.

8. Evaluate expressions with absolute value.

9. Round decimal to a given fraction form. e.g. $0.56 \approx 9/16$

10. Apply the rules of exponents to simplify or evaluate expressions. e.g. $3^5 \times 3^4 = 3^9$, $10^{-3} = 1/10^3$, $(2x^2)^3 = 2^3 x^6$

11. Switch between decimal and scientific notation.

12. Evaluate expressions using scientific notation.

13. Evaluate expressions using formulas.

14. Read/write values with significant digits correctly identified.

15. Apply the rules of rounding and approximate values in calculations with addition and subtraction.

16. Apply the rules of rounding and approximate values in calculations with multiplication and division.

17. Apply the rules of rounding and approximate values when evaluating expressions/formulas.

18. Plot/read (x, y) coordinates on a graph.

19. Interpret the behavior inherent in a graph.

20. Calculate volumes of spheres, cylindrical shapes and pyramidal shapes.

Measurement (include US, metric)

1. Understand and correctly apply the notation & vocabulary of US and metric measurements.

2. Know the basic units of US Standard measurement and be able to convert to alternate units.

3. Know the basic units of metric measurement and be able to convert to alternate units.

1. Add/subtract/multiply divide units of measurement. e.g. 4' 3 ⅜" + 5' 9 ¾"; 4' 3 ⅜" × 5' 9 ¾"

2. Change between alternate units of compound measurement. e.g. cfs → gpm; cu-in/hr → cu-ft/sec

3. Reduce formulas/expressions to a single value with simplified units. e.g. r = 15", h = 3' 6", A = $2\pi rh \approx 27.5$ ft^2

4. Change between alternate prefixes for units. e.g 2.5 Mw → 2,500 Kw

5. Convert decimal feet to feet-inches-16ths of an inch. e.g. 4.7865 → 4' 9 7/16"

Direct Proportion

1. Find equivalent fractions/ratios. e.g. 3/5 = x/10

1. Correctly identify applications as direct proportions.

2. Setup and solve direct proportions.

Percents

1. Switch between *percent* ↔ *decimal* ↔ *fraction.* e.g. $60\% \leftrightarrow 0.60 \leftrightarrow 3/5$
2. Perform basic percent calculations. e.g 20% of $45 \to 9,\ 13$ out of 20 correct $\to 65\%$
3. Correctly identify Base, Rate, Amount and Net in percent applications.
4. Solve percent applications. e.g. Compute $-tax and net pay from gross pay & %-tax.
5. Compute percent efficiency.
6. Compute percent concentration.

Relative and Absolute Error

1. Compute absolute and relative error.
2. Determine initial measurements necessary to obtain a final accuracy.

Algebra

1. Know and use the terminology of algebra. e.g. Distributive rule, coefficient, like terms
2. Solve linear equations.
3. Solve literal equations (rearrange formulas).
4. Solve basic radical equations. e.g. Solve $10\sqrt{x+3}\ 16 = 56$ for x
5. Solve basic quadratic equations. e.g. Solve $10(x+3)^2 - 16 = 56$ for x
6. Switch between algebraic forms and text forms. e.g. the base is twice the height $\to\ B = 2H$
7. Know and use the terminology of proportion. e.g. inverse proportions; inverse square proportions
8. Evaluate expressions using function notation. e.g. $f(x) \to f(t),\ f(2)$

Geometry

1. Know and use the terminology of geometry. e.g. right angle, parallel, DMS, supplement
2. Convert among angle representations. bearing ↔ azimuth ↔ θ-angle ↔ radians ↔ revolutions
3. Switch between DMS and decimal degrees. e.g. $50.6750 = 50°\ 40'\ 30''$
4. Convert multiple revolutions to principle angle. $780° \to 60°$
5. Find missing circle dimensions from partial information.
6. Compute entire (or partial) area or circumference of a circle.
7. Solve applications involving circles.
8. Apply rules of complements, supplements, etc to find missing angles from partial information.
9. Use the Pythagorean Theorem in 2-D and 3-D applications.
10. Use similar triangles in geometric applications.
11. Switch between pitch ↔ slope ↔ grade.
12. Use slope in geometric applications.
13. Find the area or volume of complex shapes. Includes Heron's and Polygon-Fit formulas.

Writing and Working in a Group

1. Effectively communicate mathematical concepts in writing using correct mathematical notation.
2. Work collaboratively with your peers on projects or activities to explore mathematical concepts.