College Algebra
Test 1 outline

NUMBERS, ARITHMETIC (1.1, prerequisites)
• Given a set of numbers in fraction or decimal form, put them in order from lowest to highest.
• Convert a number from scientific notation to decimal form, and the other way around.
• Given an old value and a new value, calculate the percent change.

GRAPHING, DISTANCE (1.2)
• Given a point in the x-y plane, write the x- and y-coordinates. Given (x, y), plot the point.
• Given two points in the x-y plane, calculate the distance between them.

CIRCLES (1.2, R.1, prerequisites)
• Understand that a circle is about 3 times as long around as it is across.
• Know that the circumference of a circle is exactly \( \pi \) (or about 3.14) times the diameter.
• Given an equation of a circle, state the center and radius.
• Given the center and radius of a circle, write an equation of the circle.
• Given a graph of a circle, write an equation of the circle.

FUNCTION CONCEPT (1.3)
• Know that a function returns one output value for each input value.
• Be familiar with function notation and language:
  Understand that in the statement "f(x) = x+5",
  \( f \) is the name of the function, \( x \) represents an input value, and \( f(x) \) represents the output value.
  Read \( f(x) \) as "\( f \) of \( x \)."
• Given a description (formula, table, graph, or words) of a function and a specific input value, use it to evaluate the function.
• Given a description of a function in words, give a formula for that function.
• Given a formula for a function, make a table for that function.
• Given a table for a function, draw a graph of that function.

RATES; LINEAR FUNCTIONS (1.4, 1.5, 2.1, 2.2, 2.3, 2.4)
• Calculate the average rate of change of a function as \( \frac{\text{change in output}}{\text{change in input}} \).
• Given a symbolic (formula) description of a function, tell if it is linear or nonlinear.
• Given a numerical (table) or graphical description of a function, tell if it could be linear or not.
• Given a description (formula, table, graph, or words) of a linear function, give the other descriptions of that function.
• Write the equation of a line in one form (point-slope, slope-intercept) or the other.
• Given two points in the x-y plane, calculate the slope of the line passing through those points.
• Given two points in the x-y plane, write an equation of the line passing through those points.
• Solve any linear equation in one variable, by first combining like terms if needed.
• Know that the graph of a linear function is a (straight) line.
• Solve any linear inequality symbolically (p. 133) and graphically (p. 134).
• Solve applied problems using linear functions, equations, and/or inequalities.

PIECEWISE-DEFINED FUNCTIONS (2.1, 2.5)
• Given the formula for a piecewise-defined function, graph the function.
• Given the formula for a piecewise-defined function, evaluate it at a particular input value.
• Solve simple equations and inequalities involving absolute value.