

# ACT/MME/WorkKeys Hot Topics ~ Mathematics ~

Quick ways to pick up points on the ACT/MME/WorkKeys tests

Calculators and Pencils:

- Be sure your calculator has fresh batteries.
- Use a calculator you already know how to use; during the test isn't the time to learn to use a new one.
- Bring a second calculator, just in case your first choice calculator quits (remember Murphy's Law).
- Before the test, make sure the mode/display settings are appropriate for the test question you're likely to see (degrees vs. radians; "float" vs. "fixed" decimal)
- Be sure to have several pencils available. Mechanical pencils are fine, as long as their leads are equivalent to #2 pencils. Be sure to have a couple erasers (on the pencils and/or separately).

WEAR A WATCH and keep track of the time yourself.

WorkKeys

- Even if you are in an advanced mathematics course (Algebra 2, Precalculus/Trigonometry, Calculus, any AP course), be sure you can fluently solve basic applied mathematics problems. See your problem packets for the types of problems you can expect.
- Be sure you can quickly and easily work with fractions, decimals, percents; applying formulas; estimating reasonable answers.
- Other areas to be sure you understand are sales taxes, simple interest, tips, measurement equivalencies (e.g., 12 in = 1 ft).
- WorkKeys is a GREAT place to pick up points easily!

ACT/MME

- Practice using the Pythagorean Theorem in geometric diagrams and in applied situations.
- Know the basic Pythagorean triples, and how to scale them to solve problems. Be sure you can recognize these: 3-4-5; 8-15-17; 5-12-13; 7-24-25 (9-40-41 and 11-60-61, too).
- KNOW, and know how to apply, all the formulas for perimeter, area, surface area, and volume.

- Be able to express results in simplest radical form, and in terms of pi.
- Know your perfect squares from  $0^2$  through  $30^2$ . Know your perfect cubes from  $0^3$  through  $10^3$ .
- Know the properties of  $30^\circ$ - $60^\circ$ - $90^\circ$  and  $45^\circ$ - $45^\circ$ - $90^\circ$  triangles – fluently; be able to apply these properties to geometric diagrams and to applied situations. Be fluent in working with expressions involving  $\sqrt{2}$  and  $\sqrt{3}$ .
- Know your trigonometric ratios (all 6 of them); be able to find these given a right triangle, whether in a geometric diagrams or in applied situations.
- Know the distance formula, midpoint formula, and quadratic formula, and how/when to apply these.
- Be able to reconstruct the unit circle and find sine, cosine, and tangent of angles which are multiples of  $30^\circ$  or  $45^\circ$ .
- Know that  $\sin^2 \theta + \cos^2 \theta = 1$ , and that  $\tan \theta = \frac{\sin \theta}{\cos \theta}$ ; given  $\sin \theta$ , find  $\cos \theta$ ; find  $\tan \theta$  from these.
- Know and be able to apply the properties of triangles, quadrilaterals, and circles; with circles, know and be able to apply all the angle and segment properties.
- Be able to read, interpret, and construct statistical graphs: line plots, scatter plots, dot plots, box-and-whisker plots, circle graphs, histograms; know how to find and interpret the 5-number summary for a data set.
- Know how to find and interpret the arithmetic mean, median, mode, range, and interquartile range of a data set; know how outliers affect all of the above.
- Be able to identify graphing and surveying practices which lead to bias and/or misinterpretation.
- Know how to use the Fundamental Counting Principle (Basic Counting Principle, Basic Multiplication Principle) to find combinations and permutations; know how to use a tree diagram to find probabilities.
- Know how to find and interpret probabilities of simple, compound, and complementary events.
- Practice your logical reasoning: make and interpret Venn diagrams; know your hypothesis from your conclusion; given a statement, find the converse, inverse, and contrapositive.