

9th, 10th, & 11th Grades Math TAKS

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There are numerous websites available for teachers and students to make math more exciting and fun as well as prepare students for any type of test. I have listed a few of the websites below that may be of interest.

✚ www.Coolmath.com – This site provides math practice for kids ages 13-100 and lessons for teachers of all grade levels.

✚ www.mathforamerica.com - This site includes many links to other math websites which includes a site for teachers to create their own *Jeopardy* game.

✚ www.aplusmath.com – This site includes games for various levels and printable worksheets for teachers.

✚ www.sosmath.com - Intended as an online tutorial for high school students, this site contains explanations and examples for a variety of topics including: Algebra 2; Pre-Calculus; Calculus. Also included is the Cyberexam section, which contains review tests and quizzes for the subjects mentioned above (complete with answers).

✚ <http://themathworksheetsite.com> - The free section of this website lets you make worksheets with answer keys. There is also a worksheet maker that will generate coordinate planes.

✚ www.studyisland.com – This site has information available for just about any state in the U.S. This site does require a subscription, but it is filled with TAKS prep material.

The Texas Assessment of Knowledge and Skills, or TAKS, test began its development process in the summer of 1999, although the actual high stakes test was not given until the spring of 2003. The development of this test went through several stages, and various drafts of the test were made along the way. Committees of Texas educators for each grade level and subject area determined which TEKS student expectations should be tested on a statewide assessment. Two key questions needing to be answered were: 1) Are these objectives critical to measure on a statewide assessment?; and 2) Have the students received adequate instruction on these objectives to show mastery by the spring of the school year?.

Throughout this development process, TEA relied heavily on educator input.

Each year TEA holds two different types of committee meetings, one before and one after field-testing. The committee meeting before field testing items is called review and revision. This committee looks at 250

proposed test items over the course of two days. During this time the committee may edit any test item or throw it out altogether. The committee meeting after items have been field-tested is called data review. This committee also looks at 250 items, but these items have already been tested. The committee looks at the data that comes with each test item and determines if the item is too difficult, too easy, or biased against any one group, in which case the committee may throw out that item. The data review committee may **not** edit a test item for any reason.

The TAKS test is separated into ten different objectives which are the same for grades 9-11. Although the objectives remain the same for all high school level tests, the degree of difficulty increases from one grade to the next. The table below provides a blueprint for the math test at each grade level.

Objectives	Grade 9	Grade 10	Grade 11
1. Functional relationships	5	5	5
2. Properties & attributes of functions	5	5	5
3. Linear functions	5	5	5
4. Linear equations & inequalities	5	5	5
5. Quadratic & other nonlinear functions	4	5	5
6. Geometric relationships & spatial reasoning	4	5	7
7. 2D & 3D representations	4	5	7
8. Measurement	6	7	7
9. Percents, proportions, & statistics	5	5	5
10. Mathematical processes & tools	9	9	9
Total number of items	52	56	60

The objectives for the high school level TAKS tests include concepts from 8th grade math, as well as Algebra I and Geometry. Test items from the Geometry curriculum are not included on the 9th or 10th grade tests because some students may not have had the opportunity to learn these concepts due to the fact that there is no state mandated course sequence for math. Therefore, these particular test items are not seen until the exit level test.

Objectives 1-5 receive much emphasis on the test at all three levels, but the percentage of Algebra I items is less on the Exit-Level test due to greater emphasis placed on Geometry. Objectives 6-8 include various aspects of Geometry and measurement. Since some students have not completed the Geometry course by 9th or 10th grade any geometry-related

test item is taken from the 8th grade TEKS. Objectives 6-8 receive much greater emphasis on the Exit Level test since most 11th graders have completed Geometry. This group of objectives is without a doubt the weakest area for most students, especially at the exit level. Objective 9 consists of problems pertaining to probability and statistics and tends to remain constant on all three high school tests. Finally, Objective 10 includes problems that require students to link math skills from different areas. This objective includes more problems than any other objective and combines content from multiple objectives.

Every grade level is provided a separate formula chart for reference when necessary. The exact same formula chart is also found in the test booklet at the beginning of the mathematics test. The formula charts have changed over the years. The separate chart now has a metric ruler on one side and a customary ruler on the other side for students to use if any measuring is necessary. The spring of 2007 brought about another addition to the formula chart. Students are now given the meaning of the “P” and “B” that appear in some formulas, such as volume of a cylinder and a cone, as well as surface area of a prism or pyramid. Another significant change was the addition of the lengths of sides of special right triangles. This is the most useful addition that has been made because until this year students had to have the special right triangle information committed to memory.

Graphing calculators are a must on the high school tests. Every student must have access to some type of graphing calculator during the mathematics test. There are two stipulations for the kind of calculator allowed for the test: 1) it cannot have a typewriter style keypad, and 2) it cannot have a computer based algebra system. Since the districts are responsible for providing the calculators, the state has made sure the math tests are given on different days. Every calculator that will be used during testing must have the memory cleared prior to each mathematics test. Graphing calculators come with many programs when they are purchased; it is the school's responsibility to remove these programs prior to testing.

Vocabulary is yet another obstacle for students at the secondary level. Words that one might think would not present any problems at all have these students taking a wild guess. For example, the words "apparent" and "valid" give students trouble. But there are mathematical terms used that many students are not familiar with for one reason or another, such as "iteration", "tessellation", and "rate of change". Iteration and tessellation are math vocabulary words students do not see consistently from one course to the next. "Rate of change" is a phrase used interchangeably with the term "slope". Students are taught the term slope for many years, and teachers do not always connect this term with

rate of change. Vocabulary is an area that should be stressed in math classes.

The passing rate for each test at the high school level is different, as is the rate required to receive a commended score. The table below shows the number of correct answers needed to pass and to receive the commended rating as well as the percentages for each.

Grade Level	Passing #	Passing %	Commended #	Commended %
9 th	31/52	60%	45/60	87%
10 th	32/56	57%	50/56	89%
11 th	33/60	55%	53/60	88%

The table below shows the state passing rate for 2006 and 2007, as well as the percentage of students who reached the commended level.

Grade Level	2006 State Passing Rate	2006 % Commended	2007 State Passing Rate	2007 % Commended
9 th	56%	14%	60%	17%
10 th	60%	12%	63%	14%
11 th	77%	18%	80%	19%

While the passing rate statewide is increasing, there are still many high school seniors who are without a diploma due to this high stakes graduation test. The Class of 2007 graduated 40,182 less than expected due to failure of one or more portions of the TAKS. This record number

constitutes 16% of the seniors in the state of Texas. According to an article in The Dallas Morning News (May 2007) entitled “16% Fail TAKS Graduation Test”, minority students were hit the hardest by the test requirements. Black students constituted 28% of those failing one or more portions of the test, while 24% of Hispanic students failed at least one portion. TEA officials claim this record number of failures is due to a higher passing standard which requires students to answer more questions correctly than in previous years.

Secondary math departments were able to adopt new textbooks in the spring of 2007 for the 2007-2008 school year. Teachers finally have materials directly aligned with the TAKS which is something teachers had to put together on their own prior to this upcoming school year. The textbooks include TAKS practice problems in each section of the chapters, as well as a TAKS review at the end of each chapter. This will help students become familiar with the problems that may appear on the test. Most of the textbook publishers also included TAKS preparation workbooks for the students along with transparencies for teacher use. With the increase in technology usage in the classroom today, the publishers also provided PowerPoint presentations that coincide with the textbook. Finally, the publishers provided a CD-ROM with a Jeopardy-style game to use for test review and TAKS review. The publishers have done a good job of providing teachers with more TAKS preparation material than has been available in the past.