Texas Assessment of Knowledge and Skills - Answer Key

Grade: 08
Subject: Mathematics
Administration: Spring 2003

Item Number	Correct Answer	Objective Measured	Student Expectations
01	A	02	8.4 (A)
02	G	01	8.1 (B)
03	D	05	8.12 (C)
04	G	05	8.13 (A)
05	D	06	8.14 (B)
06	F	06	8.14 (C)
07	B	04	8.9 (B)
08	J	05	8.11 (B)
09	B	01	8.2 (A)
10	J	03	8.6 (B)
11	A	01	8.2 (C)
12	G	02	8.5 (A)
13	D	03	8.7 (B)
14	F	05	8.12 (B)
15	C	02	8.3 (B)
16	J	05	8.13 (B)
17	A	05	8.12 (A)
18	J	06	8.15 (A)
19	C	04	8.9 (A)
20	G	06	8.16 (A)
21	238.22	01	8.2 (B)
22	H	05	8.11 (A)
23	B	04	8.8 (A)
24	H	01	8.2 (B)
25	B	06	8.14 (A)
26	H	01	8.2 (C)
27	A	02	8.3 (B)
28	G	04	8.8 (C)
29	D	02	8.5 (B)
30	G	01	8.1 (C)
31	C	03	8.6 (A)
32	J	02	8.3 (A)
33	D	06	8.14 (B)
34	F	03	8.7 (D)
35	B	06	8.14 (B)
36	G	02	8.5 (B)
37	C	03	8.7 (C)
38	G	04	8.10 (B)
39	C	06	8.14 (B)
40	J	02	8.5 (A)
41	B	05	8.13 (B)
42	J	01	8.1 (A)
43	A	03	8.6 (B)
44	J	06	8.16 (B)
45	B	01	8.1 (B)
46	F	01	8.1 (D)
47	B	02	8.4 (A)
48	J	06	8.14 (A)
49	B	02	8.3 (A)
50	F	03	8.7 (A)

Grade 8 Mathematics

Refer to the *TAKS Information Booklet* Mathematics Grades 5-9 or Mathematics Grades 8-11 for a more complete description of the objectives measured.

Objective 1: The student will demonstrate an understanding of numbers, operations, and quantitative reasoning.

(8.1) **Number, operation, and quantitative reasoning.** The student understands that different forms of numbers are appropriate for different situations. The student is expected to

(A) compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals;

(B) select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships;

(C) approximate mentally [and with calculators] the value of irrational numbers as they arise from problem situations (π, $\sqrt{2}$); and

(D) express numbers in scientific notation, including negative exponents, in appropriate problem situations [using a calculator].

(8.2) **Number, operation, and quantitative reasoning.** The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to

(A) select and use appropriate operations to solve problems and justify the selections;

(B) add, subtract, multiply, and divide rational numbers in problem situations;

(C) evaluate a solution for reasonableness; and

(D) use multiplication by a constant factor (unit rate) to represent proportional relationships; for example, the arm span of a gibbon is about 1.4 times its height, $a = 1.4h$.

Objective 2: The student will demonstrate an understanding of patterns, relationships, and algebraic reasoning.

(8.3) **Patterns, relationships, and algebraic thinking.** The student identifies proportional relationships in problem situations and solves problems. The student is expected to

(A) compare and contrast proportional and non-proportional relationships; and

(B) estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates.

(8.4) **Patterns, relationships, and algebraic thinking.** The student makes connections among various representations of a numerical relationship. The student is expected to

(A) generate a different representation given one representation of data such as a table, graph, equation, or verbal description.

Grade 8 Mathematics (continued)

(8.5) **Patterns, relationships, and algebraic thinking.** The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to

(A) estimate, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations; and

(B) use an algebraic expression to find any term in a sequence.

Objective 3: The student will demonstrate an understanding of geometry and spatial reasoning.

(8.6) **Geometry and spatial reasoning.** The student uses transformational geometry to develop spatial sense. The student is expected to

(A) generate similar shapes using dilations including enlargements and reductions; and

(B) graph dilations, reflections, and translations on a coordinate plane.

(8.7) **Geometry and spatial reasoning.** The student uses geometry to model and describe the physical world. The student is expected to

(A) draw solids from different perspectives;

(B) use geometric concepts and properties to solve problems in fields such as art and architecture;

(C) use pictures or models to demonstrate the Pythagorean Theorem; and

(D) locate and name points on a coordinate plane using ordered pairs of rational numbers.

Objective 4: The student will demonstrate an understanding of the concepts and uses of measurement.

(8.8) **Measurement.** The student uses procedures to determine measures of solids. The student is expected to

(A) find surface area of prisms and cylinders using [concrete] models and nets (two-dimensional models); and

(C) estimate answers and use formulas to solve application problems involving surface area and volume.

(8.9) **Measurement.** The student uses indirect measurement to solve problems. The student is expected to

(A) use the Pythagorean Theorem to solve real-life problems; and

(B) use proportional relationships in similar shapes to find missing measurements.

(8.10) **Measurement.** The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to

(A) describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally; and

(B) describe the resulting effect on volume when dimensions of a solid are changed proportionally.

Objective 5: The student will demonstrate an understanding of probability and statistics.

(8.11) **Probability and statistics.** The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to

(A) find the probabilities of compound events (dependent and independent); and

(B) use theoretical probabilities and experimental results to make predictions and decisions.

(8.12) **Probability and statistics.** The student uses statistical procedures to describe data. The student is expected to

(A) select the appropriate measure of central tendency to describe a set of data for a particular purpose;

(B) draw conclusions and make predictions by analyzing trends in scatterplots; and

(C) construct circle graphs, bar graphs, and histograms, [with and] without technology.

(8.13) **Probability and statistics.** The student evaluates predictions and conclusions based on statistical data. The student is expected to

(A) evaluate methods of sampling to determine validity of an inference made from a set of data; and

(B) recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.

Objective 6: The student will demonstrate an understanding of the mathematical processes and tools used in problem solving.

(8.14) **Underlying processes and mathematical tools.** The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to

(A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics;

(B) use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness; and

(C) select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem.

(8.15) **Underlying processes and mathematical tools.** The student communicates about Grade 8 mathematics through informal and mathematical language, representations, and models. The student is expected to

(A) communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

(8.16) **Underlying processes and mathematical tools.** The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to

(A) make conjectures from patterns or sets of examples and nonexamples; and

(B) validate his/her conclusions using mathematical properties and relationships.