

## Table of Contents

Suggestions for the Day of the Exam .....	4
Multiple Choice Test Taking Strategies .....	5
Strategies for the TExES.....	7
The TExES Exams: General Information .....	9
Learner-Centered Proficiencies .....	10
Cooperative Learning.....	11
Bloom’s Taxonomy of Levels of Thinking .....	12
Abbreviations and their Meanings.....	13
Code of Ethics and Standard Practices for Texas Educators .....	14
Field 135: Mathematics 8-12 Test Framework.....	16
Discussion of Competencies .....	26
Domain I – Number Concepts .....	26
Competency 001-Real number system and its structure, operations, algorithms, and representations.....	26
Competency 002-Complex number system and its structure, operations, algorithms, and representations. ....	31
Competency 003-The teacher understands number theory concepts and principles and uses numbers to model and solve problems in a variety of situations.....	36
Domain II – Patterns and Algebra .....	49
Competency 004-Patterns to model and solve problems and formulate conjectures.....	49
Competency 005-The attributes of functions, relations, and their graphs.....	55
Competency 006- Linear and quadratic functions, their algebraic and graphical properties, models to solve problems.....	62
Competency 007-Polynomial, rational, radical, absolute value, and piece wise functions, their algebraic and graphical properties, and suggestions to model and solve problems. ....	75
Competency 008-Exponential and logarithmic functions, their algebraic and graphical properties, and suggestions to model and solve problems.....	85
Competency 009-Trigonometric and circular functions, their algebraic and graphical properties, and suggestions to model and solve problems.....	93
Competency 010-Problems using differential and integral calculus.....	100
Domain III – Geometry and Measurement .....	107
Competency 011-Measurement as a process.....	107
Competency 012-Geometries, in particular Euclidean geometry, as axiomatic systems.....	110
Competency 013-Results, uses, and applications of Euclidean geometry.....	116
Competency 014-Coordinate, transformational, and vector geometry and their connections. ....	118

Domain IV – Probability and Statistics .....	123
Competency 015-The use of appropriate graphical and numerical techniques to explore data, characterize patterns, and describe departures from patterns.....	123
Competency 016-Concepts and applications of probability. ....	128
Competency 017-Relationships among probability theory, sampling, and statistical inference, and how statistical inference is used in making and evaluating predictions. ....	134
Domain V – Mathematical Processes and Perspectives .....	139
Competency 018 – Mathematical reasoning and problem solving.....	139
Competency 019 – Mathematical connections both within and outside of Mathematics and how to communicate mathematical ideas and concepts .....	143
Competency 020 – Planning, organizing and implementing instruction.....	146
Competency 021 – Purpose, characteristics, and uses of various assessments in mathematics, including formative and summative assessments .....	150
Formulas and Definitions Chart.....	155
Sample Problems .....	156
Answers and Solutions.....	173
References.....	176
Glossary and Index .....	179