Mathematics 7 Additions/Revisions

Revised TEKS Student Expectation 7.4A
Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling.

Learning Focus 2.3 – Proportional Reasoning
Students write and solve real-world problems involving proportional reasoning, such as measurement comparisons and cost ratios. Students use intuitive methods such as unit rates and factor of change strategies.

HISD Objectives	Time Allocation	Assessment Connections	Instructional Considerations	Instructional Strategies	Resources
Add revised HISD objectives (revisions indicated by underlined text) to page 9 of HAPG2: **MATH.7.4A** Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, scaling, and sequences of numbers from a variety of representations including verbal descriptions, tables of data, and diagrams.	**No additional time required**	**Existing information of special note on page 10 of HAPG2:** **Formative Assessment 2.3** Students solve a real-world application problem involving measurement conversions and complete a self-evaluation of their solutions (see notes in the Instructional Strategies and Resources columns).	**Existing information of special note on page 10 of HAPG2:** **TAKS Tips** Students must be able to recognize abbreviations of measurement units of all types. Use the Seventh Grade TAKS Measurement and Formula charts available from TEA to help students with this as well as acquainting them with the measurement conversions that might be tested.	**Existing information of special note on page 9 of HAPG2:** **Nonlinguistic Representations** Various real-life problems that enable students to apply the skills involved in proportional reasoning are available in MS TEXTEAMS, Proportionality Across the TEKS. Students examine measurement conversions in the context of proportionality by creating tables and graphs to illustrate various conversions in the activity "Lost and Gained" (see Resources Column).	**Existing resources of special note on pages 9 and 10 of HAPG2:** MS TEXTEAMS, Proportionality Across the TEKS, UT Dana Center • "Lost and Gained", Activities 1 – 4, pp. 215 – 224. Formative Assessment 2.3 includes the following problem and evaluation document from *Middle School Mathematics Assessments*, UT Dana Center • "Bug Juice", pp. 235 – 240 and • 'Middle School Mathematics Assessment Solution Guide", a self-assessment instrument for student use when solving application problems.

Revised TEKS objective 7.4A (continued)
Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling.

Learning Focus 3.1 – Proportional and Non-Proportional Relationships
Students solve real-world problems involving proportional reasoning with data presented in multiple representations (graphs, tables, verbal descriptions, and/or equations). They learn to discriminate between proportional and non-proportional relationships using cues from the various representations.

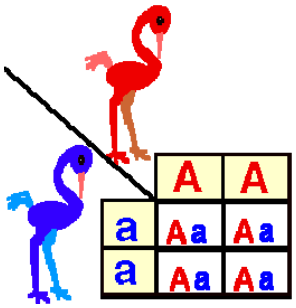
HISD Objectives	Time Allocation	Assessment Connections	Instructional Considerations	Instructional Strategies	Resources
Add revised HISD objectives (revisions indicated by underlined text) to page 4 of HAPG3: **MATH.7.4A** Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, scaling, and sequences of numbers from a variety of representations including verbal descriptions, tables of data, and diagrams.	**No additional time required**	**No changes required**	**Existing information of special note on page 4 of HAPG3:** In this learning focus, Power Objectives 7.3B and 7.13B use a problem-solving model to solve application problems involving proportionality. These problems should involve multiple representations as stated in Power Objective 7.14A and Objective 7.4A.	**Existing information of special note on pages 4 and 5 of HAPG3:** **Cooperative Learning** Organize the class in pairs or small groups and present activities, open-ended problems, or real-world problems in various formats (see Resources column). Ask students how they can use a graph, table, or equation to solve application problems involving proportional relationships. Lead them in discussions regarding how to decide which representation is appropriate for a given situation. **Cues, Questions, and Advance Organizers** Graphic Organizers Use graphic organizers such as a Problem Solving Mat and a Problem Solving Rubric Matrix to guide students through the problem solving process (see Resources Column).	**Existing resources of special note on page 4 of HAPG3:** Textbook Glencoe, *Texas Mathematics*, Course 2, 2007: Ch. 7 resource masters, Word Problem Practice: • Measurement Conversions, p. 25. Templates available for use include: • Problem Solving Mat • Problem Solving Rubric Matrix

Revised TEKS objective 7.4A (continued)
Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling.

Learning Focus 4.3 – Multiple Representations of Functions Students generate multiple representations of a functional relationship.					
HISD Objectives	**Time Allocation**	**Assessment Connections**	**Instructional Considerations**	**Instructional Strategies**	**Resources**
Add revised HISD objectives (revisions indicated by underlined text) to page 9 of HAPG4: **MATH.7.4A** Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, scaling, and sequences of numbers from a variety of representations including verbal descriptions, tables of data, and diagrams.	**No additional time required**	**Add to existing information:** **TAKS (Obj. 2) Gr. 7** 2009: #25(B)	**Add to existing information on page 10 of HAPG4:** **TAKS Tips** Problems involving measurement conversion formulas may involve students identifying the proper equation to be used in a specific conversion (see Assessment Connections column). Reference work done previously regarding measurement conversions in Learning Foci 2.3 and 3.1.	**No changes in Instructional Strategies column**	**No changes in Resources column**

Revised TEKS statement 7.10
The student recognizes that a physical or mathematical model (including geometric) can be used to describe the experimental and theoretical probability of real-life events.

Learning Focus 5.3 – Data Analysis and Sample Spaces
Students explore data collection and use graphical representations to create data displays (line plots, line graphs, bar graphs, stem and leaf plots, circle graphs, and Venn diagrams) of real-world situations. They use the displays and statistical measures of central tendency and variability (mean, median, mode, and range) for data analysis and interpretation. Sample spaces are constructed and described for simple and composite events using lists, tree diagrams, and geometric models.

HISD Objectives	Time Allocation	Assessment Connections	Instructional Considerations	Instructional Strategies	Resources
Existing information of special note on page 15 of HAPG5: **MATH.7.10A** Construct sample spaces for simple or composite experiments, match a situation with a sample space that lists all possible combinations, or select the missing portion of a given sample space. **Ⓟ MATH.7.14A** Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.	**No additional time required**	**No changes required**	**Changes in existing information on pages 15 and 16 of HAPG5:** Power Objective 7.14A suggests the use of graphical strategies as well as the use of physical and geometric models in studying sample spaces. **Connections to Science:** *Punnett Squares* Punnett Squares are matrices (geometric models) that organize the sample spaces of possible inherited traits. Scientists use them to determine how inherited traits (characteristics) are distributed. The example below organizes the sample space of potential offspring of a red bird parent and a blue bird parent. 	**No changes required**	**No changes required**

Revised TEKS statement 7.12
The student uses measures of central tendency and variability ~~range~~ to describe a set of data.

Learning Focus 5.3 – Data Analysis and Sample Spaces
Students explore data collection and use graphical representations to create data displays (line plots, line graphs, bar graphs, stem and leaf plots, circle graphs, and Venn diagrams) of real-world situations. They use the displays and statistical measures of central tendency and variability (mean, median, mode, and range) for data analysis and interpretation. Sample spaces are constructed and described for simple and composite events using lists and tree diagrams.

HISD Objectives	Time Allocation	Assessment Connections	Instructional Considerations	Instructional Strategies	Resources
Existing information of special note on page 14 of HAPG5: **MATH.7.12A** Describe a set of data using mean, median, mode, and range, match the mean, median, mode, and/or range with a given data set and identify the missing piece of data that will produce a target mean, median, mode, and/or range. **MATH.7.12B** Choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.	**No additional time required**	**No changes required**	**Changes in existing information on page 14 of HAPG5:** **Essential Understandings/Guiding Questions** Data displays and statistical measures can be used to describe real-world situations. 1. How can measures of central tendency and variability (mean, median, mode, and range) be used to describe real-world situations? 2. How do measures of central tendency and variability help make comparisons of two or more sets of data? 3. Which measure of central tendency is most appropriate for a given situation? Why?	**Changes in existing information on page 14 of HAPG5:** **Cooperative Learning** After collecting a set of numeric data (such as the height of the members of the class), students should define and use measures of central tendency (mean, median, and mode) and the range (a measure of variability) to describe the data collected and to draw conclusions concerning the data. Include in a discussion the issue of representative sampling (Activity: Measures of Central Tendency, Activity 7.12A in the Mathematics Toolkit – see Resources column). **Homework and Practice** Creating and interpreting data using box-and-whisker plots is an effective way to utilize and evaluate measures of central tendency and variability. An online discussion of box plots and a java-applet to create them is available at Interactivate (see Resources column).	**Existing resources of special note on page 14 of HAPG5:** The following hands-on manipulatives-based activities include student activity masters and extensive teacher notes. • Measures of Central Tendency • Activity 7.12A, Mathematics Toolkit, UT Dana Center An online discussion of box plots and a java-applet to create them is available at Interactivate.