### Mathematics Curriculum Bundle

**Course or Grade Level: THIRD**

<table>
<thead>
<tr>
<th>Calendar (Weeks 1, 2, 3) Bundle 1</th>
<th>(Problem Solving, Graphs, Probability)</th>
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<tr>
<th>STAAR Reporting Category</th>
<th>TEKS Knowledge &amp; Skills</th>
<th>TEKS Student Expectation</th>
<th>Specification/Examples</th>
<th>Resources</th>
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</thead>
</table>
| 5 Probability and Statistics | (3.13) Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. | (3.13)(A) collect, organize, record, and display data in pictographs and bar graphs where each picture or cell might represent more than one piece of data. (Readiness) | Including but not limited to:  
- collect, organize, record and display data of hands-on experimental activities  
- create bar pictographs and bar graphs with appropriate labels of collected data displayed vertically and horizontally with consistent intervals  
- display data using a key  
- identify missing information needed to complete a graph  
- completes missing information in graphs  
- analyze pictographs with a key  
  - (each picture = 1 or more pieces of data)  
  - (information can be represented with half of a picture)  
- analyze bar graphs with a key  
  - using key, determine number of symbols needed to complete a graph | AIRM |
|                          |                         |                          |                        | Class Survey #119, What’s your favorite restaurant #120 |
|                          |                         |                          |                        | Kamico Picture Perfect pg. 277 |
|                          |                         |                          |                        | Engaging Mathematics 3.13A-Pgs 313-326 |
|                          |                         |                          |                        | Easy Tech Bar Graph Pie Graph Line Graph |
|                          |                         |                          |                        | Math Facts Kim Sutton Drill to Thrill |
|                          |                         |                          |                        | Interventions Mastering Basic Math Facts 10 Frame Part/Part Whole Making 10 |
|                          |                         |                          |                        | Supporting STAAR Achievement Creating Graphs pgs 312-316 |

**Vocabulary:**
- bar graphs
- title
- key/legend
- labels
- pictographs
- scale
- tally mark
- TALK strategy “Title, All Labels, Key”

**Content**

- Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data.

- A frequency table shows how often an item, a number, or a range of numbers occurs. Tallies and counts are used to record frequencies. Students begin work with frequency tables in grade 3. A dot plot may be used to represent frequencies. A number line may be used for counts related to numbers. A line labeled with categories may be used as well if the context requires. Dots are recorded vertically above the number line to indicate frequencies. Dots may represent one count or multiple counts if so noted. Students begin work with dot plots in grade 3.

**Supporting STAAR Achievement**

- Creating Graphs pgs 312-316
Technology Applications:
7(A) use software programs with audio, video, and graphics to enhance learning experiences
8(B) use interactive technology environments, such as simulations, electronic science or mathematics laboratories, virtual museum field trips, or on-line interactive lessons, to manipulate information

3.13(B) Interpret information from pictographs and bar graphs. [Supporting]

3(B)/8(B) solve one-and two-step problems using categorical data represented with a frequency table, dot plot, pictograph, or bar graph with scaled intervals.

Students begin work with pictographs in grade K and bar graphs in grade 1 with the Revised TEKS (2012). Specificity for the purpose of interpreting graphs has been added with the phrase “solve one- and two-step problems.” Specificity has been added regarding the type of data. Categorical data are the focus in grade 3. Specificity regarding the graphical representations has been added with the phrase “with scaled intervals.”

Students begin work with frequency tables and dot plots in grade 3 with the Revised TEKS (2012)

Rigor Implications-Verbs:
- Interpret

Level of Bloom’s:

Including but not limited to:
- read and interpret all parts of a vertical and horizontal pictographs
- Use additional real words examples of bar graphs and pictographs (Newspapers, Internet, etc.) and bar graphs (labels, keys, data)
- interpret and analyze graphs by combining given information in graphs to solve problems
- interpret and analyze data to determine missing information
- the key for a pictograph may be different amounts
- Make sure students see the connection between a graph and a chart.
- Make sure students see why pictorial representations of information are often used in real world. Newspapers, internet, etc.

Vocabulary:
- bar graphs
- key/legend
- labels
- pictographs

AII R
- Pictograph # 121
- Complete the Bar Graph
- Making Bar Graphs #123
- Comparing the Same Data #124

Kamico
Read Between the Lines pg. 286

Engaging Mathematics
- 3.13B-Pgs 327-333
**Mathematics Curriculum Bundle**

- **Evaluating**
  - 3.13(C) Use data to describe events as more likely than, less likely than, or equally likely as. [Supporting]
  - Deleted: 3(13)(C) Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to use data to describe events as more likely than, less likely than, or equally likely as.

**Rigor Implications - Verbs:**
- Use
- Describe

**Level of Bloom's:**
- Understanding
- Applying

**Including but not limited to**
- analyze experimental activities or spinners to describe if the event is more likely than
- less likely than
- equally likely as
- represent results of experiments by generating lists, tables, graphs (ex: tally marks)
- identify if there is no possibility of the event occurring as "impossible"
- identify if it is "certain" for an event to occur

**Vocabulary:**
- more likely
- less likely
- equally likely
- impossible
- certain
- probability
- likelihood
- random
- interpret
- data

**Processes and Math Tools**

<table>
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<tr>
<th>TEKS Knowledge &amp; Skills</th>
<th>TEKS Student Expectation</th>
<th>Specification/Examples</th>
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| (3.14) The student applies Grade 3 mathematics to solve problems connected to everyday situations and activities in and outside of school. | 3.14(A) Identify the mathematics in everyday situations. [Readiness] | Including but not limited to
- students identify real world geometric shapes in the classroom and surrounding areas
- list and identify how real world geometric shapes relate and connect to the objects the students work with in the classroom |

**AIRR**
- How Likely Is It #125
- Design a Spinner #126
- Match the Spinner # 31
- Table of Events #32
- Pick a Cube # 33
- The Results Are In #34

**Kamico**
- It's in the Bag, or Is It? Page 299

**Engaging Mathematics**
- 3.13C-Pgs 334-340

**3.14A-Pgs 316, 327,329**
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Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.

The revised SE restates and condenses 3(14)(B) and 3(14)(C).

3.14(B) Solve problems that incorporate understanding the problem, making a plan, carrying out the plan, and evaluating a solution for reasonableness. (Readiness)

3(1)(B) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.

The student is expected to use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, and evaluating the problem-solving process and the reasonableness of the solution.

The focus has shifted to application. The opportunities for application have been consolidated into three areas: everyday life, society, and the workplace. This SE, when tagged to a content SE, allows for increased rigor through connections outside the discipline.

Use reasonableness to choose the correct solution to a word problem.

Including but not limited to

- using tables to make graphs on grid paper and draw conclusions.

Strategies:
- Find a rule
- look for a pattern
- T-charts
- place value chart
- Place = house symbol
  Value = $

Including but not limited to

- solving a problem using objects to make figures with lines of symmetry

Including but not limited to:
- compare units of measure
  find how many smaller units equal larger units

Including but not limited to

- drawing a multiplication model to help them write a number sentence to solve a problem
- develop problem solving strategies to help recall and apply multiplication facts

Including but not limited to:
- compare units of measure
  find how many smaller units equal larger units

Including but not limited to

- drawing a multiplication model to help them write a number sentence to solve a problem
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- compare units of measure
  find how many smaller units equal larger units

Including but not limited to

- drawing a multiplication model to help them write a number sentence to solve a problem
- develop problem solving strategies to help recall and apply multiplication facts
3.14(C) Select or develop an appropriate problem-solving plan or strategy, 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. (Readiness)

3.14(D) Use tools such as real objects, manipulatives, and technology to solve problems. (Readiness)

3(1)(C) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.

The student is expected to select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including:

- ex. T-chart
- drawing a picture (array)
- Work simpler problems
- Look for patterns
- Skip counting

Including but not limited to:
- understanding problems that can be solved by making a table and looking for a pattern

Including but not limited to:
- Use reasonableness to choose the correct solution to a word problem.
Mathematics Curriculum Bundle

(3.15) The student communicates about Grade 3 mathematics using informal language.

- Mathematical process standards: The student uses mental math, estimation, and number sense as appropriate, to solve problems.

The phrase “as appropriate” has been inserted into the Revised TEKS (2012). This implies that students are assessing which tool to apply rather than trying only one or all. “Paper and pencil” is now included in the list of tools that still includes real objects, manipulatives, and technology.

3.15(A) Explain and record observations using objects, words, pictures, numbers, and technology. (Readiness)

3.15(D) The student is expected to communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.

Communication has expanded to include “reasoning” and the implications of mathematical ideas and reasoning. The list of representations is now summarized with “multiple representations” with specificity added for symbols and diagrams.

3.15(B) Relate informal language to mathematical language and symbols. (Readiness)

3.15(E) The student is expected to create and use representations to organize, record, and communicate mathematical ideas.
The use of representations is extended to include organizing and recording mathematical ideas in addition to communicating. As students use and create representations, it is implied that they will evaluate the effectiveness of their representations to ensure that they are communicating mathematical ideas clearly. Students are expected to use appropriate mathematical vocabulary and phrasing when communicating mathematical ideas.

(3.16) The student uses logical reasoning.

Mathematical process standards:
The student uses mathematical processes to acquire and demonstrate mathematical understanding.

3.16(A) Make generalizations from patterns or sets of examples and non-examples. (Readiness)

3.1(F) The student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.

The Revised TEKS (2012) extends the current TEKS to allow for additional means to analyze relationships and to form connections with mathematical ideas past conjecturing and sets of examples and non-examples. Students are expected to form conjectures based on patterns or sets of examples and non-examples.

3.16(B) Justify why an answer is reasonable and explain the solution process. (Readiness)

3.1(G) The student is expected to display, explain, and justify
The Revised TEKS (2012) clarifies "validates his/her conclusions" with displays, explanations, and justifications. The conclusions should focus on mathematical ideas and arguments. Displays could include diagrams, visual aids, written work, etc. The intention is to make one's work visible to others so that explanations and justifications may be shared in written or oral form. Precise mathematical language is expected. For example, students would use "vertex" instead of "corner" when referring to the point at which two edges intersect on a polygon.

<table>
<thead>
<tr>
<th>Language of Instruction</th>
<th>Technology TEKS/Product</th>
<th>Primary Resource Reference</th>
<th>Secondary Resource Reference</th>
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</table>

**Student Performance**
- Assessments
  - Textbook assessment
  - Common assessment
  - Benchmark
  - TAKS
  - Advanced Placement
- Lab
- Project
- Essay
- Short answer response
- Applying mathematics

<table>
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<tr>
<th>Formative</th>
<th>Summative</th>
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## Mathematics Curriculum Bundle

<table>
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<tr>
<th>Intervention</th>
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<tbody>
<tr>
<td>Outline specific interventions for different learning needs:</td>
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<tr>
<td>• Re-teach options for non-mastery</td>
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<tr>
<td>• Scaffolds for ELLs</td>
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<tr>
<td>• Differentiation for struggling learners</td>
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<tr>
<td>Identify specific resources and teaching tools/ideas for intervention (grouping, pacing).</td>
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<tr>
<td>Introduction-level standards include tier 2 interventions.</td>
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<tr>
<td>Interventions for tested include both tier 2 and 3 focused small group interventions.</td>
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<tr>
<td>Interventions for reviewed standards include more tier 3 focused small groups and individualized intervention.</td>
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<tr>
<th>Other Curricular Connection (ELA, Math, SS)</th>
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<tbody>
<tr>
<td>The TEKS social studies strand for science and technology should be the first source to connect math concepts with the history of mathematics and contributions of mathematicians.</td>
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