Grade 7 Expectations in Mathematics

*The Franklin Public School System's grade level expectations for Grade 8 are listed below. They are taken from the Learning Standards from the **MA Mathematics Curriculum Framework** for the end of Grade 7. All students are expected to master all grade level expectations.*

Number Sense and Operations

Curriculum Framework Learning Standard	Impact Course 2 Reference
1. Compare, order, estimate, and translate among integers, fractions and mixed numbers (i.e., rational numbers), decimals, and percents.	**Chapters 4, 8**
2. Use ratios and proportions in the solution of problems involving unit rates, scale drawings, and reading of maps.	**Chapters 5, 7, 8**
3. Represent numbers in scientific notation (positive powers of ten only) and use that notation in problem situations.	**Chapter 3**
4. Demonstrate an understanding of absolute value, e.g., |-3| = |3| = 3.	**Chapter 4**
5. Apply the rules of positive integer exponents to the solution of problems. Extend the Order of Operations to include positive integer exponents.	**Chapters 1, 3**
6. Use the inverse relationships of addition and subtraction, and of multiplication and division, to simplify computations and solve problems, e.g., multiplying by 1⁄2 or 0.5 is the same as dividing by 2.	**Chapters 1, 6, 9**
7. Estimate and compute with fractions (including simplification of fractions), integers, decimals, and percents (including those greater than 100 and less than 1).	**Chapters 4, 8**
8. Determine when an estimate rather than an exact answer is appropriate and apply in problem situations.	**Chapters 2, 4, 9**
9. Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents—to solve	**Chapters 1, 4, 6**

problems with rational numbers (including negatives).	

Patterns, Functions, and Algebra

Curriculum Framework Learning Standard	Impact Course 2 Reference
1. Extend, represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic expressions. Include arithmetic and geometric progressions, e.g., compounding.	**Chapters 1, 2, 3, 5, 9**
2. Evaluate simple algebraic expressions for given variable values, e.g., $3a^2 - b$ for a = 3 and b = 7.	**Chapters 1, 6**
3. Create and use symbolic expressions for linear relationships and relate them to verbal, tabular, and graphical representations.	**Chapter 5**
4. Solve linear equations using tables, graphs, models, and algebraic methods.	**Chapters 5, 6**
5. Identify, describe, and analyze linear relationships between two variables. Compare positive rate of change, e.g., y = 3x + 1, to negative rate of change, e.g., y = –3x + 1.	**Chapter 5**
6. Use linear equations to model and analyze problems involving proportional relationships. Use technology as appropriate.	**Chapter 5**

Geometry

Curriculum Framework Learning Standard	Impact Course 2 Reference
1. Analyze, apply, and explain the relationship between the number of sides and the sums of the interior angle measures of polygons.	**Chapter 7**

2. Classify figures in terms of congruence and similarity, and apply these relationships to the solution of problems.	**Chapter 7**
3. Demonstrate an understanding of the relationships of angles formed by intersecting lines, including parallel lines cut by a transversal.	**Chapter 7, Supplemental Materials**
4. Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	**Chapters 4, 5**
5. Use a ruler, protractor, and compass to draw polygons and circles.	**Supplemental Materials**
6. Predict the results of translations and reflections of figures on unmarked or coordinate planes and draw the transformed figure.	**Supplemental Materials**
7. Identify three-dimensional figures (e.g., prisms, pyramids) by their physical appearance, distinguishing attributes, and spatial relationships such as parallel faces.	**Chapter 2**
8. Recognize and draw two-dimensional representations of three-dimensional objects, e.g., nets, projections, and perspective drawings.	**Chapter 2**

Data Analysis, Statistics, and Probability

Curriculum Framework Learning Standard	Impact Course 2 Reference
1. Select, create, interpret, and utilize the following tabular and graphical representations of data: circle graphs, Venn diagrams, stem-and-leaf plots, tables, and charts.	**Chapter 10**
2. Find, describe, and interpret appropriate measures of central tendency (mean, median, and mode) and spread (range) that	**Chapter 10**

represent a set of data. Use these notions to compare different sets of data.	
3. Use tree diagrams, tables, organized lists, and area models to compute probabilities for simple compound events, e.g., multiple coin tosses or rolls of number cubes.	**Chapter 10**
4. Describe the characteristics and limitations of a data sample. Identify different ways of selecting a sample, e.g., convenience sampling, responses to a survey, random sampling.	**Chapter 10**

Measurement

Curriculum Framework Learning Standard	Impact Course 2 Reference
1. Select, convert (within the same system of measurement), and use appropriate units of measurement or scale.	**Chapters 2, 8**
2. Given the formulas, convert from one system of measurement to another. Use technology if appropriate.	**Chapter 2**
3. Demonstrate an understanding of the concepts and apply formulas and procedures for determining measures, including those of area and perimeter/circumference of parallelograms, trapezoids, and circles. Given the formulas, determine the surface area and volume of rectangular prisms and cylinders. Use technology as appropriate.	**Chapter 2**