4th Grade Math and Science Expectations

4th Quarter

Dear Parents,

In Mathematics, your child will work to answer the following questions through exploration of these ideas and concepts:

How can I use the relationship of multiplication and division to solve comparison problems?

- Model, represent, and solve word problems involving multiplicative comparison situations.
- Know relative sizes of measurement units within a system *(including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec)* and convert measurements from a larger unit to a smaller unit, generating a conversion table.

How can I be strategic and accurate in my operations with whole numbers?

- Use a variety of strategies to solve multi-step word problems with whole numbers involving the four operations.
- Add and subtract multi-digit whole numbers with computational fluency using a standard algorithm.
- Multiply and divide multi-digit numbers using a variety of strategies, explaining their calculations through illustrations, equations, arrays and/or area models.

Why is it important to be flexible in how we represent numbers?

- Recognize, create, and explain why fractions are equivalent using visual fraction models.
- Use equivalent fractions to add two fractions with denominators of 10 and 100.
- Use decimal notation for fractions with denominators of 10 or 100.
- Compare two decimals to hundredths by reasoning about their size.

How do I notate my thinking when solving problems with fractions?

- Add and subtract fractions with like denominators; add and subtract mixed numbers with like denominators.
- Solve word problems involving addition and subtraction of fractions *(referring to the same whole and having like denominators)* using visual fraction models and equations.
- Multiply a fraction by a whole number and solve word problems involving multiplication of a fraction by a whole number using visual fraction models and equations.

How can lines and angles help us classify two-dimensional figures?

- Recognize angles as geometric shapes formed when two rays share a common endpoint.
- Understand concepts of angle measurement and how an angle is measured with reference to a circle. Measure and sketch angles in whole-number degrees using a protractor.
- Classify two-dimensional figures based on *attributes* (including parallel or perpendicular lines and angles).
- Recognize and draw lines of symmetry and line-symmetric figures.
- Identify and draw points, lines, line segments, rays, angles, and perpendicular and parallel lines.

In Science, your child will answer questions through exploration of ideas and concepts about *Waves – Waves and Information*:

What are waves? How are waves used to transfer energy and information?

- Waves are regular patterns of motion, a disturbance that moves or spreads throughout space.
- Waves can be made in water by disturbing the surface. When waves move across the surface of deep water, the water goes up and down in place.
- Waves of the same type can differ in amplitude (height of the wave) and wavelength (spacing between the wave peaks).
- Waves of different amplitudes transfer different amounts of energy.

How are instruments that transmit and detect waves used to extend the human senses?

- Patterns can be used to communicate information across a distance.
- Information can be digitized and transmitted.
- High-tech devices, such as computers or cell phones, can receive and decode information – convert it from digitized for to voice – and vice versa.