Common Core Math—Lighten Up: Designing Lighting Systems

Engineering is Elementary units are designed primarily to teach engineering skills and habits of mind. In doing so, all units also reinforce and link to other content areas. The math practices and standards addressed by this unit are listed below.

Math Practices Embedded Throughout the Unit:

1. Make sense of problems and persevere in solving them.
2. Reasons abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.

Grade	Lesson #	Common Core Math Cluster or Practice	Common Core Math Standard
1	4	Operations and Algebraic Thinking 1.OA • Work with addition and subtraction equations.	1.OA.7: Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. 1.OA.8: Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.
1	2, 3, 4	Measurement and Data 1.MD: • Measure lengths indirectly and by iterating length of units • Tell and write time. • Represent and interpret data	1.MD.2: Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. 1.MD.3: Tell and write time in hours and half-hours using analog and digital clocks. 1.MD.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

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2	4	Number and Operations in Base 10 2.NBT • Use place value understanding and properties of operations to add and subtract.	2.NBT.6: Add up to four two-digit numbers using strategies based on place value and properties of operations.
2	2, 4	Measurement and Data 2.MD: • Measure and estimate lengths in standard units.	2.MD.1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
3	4	Operations and Algebraic Thinking 3.OA • Represent and solve problems involving multiplication and division.	3.OA.1: Interpret products of whole numbers, e.g., interpret 5x7 as the total number of objects in 5 groups of 7 objects each.
4	3, 4	Measurement and Data 4.MD: • Geometric measurement: understand concepts of angle and measure angles.	4.MD.5: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle: a. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. 4.MD.6: Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
4	3,4	Geometry 4.MD: • Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	4.G.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. 4.G.3: Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts.

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Grade	Lesson #	Common Core Math Cluster or Practice	Common Core Math Standard
			Identify line-symmetric figures and draw lines of symmetry.