

| <p style="text-align: center;">DESIGN AND CONSTRUCTION 7th Grade Math</p> | <p style="text-align: center;">Code</p> | <p style="text-align: center;">Activity 1: How Much Traffic Can the Road Handle?</p> | <p style="text-align: center;">Activity 2: Not in My Backyard!!</p> | <p style="text-align: center;">Activity 3: How Much Does Land Cost?</p> | <p style="text-align: center;">Activity 4: Keep Me on the Road!</p> | <p style="text-align: center;">Activity 5: Take the Short Way Home</p> | |
|--|---|--|---|---|---|--|--|
| Numbers and Operations | | | | | | | |
| Understand derived quantities | | | | | | | |
| Solve problems involving derived quantities such as density, velocity, and weighted averages.* | N.MR.07.02 | | | | | | |
| Understand and solve problems involving rates, ratios, and proportions | | | | | | | |
| Calculate rates of change including speed. | N.FL.07.03 | | | | | | |
| Convert ratio quantities between different systems of units, such as feet per second to miles per hour. | N.MR.07.04 | | | | | | |
| Solve proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $a/b = c/d$; know how to see patterns about proportional situations in tables.* | N.FL.07.05 | | | | | | |
| Recognize irrational numbers | | | | | | | |
| Understand the concept of square root and cube root, and estimate using calculators | N.MR.07.06 | | | | | | |
| | | | | | | | |

| DESIGN AND CONSTRUCTION | Code | Activity 1: How Much Traffic Can the Road Handle? | Activity 2: Not in My Backyard!! | Activity 3: How Much Does Land Cost? | Activity 4: Keep Me on the Road! | Activity 5: Take the Short Way Home | |
|---|-------------------|--|---|---|---|--|--|
| Compute with rational numbers | | | | | | | |
| Solve problems involving operations with integers. | N.FL.07.07 | | | | | | |
| Add, subtract, multiply, and divide positive and negative rational numbers fluently.* | N.FL.07.08 | | | | | | |
| Estimate results of computations with rational numbers. | N.FL.07.09 | | | | | | |
| ALGEBRA | | | | | | | |
| Understand and apply directly proportional relationships and relate to linear relationships | | | | | | | |
| Recognize when information given in a table, graph, or formula suggests a directly proportional or linear relationship.* | A.PA.07.01 | | | | | | |
| Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations. | A.RP.07.02 | | | | | | |
| Given a directly proportional or other linear situation, graph and interpret the slope and intercept(s) in terms of the original situation; evaluate $y = mx + b$ for specific x values, e.g., weight vs. volume of water, base cost plus cost per unit.* | A.PA.07.03 | | | | | | |

| DESIGN AND CONSTRUCTION | Code | Activity 1: How Much Traffic Can the Road Handle? | Activity 2: Not in My Backyard!! | Activity 3: How Much Does Land Cost? | Activity 4: Keep Me on the Road! | Activity 5: Take the Short Way Home | |
|---|-------------------|--|---|---|---|--|--|
| For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volume of a container with uniform cross-section; height of water in a tank being filled at a constant rate; degrees Celsius and degrees Fahrenheit; distance and time under constant speed. | A.PA.07.04 | | | | | | |
| Recognize and use directly proportional relationships of the form $y = mx$, and distinguish from linear relationships of the form $y = mx + b$, b non-zero; understand that in a directly proportional relationship between two quantities one quantity is a constant multiple of the other quantity.* | A.PA.07.05 | | | | | | |
| Understand and represent linear functions | | | | | | | |
| Calculate the slope from the graph of a linear function as the ratio of “rise/run” for a pair of points on the graph, and express the answer as a fraction and a decimal; understand that linear functions have slope that is a constant rate of change. | A.PA.07.06 | | | | | | |
| Represent linear functions in the form $y = x + b$, $y = mx$, and $y = mx + b$, and graph, interpreting slope and y-intercept. | A.PA.07.07 | | | | | | |

| | | | | | | | |
|---|-------------------|--|--|--|--|--|--|
| Find and interpret the x and/or y intercepts of a linear equation or function. Know that the solution to a linear equation of the form $ax+b=0$ corresponds to the point at which the graph of $y=ax+b$ crosses the x axis.* | A.FO.07.08 | | | | | | |
| Understand and solve problems about inversely proportional relationships | | | | | | | |
| Recognize inversely proportional relationships in contextual situations; know that quantities are inversely proportional if their product is constant, e.g., the length and width of a rectangle with fixed area, and that an inversely proportional relationship is of the form $y = k/x$ where k is some non-zero number. | A.PA.07.09 | | | | | | |
| Know that the graph of $y = k/x$ is not a line, know its shape, and know that it crosses neither the x nor the y-axis. | A.RP.07.10 | | | | | | |
| Apply basic properties of real numbers in algebraic contexts | | | | | | | |
| Understand and use basic properties of real numbers: additive and multiplicative identities, additive and | A.PA.07.11 | | | | | | |
| Combine algebraic expressions and solve equations | | | | | | | |
| Add, subtract, and multiply simple algebraic expressions of the first degree, e.g., $(92x + 8y) - 5x + y$, or $x(x+2)$ and justify using properties of real numbers.* | A.FO.07.12 | | | | | | |
| From applied situations, generate and solve linear equations of the form $ax + b = c$ and $ax + b = cx + d$, and interpret solutions. | A.FO.07.13 | | | | | | |

| DESIGN AND CONSTRUCTION | Code | Activity 1: How Much Traffic Can the Road Handle? | Activity 2: Not in My Backyard!: | Activity 3: How Much Does Land Cost? | Activity 4: Keep Me on the Road! | Activity 5: Take the Short Way Home | |
|---|------------|---|----------------------------------|--------------------------------------|----------------------------------|-------------------------------------|--|
| GEOMETRY | | | | | | | |
| Draw and construct geometric objects | | | | | | | |
| Use a ruler and other tools to draw squares, rectangles, triangles, and parallelograms with specified dimensions. | G.SR.07.01 | | | | | | |
| Use compass and straightedge to perform basic geometric constructions: the perpendicular bisector of a segment, an equilateral triangle, and the bisector of an angle; understand informal justifications. | G.SR.07.02 | | | | | | |
| Understand the concept of similar polygons, and solve related problems | | | | | | | |
| Understand that in similar polygons, corresponding angles are congruent and the ratios of corresponding sides are equal; understand the concepts of similar figures and scale factor. | G.TR.07.03 | | | | | | |
| Solve problems about similar figures and scale drawings. | G.TR.07.04 | | | | | | |
| Show that two triangles are similar using the criteria: corresponding angles are congruent (AAA similarity); the ratios of two pairs of corresponding sides are equal and the included angles are congruent (SAS similarity); ratios of all pairs of corresponding sides are equal (SSS similarity); use these criteria to solve problems and to justify arguments. | G.TR.07.05 | | | | | | |

| DESIGN AND CONSTRUCTION | Code | Activity 1: How Much Traffic Can the Road Handle? | Activity 2: Not in My Backyard!! | Activity 3: How Much Does Land Cost? | Activity 4: Keep Me on the Road! | Activity 5: Take the Short Way Home | |
|--|-------------------|---|----------------------------------|--------------------------------------|----------------------------------|-------------------------------------|--|
| Understand and use the fact that when two triangles are similar with scale factor of r , their areas are related by a factor of r^2 . | | | | | | | |
| DATA AND PROBABILITY | | | | | | | |
| Represent and interpret data | | | | | | | |
| Represent and interpret data using circle graphs, stem and leaf plots, histograms, and box-and-whisker plots, and select appropriate representation to address specific questions. | D.RE.07.01 | | | | | | |
| Create and interpret scatter plots and find line of best fit; use an estimated line of best fit to answer questions about the data. | D.AN.07.02 | | | | | | |
| Compute statistics about data sets | | | | | | | |
| Calculate and interpret relative frequencies and cumulative frequencies for given data sets. | D.AN.07.03 | | | | | | |
| Find and interpret the median, quartiles, and interquartile range of a given set of data. | D.AN.07.04 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| | | | | | | | |
|--|--|--|--|--|--|--|--|
| | | | | | | | |
| | | | | | | | |

