

7th Grade

Numbers Concepts and Computations **NC**

Rational Numbers

- 1 Model and describe additive inverse in real-world situations to show opposite quantities combine to make zero (positive or negative). **7.NC.1**
- 2 Demonstrate in real-world contexts the distance between two rational numbers on the number line as the absolute value of their differences. **7.NC.2**
- 3 Convert a rational number in fraction form to decimal form and recognize that the decimal form of a rational number terminates in zeros or eventually repeats (using bar notation). **7.NC.3**
- 4 Understand that integers can be divided, provided the divisor is not zero. **7.NC.4**

Rational Number Operations

- 5 Add and subtract rational numbers using horizontal or vertical number lines and real-world contexts. **7.NC.5**
- 6 Solve multi-step problems with rational numbers (whole numbers, fractions, and decimals) and justify the steps taken. **7.NC.6**
- 7 Multiply and divide rational numbers (integers, fractions, decimals etc.) in real-world and mathematical problems. **7.NC.7**

Proportional Relationships **PR**

Ratio and Rates

- 1 Calculate unit rates in real-world contexts that include complex fractions. **7.PR.1**
- 2 Determine the unit rate (constant of proportionality $yy = kkkk$) from tables, graphs, equations, diagrams, or verbal descriptions of proportional relationships. **7.PR.2**
- 3 Solve multi-step ratio and percent problems using proportional reasoning. **7.PR.3**

Constant of Proportionality

- 4 Determine whether two quantities are in a proportional relationship, by determining if each have a constant rate of change that starts at (0,0), using tables, graphs, equations, diagrams, and verbal descriptions. **7.PR.4**
- 5 Explain what a point (xx, yy) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0,0) and $(1, rr)$ where rr is the unit rate. **7.PR.5**

Algebra **A**

Expressions

- 1 Write and solve equations ($yy = kkkk$ or $yy = mmmm + bb$) to represent relationships between quantities. 7.A.1
- 2 Add, subtract, factor, and expand linear expressions with rational coefficients using multiple grouping symbols. 7.A.2

Equations and Inequalities

- 3 Write and solve two-step equations in real-world and mathematical problems in the form of $pppp + qq = rr$ and $pp(xx + qq) = rr$ where pp , qq , and rr are specific rational numbers. 7.A.3
- 4 Write, solve, and graph two-step inequalities in real-world and mathematical problems in the forms of $pppp + qq > rr$, $pppp + qq \geq rr$, $pppp + qq < rr$, and $pppp + qq \leq rr$, where pp , qq , and rr are specific rational numbers. 7.A.4

Relationships between Quantities

- 5 Use tables, graphs, and equations to distinguish between proportional and non-proportional relationships. 7.A.5

Geometry G

Area, Volume, and Surface Area

- 1 Identify, describe, and draw elements of circles, including center, radius, and diameter. 7.G.1
- 2 Use the constant ratio π ($\pi = CC/dd$) to calculate the circumference and area of a circle. 7.G.2
- 3 Use area ($AA = \pi r^2$) and circumference ($CC = 2\pi r$) formulas of a circle to solve real-world and mathematical problems. 7.G.3
- 4 Solve real-world and mathematical problems involving area, volume and surface area of two and three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 7.G.4

Cross Sections

- 5 Describe the two-dimensional figure (cross section) that results from slicing a three-dimensional figure including right rectangular prisms, triangular prisms, pyramids and cylinders. 7.G.5

Triangle and Angles

- 6 Draw geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. 7.G.6
- 7 Solve multi-step problems involving supplementary, complementary, vertical, and adjacent angles to include solving for an unknown angle in a figure. 7.G.7

Measurement M

Scale

- 1 Calculate the scale factor, compute the actual lengths from the scale in a drawing, and reproduce a scale drawing using another scale. 7.M.1
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Statistics and Probability SP

Sampling and Population

- 1 Understand sampling to be a selection of a smaller group (sample) from a larger group (population). 7.SP.1
 - 2 Compare random and convenience sampling to determine if a sample is representative of a population. 7.SP.2
 - 3 Draw conclusions, such as mean, median, mode, and range of data, about a larger population using data from a representative sample. 7.SP.3
 - 4 Understand a sample space to be the set of all possible outcomes for a situation or experiment. 7.SP.4
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Probability

- 5 Understand probability as the likelihood or chance of an event occurring. 7.SP.5
- 6 Recognize that probabilities in a simple experiment can be qualitative descriptors of likelihood: impossible (0), unlikely, neither likely nor unlikely, likely, or certain (1). 7.SP.6
- 7 Calculate the probability for a single event by dividing the number of favorable outcomes by the number of total outcomes. 7.SP.7
- 8 Determine experimental probabilities in simple experiments and represent as fractions, decimals, and percents. 7.SP.8
- 9 Use theoretical probability of an event in a simple experiment to predict the number of times that an event will occur for a large number of experiments. 7.SP.9
- 10 Calculate the probability for a compound event using organized lists, tables, tree diagrams, and a simulation. 7.SP.10