Montana Math

Grade 7

Ratios and Proportional Relationships MT.7.RP

1. **Compute unit rates associated with ratios of fractions, measured in like or different units.** MT.7.RP.1

2. **Recognize and represent proportional relationships between quantities, using tables, graphs, and equations by:** MT.7.RP.2
   - a *Recognize and represent proportional relationships between quantities, using tables, graphs, and equations by* deciding whether a table represents quantities in a proportional relationship, by testing for equivalent ratios and deciding whether a graph represents quantities in a proportional relationship if the graph is a straight line through the origin. MT.7.RP.2.A
   - b *Recognize and represent proportional relationships between quantities, using tables, graphs, and equations by* identifying the constant of proportionality (unit rate) in tables, graphs, and equations, of proportional relationships. MT.7.RP.2.B

3. **Use proportional relationships to solve multi-step ratio and percent problems, including problems in context that involve simple interest, tax, markups and markdowns, gratuities and commissions, fees, and percent increase and decrease, percent error. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.RP.3

The Number System MT.7.NS

1. **Add and subtract rational numbers, represent addition and subtraction on a horizontal or vertical number line diagram, and understand subtraction as adding the additive inverse p - q = p + (-q).** MT.7.NS.1

2. **Multiply and divide rational numbers and use operations of rational numbers to solve problems in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.NS.2

3. **Write any rational number as a fraction, decimal, and percent using long division, and know that the decimal form of a rational number terminates or repeats.** MT.7.NS.3

Expressions and Equations MT.7.EE

1. **Use properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients and generate equivalent expressions.** MT.7.EE.1

2. **Understand that rewriting an expression in different forms in a problem in context can show how the quantities in it are related.** MT.7.EE.2

3 **Write and solve one- and two-step equations including problems in context with rational numbers, convert between forms as appropriate, and assess the reasonableness of answers.** MT.7.EE.3

4 **Use variables to represent quantities and construct simple equations and inequalities to solve problems in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities by:** MT.7.EE.4

- a *Use variables to represent quantities and construct simple equations and inequalities to solve problems in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities by:* solving, accurately and efficiently, problems in context leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers, comparing an algebraic solution to an arithmetic solution, and identifying the sequence of the operations used in each approach. MT.7.EE.4.A
- b *Use variables to represent quantities and construct simple equations and inequalities to solve problems in context. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities by* solving problems in context leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers graphing the solution set of the inequality, and interpreting the solution in context. MT.7.EE.4.B

Geometry MT.7.G

1 **Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.** MT.7.G.1

2 **Draw (freehand, with ruler and protractor, and with technology) 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.** MT.7.G.2

3 **Know and use the formulas for the area and circumference of a circle and give an informal derivation of the relationship between the circumference and area of a circle. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.G.3

4 **Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.** MT.7.G.4

5 **Solve geometrical problems including problems in context that involve area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.G.5

Statistics and Probability MT.7.SP

1. **Understand statistics can be used to gain information about a population by examining a representative sample of the population.** MT.7.SP.1
2. **Use data from a random sample to draw inferences about a population with an unknown characteristic of interest and generate or simulate multiple samples of the same size to gauge the variation in estimates or predictions. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.SP.2
3. **Visually analyze two data distributions to compare measures of central tendency and variability.** MT.7.SP.3
4. **Use measures of central tendency and measures of variability for numerical data from random samples to draw comparative inferences about two populations.** MT.7.SP.4
5. **Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.** MT.7.SP.5
6. **Find the experimental probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency. This standard should incorporate cultural context relating to Montana Indigenous Peoples and local communities.** MT.7.SP.6
7. **Develop a theoretical probability model and use it to find probabilities of events, compare theoretical and experimental probabilities, and explain possible sources of discrepancy, if any exist.** MT.7.SP.7
8. **Represent sample spaces for compound events, identify the desired outcomes in the sample spaces, and find probabilities of events using organized lists, tables, tree diagrams, and simulations.** MT.7.SP.8