Minnesota Mathematics

Grade 3

Data Analysis

1 **Data Sciences: Identify, formulate and investigate statistical questions by collecting data considering cultural perspectives, analyzing and interpreting data and communicating the results.**

1 Notice and describe patterns in data-rich situations or given data sets. Ask statistical questions that can be answered with data. (MP7) ☼ ✣ 3.1.1.1

2 Describe how data can be collected, including from surveys, grouping of items and measurement, to answer a statistical investigative question. (MP7) ☼ 3.1.1.2

3 Collect and organize data to answer a statistical question using various tools and addressing missing or incomplete data. Represent data in a variety of ways including technology. (MP1, MP5) # μ ☼ 3.1.1.3

4 Make predictions and recognize that the amount and source of the data impacts the accuracy of predictions. (MP4, MP8) 3.1.1.4

5 Critically analyze data visualizations, including frequency tables, bar graphs, picture graphs or number line plots having a variety of scales to support a claim and solve situations. (MP1, MP3) $ # 3.1.1.5

2 **Chance and Uncertainty: Apply and explain the concepts of probability to interpret data, generate questions, predict and make informed decisions to solve problems and communicate ideas.**

1 Describe outcomes of events as impossible, certain, likely, unlikely and equally likely. (MP1, MP4) 3.1.2.1

Spatial Reasoning

3 **Measurement: Investigate measurement using a variety of tools, units, systems, processes and techniques in various cultures. Explain and reason with attributes, estimations and formulas to communicate measurement(s) and relationships effectively. Justify decisions and consider the reasonableness of the measurement.**

1 Measure lengths to the nearest fourth when measuring with standard units. (MP2, MP5) ☼ 3.2.3.1

2 Compare and contrast the relative sizes of measurement units within one system (inches and feet, centimeters and meters, grams and kilograms, ounces and pounds). (MP5, MP6) $ ☼ 3.2.3.2

3 Calculate the perimeter of a polygon with whole number side lengths. (MP5, MP6) 3.2.3.3

4 Use addition and subtraction with whole numbers, within 100, to calculate change up to one dollar in several different ways, using $ and ¢ symbols appropriately. (MP7, MP8) $ 3.2.3.4

4 **Geometry: Analyze characteristics of geometric shapes to make mathematical arguments and justifications about geometric relationships. Use visualization and geometric modeling to compare, solve problems and communicate ideas.**

1 Create representations of regular and irregular polygons with a given number of sides, including triangles, quadrilaterals, pentagons, hexagons and octagons. (MP2, MP6) ✜ ☼ 3.2.4.1

Patterns and Relationships

5 **Number Relationships: Describe/Interpret and use quantities, relationships between and representations of quantities and number systems. Describe and relate operations. Use strategies and procedures accurately, efficiently and flexibly. Assess the reasonableness of the results.**

1 Given a value, mentally find 100 more or 100 less, 1,000 more or 1,000 less and 10,000 more or 10,000 less than the number. Justify reasoning by referencing a model. (MP2, MP3) 3.3.5.1

2 Recognize and describe the place value of numbers between 10 and 10,000 as a relationship of groups of ten, hundreds and thousands plus an amount of a single digit. Know that 10,000 is 100 hundreds, 1,000 is 10 hundreds or 100 tens. (MP7) 3.3.5.2

3 Compare and order whole numbers up to 100,000 justifying with place value language, number lines, and other tools using >, = and < symbols to record the results of comparisons. (MP3, MP4) $ ☼ 3.3.5.3

4 Estimate sums and differences up to 1,000 using strategies based on benchmarks and place value language. (MP2) ✣ $ ☼ 3.3.5.4

5 Use a range of strategies and algorithms based on knowledge of place value and equality to flexibly add and subtract within 1,000. Strategies may include decomposition, expanded notation and partial sums and differences. Explain how the strategies work using place value and the properties of operations. (MP1, MP7) $ µ 3.3.5.5

6 Represent and solve contextual situations involving multiplication, measurement division and partitive division with single digit factors using visual models. (MP1, MP4) $ µ ☼ 3.3.5.6

7 Multiply and divide within 144, using strategies such as equal groups, repeated addition, the relationship between multiplication and division or properties of operations. Develop fluency with facts of 2s, 5s, 10s and square products. (MP7) 3.3.5.7

8 Multiply one-digit whole numbers by multiples of 10 and 100 using strategies such as decomposition of factors of ten, place value language, repeated addition and properties of operations. (MP7, MP8) $ ☼ 3.3.5.8

9 Partition a whole into halves, thirds, fourths and eighths. Wholes can be circles, rectangles and the distance between 0 and 1 on a number line. (MP4, MP6) ☼ 3.3.5.9

10 Use pictures and symbols to represent non- unit fractions up to 2 as sums of unit fractions using halves, fourths, thirds and eighths. (MP8) 3.3.5.10

11 Generate equivalent forms of one-half and 1 using fractions with denominators of 2, 4 and 8 and justify why these forms are equivalent using a visual model. (MP2, MP3) 3.3.5.11

12 Compare and order unit fractions using visual models and describe how the size of the fraction changes as the denominator changes. (MP1, MP7) µ 3.3.5.12

13 Use addition and subtraction with estimated whole numbers to create short- term and long-term spending and saving goals based on planned and unplanned financial decisions. (MP2) $ 3.3.5.13

6 **Equivalence and Relational Thinking: Use concepts and properties of equivalence and relational thinking to represent and compare numerical expressions, proportional relationships, algebraic expressions and equations.**

1 Use relational thinking to find a missing value in an open number sentence with up to three-digit whole number addition and subtraction expressions. Determine if the equation is true or false. Justify your reasoning. (MP3) $ # 3.3.6.1

2 Make conjectures and justifications about multiplication and division involving 0 and 1 with true/false and open number equations. (MP3) 3.3.6.2

3 Make conjectures and justifications using the commutative and associative properties of addition and multiplication with true/false and open number equations. (MP1, MP3) µ 3.3.6.3

7 **Patterns and Relationships: Represent and connect mathematical patterns and relationships using verbal descriptions, generalizations, tables and graphs. Use representations to generate questions, make predictions and solve mathematical problems.**

1 Create, describe and apply single-operation input-output rules involving addition, subtraction and multiplication to solve situations in various contexts, including when x and y are 0. (MP7) ☼ 3.3.7.1

2 Create the next two terms and the previous term in a visual pattern, growing or shrinking, and justify reasoning. (MP1, MP7) µ ✣ 3.3.7.2