

# Kansas State Mathematics Standards and Assessment Guide

Based on the 2005 Kansas State Curricular Standards for Mathematics  
adopted by the Kansas State Board of Education on July 8, 2003

## Grade 3

Developed by the Kansas State Department of Education  
and  
Mathematics Specialists in the Private Sector  
from Kansas

2005

**Standard/Benchmark/Indicator**

M.3.1.1.K2a

Standard: Number and ComputationBenchmark: Number SenseIndicator: Compares and orders: a) whole numbers from 0 through 10,000 with and without the use of concrete objects**Explanation of Indicator**

Compares numbers as greater than or less than; Orders numbers from 0 through 10,000 from least to greatest and/or greatest to least.

**Instructional Example**

1. Using index cards with different numbers written on them (ex. 6,824, 3,245, 1,007, 5,345) ask the student to put the cards in order from least to greatest. Pull two index cards and ask the student which is greater.
2. Tear out page corners from a magazine and ask the student to put them in order from greatest to least. Pull two page numbers and ask the student which number is less.
3. Reads a menu to locate selections that cost less than the money the student has available.

**Item Specification****Category 2: Perform Procedures: 2a.** Using numbers to count, order, or denote**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas**Assessment Item Example**

A list of numbers is shown below.

897 250 1,412 5,395

Which list shows the numbers ordered from LEAST to GREATEST?

- A.** 1,412 250 5,395 897
- B.** 250 897 1,412 5,395
- C.** 5,395 1,412 897 250
- D.** 250 1,412 897 5,395

Correct Answer: B

Indicator					
M.3.1.1.K2a					

**Standard/Benchmark/Indicator**

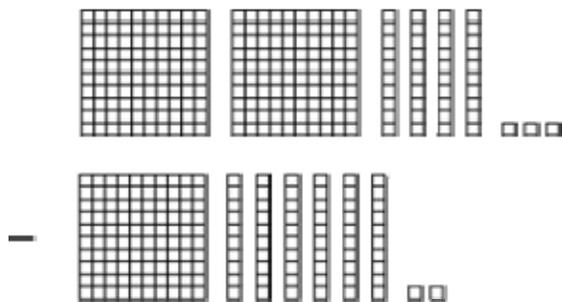
M.3.1.1.K3a-c

Standard: Number and ComputationBenchmark: Number SenseIndicator: Knows, explains, and uses equivalent representations including the use of mathematical models for: a) addition and subtraction of whole numbers from 0 through 1,000; b) multiplication using the basic facts through the 5s and the multiplication facts of the 10s; c) addition and subtraction of money**Explanation of Indicator**For example 5 dimes and 3 pennies, plus 11 dimes and 9 pennies is a representation of  $53 + 119$ For example a student recognizes that the ceramic tile in the format of four rows by three columns is a representation for  $4 \times 3$ .**Instructional Example**

1. Use money (dollars, dimes, and pennies) and make up two different amounts and ask students to write the amounts they represent and the total amount.
2. Use cards and make different arrangements of rows and columns, ask the student to write the multiplication fact it represents and total number of cards.
3. Use money and ask the student to show several ways to make \$0.55, etc.

**Item Specification****Category 2: Perform Procedures: 2b.** Do computation procedures or algorithms**Category 3: Demonstrate Understanding of Mathematical Ideas: 3e.** Show and/or explain relationships between models, diagrams, and/or other representations**Category 4: Conjecture/Generalize/Prove: 4a.** Determine the truth of a mathematical pattern, a mathematical statement, and/or proposition or make predictions**Assessment Item Example**

Shirley used blocks to model a subtraction problem, as shown below.



Which number phrase shows the same subtraction problem?

- A.  $9 - 9$
- B.  $27 - 18$
- C.  $243 - 162$
- D.  $342 - 261$

Correct Answer: C

	Indicator			
	M.3.1.1.K3a-c			

**Standard/Benchmark/Indicator**

M.3.1.1.K4 N

Standard: Number and ComputationBenchmark: Number SenseIndicator: Determines the value of mixed coins and bills with a total value of \$50 or less**Explanation of Indicator**

Determines the value of mixed coins and bills with a total value of \$50 or less

**Instructional Example**

1. Take money out of a pocket or wallet and ask the student to count the total value.
2. Ask the student to show an amount, such as \$32.45 with real or play money.
3. Student counts out the needed amount of money for admission fee to an activity (movie, sporting event, museum, etc.)
4. Opens a savings account and/or make regular deposits into it.

**Item Specification****Category 2: Perform Procedures: 2b.** Do computational procedures or algorithms**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas**Assessment Item Example**

What is the TOTAL value of 3 five-dollar bills, 8 one-dollar bills, 2 half-dollars, 3 quarters, and 2 dimes?

- A \$6.85
- B \$12.95
- C \$24.85
- D \$24.95

Correct Answer: D

		Indicator			
		M.3.1.1.K4			

**Standard/Benchmark/Indicator**

M.3.1.4.K7 N

Standard: Number and ComputationBenchmark: ComputationIndicator: Identifies multiplication and division fact families through the 5s and the multiplication and division fact families of the 10s**Explanation of Indicator**An example of a fact family is:  $3 \times 5 = 15$ ;  $5 \times 3 = 15$ ;  $15 / 3 = 5$ ;  $15 / 5 = 3$ **Instructional Example**

1. Give the student one member of a fact family, such as  $5 \times 6$ , and ask them to write the other members of this fact family. ( $6 \times 5$ ;  $30 / 5$ ;  $30 / 6$ ).
2. Give the student one member of a fact family, such as  $70 / 10$ , ask them to write or state the other members of this fact family.
3. Give the student members of a fact family and one which does not belong and ask which one does not belong. For example ( $8 \times 10$ ;  $10 \times 8$ ;  $80 / 10$ ;  $10 / 80$ ;  $80 / 8$ .)

**Item Specification****Category 1: Memorize Facts/Definitions/Formulas: 1a.** Recite or recall basic mathematics facts**Category 2: Perform Procedures: 2b.** Do computational procedures or algorithms**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas**Assessment Item Example**Which number phrase is in the SAME fact family as  $24 \div 6$  ?

- A.  $6 \times 2$
- B.  $6 \times 3$
- C.  $6 \times 4$
- D.  $6 \times 5$

Correct Answer: C

			Indicator		
			M.3.1.4.K7		

**Standard/Benchmark/Indicator**

M.3.2.3.K3

Standard: AlgebraBenchmark: FunctionsIndicator: Generalizes numerical patterns using whole numbers from 0 through 200 with one operation (addition, subtraction) by stating the rule using words**Explanation of Indicator**

When given numbers in a pattern, such as 15, 20, 25, 30, 35 ... the rule is “add five”, “plus five”, or +5

**Instructional Example**

1. Using a calendar, highlight the diagonal on a calendar and ask the student to state the rule. For example “plus 8 or add 8”
2. Give the student different patterns, such as 300, 250, 200, 150, ... and ask them to state the rule.
3. Use repetitive addition function on calculator to count by 5, 10, or 25,... and ask student to state the rule.

**Item Specification****Category 3: Demonstrate Understanding of Mathematical Ideas: 3e.** Communicate mathematical ideas or rules and/or explain the process**Category 4: Conjecture/Generalize/Prove: 4d.** Finds a mathematical rule to generate a pattern or number sequence**Assessment Item Example**

A number pattern is shown below.

8 16 24 32 40 ...

Which rule could be used to find the next number in the pattern?

- A. add 8 to the number before
- B. subtract 8 from the number before
- C. multiply the number before by 2
- D. multiply the number before by 3

Correct Answer: A

				Indicator	
				M.3.2.3.K3	

**Standard/Benchmark/Indicator**

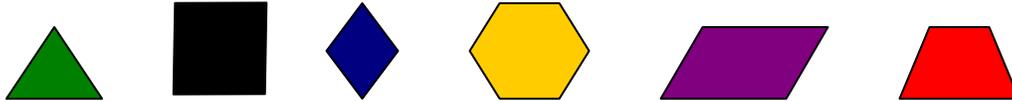
M.3.3.1.K4

Standard: Geometry

Benchmark: Geometric Figures and Their Properties

Indicator: Recognizes and describes the square, triangle, rhombus, hexagon, parallelogram, and trapezoid from a pattern block set

**Explanation of Indicator**



A pattern block set is a set of shapes shown above.

**Instructional Example**

1. Go on a Shape Hunt. Find objects in your home that are hexagons (6 sided), etc...
2. Play "I'm Thinking of a Shape that is four sided, with all sides the same length, what could I be?"(square or rhombus)
3. Cut the pattern block shapes from a baked rectangular cake, then reassemble the pieces to create a new design before icing it.
4. Use the pattern block shapes to make a quilt square.
5. Locates pattern block shapes in hidden pictures activities.

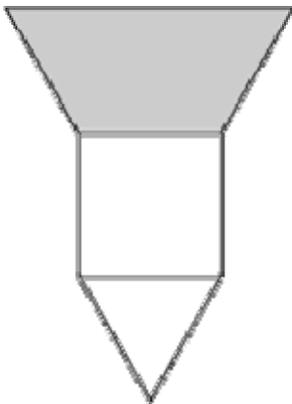
**Item Specification**

**Category 1: Memorize Facts/Definitions/Formulas: 1b.** Recall or recognize mathematical terms, definitions, or concepts

**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Uses representations to model mathematical ideas

**Assessment Item Example**

The figure below is made of 3 different shapes from a pattern block set.



- A. Parallelogram
- B. Square
- C. Trapezoid
- D. Triangle

What is the name of the shape that is shaded?

Correct Answer: C

					Indicator
					M.3.3.1.K4

**Standard/Benchmark/Indicator**

M.3.3.2.K2

Standard: GeometryBenchmark: Measurement and EstimationIndicator: Reads and tells time to the minute using analog and digital clocks**Explanation of Indicator**

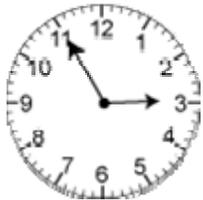
Reads and tells time to the minute using a clock with face and hands and digital clocks

**Instructional Example**

1. At different times in the day, ask students to tell the time to the nearest minute.
2. Turns on television when clock shows the time his or her favorite program is scheduled to begin.
3. Tells friend the correct time that an entertainment event is scheduled to begin, after reading the same in newspaper or flyer.
4. Sets alarm clock appropriately, in order to rise in time to arrive at school.
5. Uses watch or clock to start an activity at a certain time.
6. Uses watch or clock to make it home at a specific time.

**Item Specification****Category 1: Memorize Facts/Definitions/Formulas: 1c.** Recalls formulas or computational procedures**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Uses representations to model mathematical ideas**Assessment Item Example**

A picture of a clock is shown below.



What time is shown on the clock?

- A.** 2:55
- B.** 3:55
- C.** 10:15
- D.** 11:15

Correct Answer: A

Indicator					
M.3.3.2.K2					

**Standard/Benchmark/Indicator**

M.3.4.1.K2

Standard: Data

Benchmark: Probability

Indicator: Lists some of the possible outcomes of a simple event in an experiment or simulation including the use of concrete objects

**Explanation of Indicator**

Student describes what could happen from an experiment, such as: when rolling a die, the student can describe some of the numbers that could be rolled.

**Instructional Example**

- Using multi-colored food (m&ms, cereal, etc.) place 5 brown, 3 blue, and 2 red in a brown paper bag and ask what colors could be pulled out. Ask "Could I get an orange one?"
- Using a spinner from a game with numerals 1-6, ask "what number could I land on?"

**Item Specification**

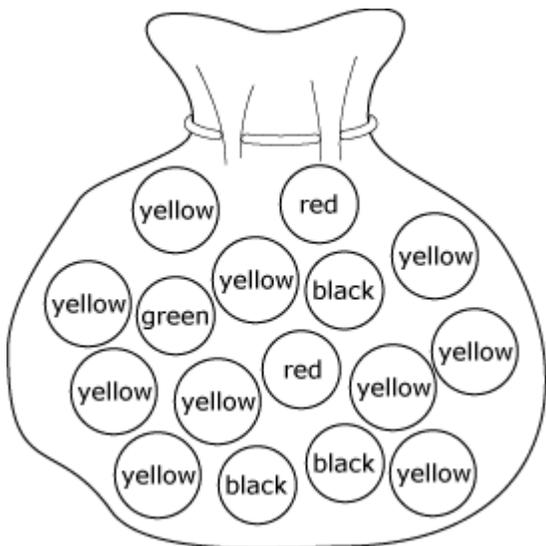
**Category 2: Perform Procedures: 2e.** Organize or display data

**Category 3: Demonstrate and Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas

**Category 4: Conjecture/Generalize/Prove: 4f.** Identify faulty arguments and misrepresentation of data

**Assessment Item Example**

LaShawn has a bag with 16 colored marbles in it, as shown below.



- A. green, yellow, yellow
- B. green, green, red
- C. green, green, yellow
- D. red, red, red

LaShawn reaches into the bag and selects 3 marbles without looking. Which group of 3 colored marbles could she select?

Correct Answer: A

	Indicator				
	M.3.4.1.K2				

**Standard/Benchmark/Indicator**

M.3.4.2.K3a-d

Standard: DataBenchmark: StatisticsIndicator: Finds these statistical measures of a data set with less than ten data points using whole numbers from 0 through 1,000:

a) minimum and maximum data values; b) range; c) mode (uni-modal only); d) median when data set has an odd number of data points

**Explanation of Indicator**

Using information students can find different values: greatest, least, the difference between the greatest and the least, the most common, and the one in the middle when arranged in order.

**Instructional Example**

1. For one week, the student keeps track of the amount of time it takes to get ready. After the week, student should list the time in order least to greatest. Using this information they can determine the greatest amount of time to get ready (maximum), the least amount of time to get ready (minimum), the difference between the longest and shortest time (range), are there two or more days that the time was the same? (mode), and the number in the middle. For example: 10 min., 12 min., 20 min, 20 min, 24 min, 26 min., 30 min. The maximum = 30 min.; minimum = 10 min.; range = 20 min.; mode = 20 min.; median = 20 min.
2. Use the newspaper and/or weather forecast to find the seven day forecast. Determine the different values.
3. Keep the stats for their favorite sports team. Determine the different values.
4. Collects 5 nutritional labels from favorite foods and determines the different values.

**Item Specification****Category 1: Memorize Facts/Definitions/Formulas: 1b.** Recall or recognize mathematical terms, definitions, or concepts, **1c.** Recall formulas or computational procedures**Assessment Item Example**

The heights, in centimeters (cm), of 9 students are listed below.

152 152 153 148 148 157 157 155 149

What is the MINIMUM height?

- A. 157 cm
- B. 148 cm
- C. 152 cm
- D. 149 cm

Correct Answer: B

		Indicator			
		M.3.4.2.K3a-d			

**Standard/Benchmark/Indicator**

M3.1.4.A1a-b N

Standard: Number and ComputationBenchmark: ComputationIndicator: Solves one-step real-world addition or subtraction problems with: a) whole numbers from 0 through 10,000; b) monetary amounts using dollar and cents notion through \$500.00**Explanation of Indicator**

Uses addition and subtraction to solve real-world problems (word problems).

**Instructional Example**

1. The student has a pledge sheet for a jump-a-thon, etc. The student should determine the total amount pledged.
2. The student looks in a catalog and determines the total cost for the items they would like to purchase. If the student has saved money, the student can determine the amount of money needed to make the purchase.
3. Ask the student a variety of story problems using addition and subtraction to solve.

**Item Specification****Category 2: Performs Procedures: 2d.** Solve equations, formulas, or routine word problems**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas**Category 4: Conjecture/Generalize/Prove: 4f.** Identify faulty arguments or identify misrepresentations of data**Category 5: Solves Non-routine Problems and Make Connections: 5b.** Applies mathematics in contexts outside of mathematics**Assessment Item Example**

For a vacation, Barry's family spent \$786 for airplane tickets and \$1,599 for hotel rooms. What is the TOTAL amount of money the family spent on these two costs?

- A. \$813
- B. \$1,213
- C. \$1,385
- D. \$2,385

Correct Answer: D

			Indicator		
			M.3.1.4.A1a-b		

**Standard/Benchmark/Indicator**

M3.2.1.A2

Standard: AlgebraBenchmark: PatternsIndicator: Recognizes multiple representations of the same pattern**Explanation of Indicator**

Can recognize a pattern shown in at least two different ways.

**Item Specification****Category 3: Demonstrate and Understanding of Mathematical ideas: 3e.** Shows and/or explain relationships between models, diagrams, and/or other representations**Category 4: Conjecture/Generalize/Prove: 4c.** Recognize, generate, or continue patterns, **4d.** Find a mathematical rule to generate a pattern or number sequence**Category 5: Solve Non-routine Problems/Make Connections: 5c.** Analyze data or recognize patterns**Assessment Item Example**

A pattern of shapes is shown below.



Which pattern of letters shows the SAME pattern as the shapes?

- A. ABAB
- B. ABAC
- C. ABCA
- D. ABCB

Correct Answer: B

				Indicator	
				M.3.2.1.A2	

**Standard/Benchmark/Indicator**

M.3.3.2.A1a,b,e

Standard: GeometryBenchmark: Measurement and EstimationIndicator: Solves real-world problems by applying appropriate measurements: a) length to the nearest inch, foot, or yard; b) length to the nearest centimeter or meter; e) number of days in a week.**Explanation of Indicator**

Using a ruler measures objects to the nearest inch, foot, or yard, length to the nearest centimeter or meter and knows the number of days in a week.

**Instructional Example**

1. Measures objects around the house using a ruler.
2. Takes a handful of crackers, lays them end to end and measures the total length.
3. Keep track of student's growth over time.
4. Measure the height of a can of vegetables. Estimate how many can be stacked to fit on a shelf.
5. Keep track of how many weeks/days before a vacation.
6. Uses measuring tape to measure distance in softball throw.
7. Uses ruler to cut materials to desired cm length.
8. Mark family members' birthdays on a calendar, to keep track of how much tie he or she has left in order to complete card/gift shopping.
9. Makes dates of future movies/video game releases on a calendar to count down the number of days until a favorite is available for purchase.

**Item Specification****Category 2: Performs Procedures: 2d.** Solves equations, formulas, or routine word problems**Category 3: Demonstrate Understanding of Mathematical Ideas: 3b.** Use representations to model mathematical ideas**Category 5: Solves Non-routine Problems/Make Connections: 5b.** Apply mathematics in contexts outside of mathematics**Assessment Item Example**

Devin's birthday is exactly 4 weeks away. How many days are there until Devin's birthday?

- A. 16 days
- B. 20 days
- C. 28 days
- D. 40 days

Correct Answer: C

					Indicator
					M.3.3.2.A1a,b,e