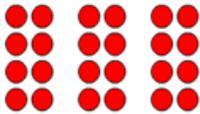# 3rd Grade MCA3 Standards, Benchmarks, Test Specifications & Sampler Questions
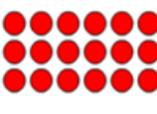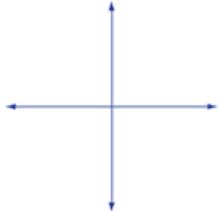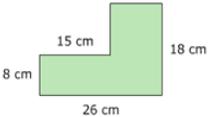
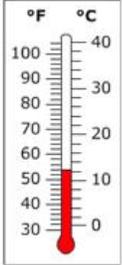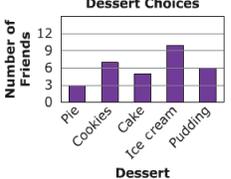| Strand	Standard	No.	Benchmark (3rd Grade)	Sampler Item
Number & Operation MCA III 20 – 24 Items	Compare and represent whole numbers up to 100,000 with an emphasis on place value and equality. MCA III 5 – 7 Items	3.1.1.1	Read, write and represent whole numbers up to 100,000. Representations may include numerals, expressions with operations, words, pictures, number lines, and manipulatives such as bundles of sticks and base 10 blocks. *Item Specifications* • Vocabulary allowed in items: digits, value, plot, locate, point	What is another way to show 4,608? A. 46+8 B. 4,000+60+8 C. 4,000+600+8 D. 4,000+600+80 ------------------------------------ Plot the number 205 on the number line. Click on the number line where you want to plot the point. 200 ⟷ 300
		3.1.1.2	Use place value to describe whole numbers between 1000 and 100,000 in terms of ten thousands, thousands, hundreds, tens and ones. *For example*: Writing 54,873 is a shorter way of writing the following sums: 5 ten thousands + 4 thousands + 8 hundreds + 7 tens + 3 ones 54 thousands + 8 hundreds + 7 tens + 3 ones. *Item Specifications* • Allowable expanded forms: 300 + 60 + 5, 3 hundreds + 6 tens + 5 ones • Items may ask to identify a place a digit is in or the value of the digit in a place • Vocabulary allowed in items: digits, value, equal	Which number has a 5 in the ten thousands place? A. 104,352 B. 365,971 C. 582,607 D. 951,480
		3.1.1.3	Find 10,000 more or 10,000 less than a given five-digit number. Find 1000 more or 1000 less than a given four- or five-digit. Find 100 more or 100 less than a given four- or five-digit number. *Item Specifications* • Vocabulary allowed in items: fewer, more, less, greater	There are 23,650 people in a stadium. The stadium can hold 1,000 more people. How many people can the stadium hold? A. 22,650 B. 23,750 C. 24,650 D. 33,650

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		3.1.1.4	Round numbers to the nearest 10,000, 1000, 100 and 10. Round up and round down to estimate sums and differences. *For example*: 8726 rounded to the nearest 1000 is 9000, rounded to the nearest 100 is 8700, and rounded to the nearest 10 is 8730. *Another example*: 473 – 291 is between 400 – 300 and 500 – 200, or between 100 and 300. *Item Specifications* • Vocabulary allowed in items: estimate, round, nearest, closest	What is 153,924 rounded to the nearest thousand? A. 150,000 B. 153,000 C. 153,900 D. 154,000
		3.1.1.5	Compare and order whole numbers up to 100,000. *Item Specifications* • < and > symbols are not allowed • Vocabulary allowed in items: least, greatest, compare, order, value	Connie lists her scores from a video game. 14,087 13,345 14,613 14,301 Which list shows the scores listed from greatest to least? A. 14,613 13,345 14,301 14,087 B. 14,613 14,301 14,087 13,345 C. 14,087 14,613 14,301 13,345 D. 13,345 14,087 14,301 14,613
	Add and subtract multi-digit whole numbers; represent multiplication and division in various ways; solve real-world and mathematical problems using arithmetic. **MCA III** **8 – 10 Items**	3.1.2.1	Add and subtract multi-digit numbers, using efficient and generalizable procedures based on knowledge of place value, including standard algorithms. *Item Specifications* • Addition items may contain 3 whole number addends, at most • Numbers used may contain 4 digits each, at most • Items must not have context • Vocabulary allowed in items: add, subtract, sum, difference, result	Subtract. 4,500 – 612 Type your answer in the box. - Subtract. 6,905 – 37 A. 3,205 B. 6,868 C. 6,932 D. 6,968
		3.1.2.2	Use addition and subtraction to solve real-world and mathematical problems involving whole numbers. Use various strategies, including the relationship between addition and subtraction, the use of technology, and the context of the problem to assess the reasonableness of results. *For example*: The calculation 117 – 83 = 34 can be checked by adding 83 and 34. *Item Specifications* • Addition items may contain 3 whole number addends, at most • Numbers used may contain 4 digits each, at most • Addition and subtraction can be used in the same item • Vocabulary allowed in items: add, subtract, sum, difference, result	Jeff had 1,350 glass beads and 695 clay beads. He sold 138 glass beads and 47 clay beads. How many beads did Jeff have left? A. 470 B. 746 C. 1,860 D. 2,230

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		3.1.2.3	Represent multiplication facts by using a variety of approaches, such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line and skip counting. Represent division facts by using a variety of approaches, such as repeated subtraction, equal sharing and forming equal groups. Recognize the relationship between multiplication and division. *Item Specifications* • Factors are limited to 1–12 • Variables are not used • Vocabulary allowed in items: multiply, divide	Which model shows 6×3? A. B. C. D.
		3.1.2.4	Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems. *For example*: You have 27 people and 9 tables. If each table seats the same number of people, how many people will you put at each table? *Another example*: If you have 27 people and tables that will hold 9 people, how many tables will you need? *Item Specifications* • Factors are limited to 1–20; 1 factor must have only 1 digit • Dividend is no greater than 100 • Vocabulary allowed in items: multiply, divide, product	Malik has 64 marbles. He puts an equal number of marbles into each of 4 jars. How many marbles are in each jar? A. 14 B. 15 C. 16 D. 18
		3.1.2.5	Use strategies and algorithms based on knowledge of place value, equality and properties of addition and multiplication to multiply a two- or three-digit number by a one-digit number. Strategies may include mental strategies, partial products, the standard algorithm, and the commutative, associative, and distributive properties. *For example*: $9 \times 26 = 9 \times (20 + 6) = 9 \times 20 + 9 \times 6 = 180 + 54 = 234$. *Item Specifications* • Items must not have context • The one-digit factor must be 2–6 • Vocabulary allowed in items: multiply, product	Multiply. 507×6 A. 342 B. 3,002 C. 3,042 D. 3,102

Strand	Standard	No.	Benchmark (3rd Grade)	Sampler Item
	Understand meanings and uses of fractions in real-world and mathematical situations. **MCA III 5 – 7 Items**	3.1.3.1	Read and write fractions with words and symbols. Recognize that fractions can be used to represent parts of a whole, parts of a set, points on a number line, or distances on a number line. *For example*: Parts of a shape (3/4 of a pie), parts of a set (3 out of 4 people), and measurements (3/4 of an inch). *Item Specifications* • Denominators are limited to 2, 3, 4, 6 and 8 • Fractions located on number lines are limited to denominators of 2 and 4 • Sets may contain no more than 12 objects • Vocabulary allowed in items: fraction, plot, locate, point	Cory has 2 red crayons and 1 blue crayon. What fraction of Cory's crayons is red? ○ A. $\frac{1}{3}$ ○ B. $\frac{1}{2}$ ○ C. $\frac{2}{3}$ ○ D. $\frac{3}{2}$
		3.1.3.2	Understand that the size of a fractional part is relative to the size of the whole. *For example*: One-half of a small pizza is smaller than one-half of a large pizza, but both represent one-half. *Item Specifications* • Denominators are limited to 2, 3, 4, 6 and 8 • Sets may contain no more than 12 objects • Vocabulary allowed in items: fraction	Gavin has 4 green apples and 4 red apples. Tara has 4 green apples and 8 red apples. Who has a greater fraction of green apples? ○ A. Gavin, because $\frac{4}{8}$ is greater than $\frac{4}{12}$ ○ B. Tara, because $\frac{4}{12}$ is greater than $\frac{4}{8}$ ○ C. Tara, because 12 is greater than 8 ○ D. They both have the same fraction of green apples.
		3.1.3.3	Order and compare unit fractions and fractions with like denominators by using models and an understanding of the concept of numerator and denominator. *Item Specifications* • Denominators are limited to 2, 3, 4, 6 and 8 • Sets may contain no more than 12 objects • Vocabulary allowed in items: fraction, equal, least, greatest	Ellen has a vase of flowers. Which is the greatest fraction? • $\frac{1}{8}$ are red. ○ A. $\frac{1}{8}$ • $\frac{1}{3}$ are blue. ○ B. $\frac{1}{3}$ • $\frac{1}{6}$ are purple. ○ C. $\frac{1}{6}$ • $\frac{1}{4}$ are yellow. ○ D. $\frac{1}{4}$

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Algebra **MCA III** 8 – 10 Items	Use single-operation input-output rules to represent patterns and relationships and to solve real-world and mathematical problems. **MCA III** **3 – 4 Items**	3.2.1.1	Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts. *For example*: Describe the relationship between number of chairs and number of legs by the rule that the number of legs is four times the number of chairs. *Item Specifications* • At least 3 iterations of the pattern must be given • Items may require identification of 3 or fewer terms beyond what is given • Vocabulary allowed in items: rule, input, output, value	A table is shown. | Input	Output
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2	12
4	24
8	48	 What is the output number when the input number is 12? ○ **A.** 2 ○ **B.** 60 ○ **C.** 72 ○ **D.** 96
	Use number sentences involving multiplication and division basic facts and unknowns to represent and solve real-world and mathematical problems; create real-world situations corresponding to number sentences. **MCA III** **5 – 6 Items**	3.2.2.1	Understand how to interpret number sentences involving multiplication and division basic facts and unknowns. Create real-world situations to represent number sentences. *For example*: The number sentence $8 \times m = 24$ could be represented by the question "How much did each ticket to a play cost if 8 tickets totaled $24?" *Item Specifications* • Variables, boxes or blanks may be used to represent unknown numbers • Vocabulary allowed in items: number sentence, equation, value, represent	Which story problem can be solved using the number sentence $2 \times n = 18$? ○ **A.** Tom had 18 pencils. He gave n pencils away and had 2 left over. How many pencils did Tom give away? ○ **B.** Alice bought n books and spent $18. Each book cost $2. How many books did Alice buy? ○ **C.** Maya had n rocks and 2 baskets. She put 18 rocks in each basket. How many rocks did Maya have? ○ **D.** Pedro saw 2 kinds of birds. He saw 18 robins and n crows. How many crows did Pedro see?
		3.2.2.2	Use multiplication and division basic facts to represent a given problem situation using a number sentence. Use number sense and multiplication and division basic facts to find values for the unknowns that make the number sentences true. *For example*: Find values of the unknowns that make each number sentence true $$6 = p \div 9$$ $$24 = a \times b$$ $$5 \times 8 = 4 \times t.$$ *Another example*: How many math teams are competing if there is a total of 45 students with 5 students on each team? This situation can be represented by $5 \times n = 45$ or $\frac{45}{5} = n$ or $\frac{45}{n} = 5$. *Item Specifications* • Variables, boxes or blanks may be used to represent unknown numbers • Vocabulary allowed: number sentence, equation, value, represent	An equation is shown. $$3 \times 7 = \_\_\_\_ + 7$$ What number makes the number sentence true? ○ **A.** 3 ○ **B.** 14 ○ **C.** 21 ○ **D.** 28 - - - - - - - - - - - - - - - - - Allie has 6 packages of straws. There are 12 straws in each package. Use n to represent the total number of straws. Write a number sentence that Allie can use to find the total number of straws in the packages. Click and drag a number or symbol into the number sentence. ☐ ☐ ☐ ☐ ☐ [+] [−] [×] [÷] [=] [n] [2] [6] [12] [24]

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Geometry & Measurement **MCA III 10 – 13 Items**	Use geometric attributes to describe and create shapes in various contexts. **MCA III 3 – 4 Items**	3.3.1.1	Identify parallel and perpendicular lines in various contexts, and use them to describe and create geometric shapes, such as right triangles, rectangles, parallelograms and trapezoids. *Item Specifications* - When identifying shapes by the attribute of parallel or perpendicular lines, shapes are limited to triangle, parallelogram, rectangle, rhombus, square and trapezoid - Allowable notation: right angle symbol (square in corner) - Items will not require students to identify right triangles by name - Vocabulary allowed in items: parallel, perpendicular, right, figure	Which shapes have parallel sides? Click on the shapes you want to select. Two lines are shown. Which describes the relationship between the lines? A. Parallel B. Perpendicular C. Square D. Straight
		3.3.1.2	Sketch polygons with a given number of sides or vertices (corners), such as pentagons, hexagons and octagons. *Item Specifications* - Allowable shapes: triangle, parallelogram, rectangle, rhombus, square, trapezoid, pentagon, hexagon, octagon - Vocabulary allowed in items: sides, angles, vertices, figure	Which shape has the fewest angles? A. Hexagon B. Octagon C. Pentagon D. Trapezoid
	Understand perimeter as a measurable attribute of real-world and mathematical objects. Use various tools to measure distances. **MCA III**	3.3.2.1	Use half units when measuring distances. *For example*: Measure a person's height to the nearest half inch. *Item Specifications* <mark>Not assessed on the MCA-III</mark>	No Sampler Item
		3.3.2.2	Find the perimeter of a polygon by adding the lengths of the sides. *Item Specifications* - Polygons may have 6 sides, at most - Items may require finding the length of an unknown side given the lengths of the other sides and the perimeter - Units are limited to inches, feet, yards, centimeters and meters - Vocabulary allowed in items: perimeter, length, width, side, figure	The perimeter of a rectangle is 16 inches. Its length is 5 inches. What is its width? A. 3 inches B. 6 inches C. 11 inches D. 21 inches What is the perimeter of the shape? 15 cm, 18 cm, 8 cm, 26 cm. Type your answer in the box. ▢ cm

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	3 – 4 Items	3.3.2.3	Measure distances around objects. *For example*: Measure the distance around a classroom, or measure a person's wrist size. Item Specifications • Items may require identification of appropriate tools or procedures for measuring distance • Vocabulary allowed: tool, ruler, yardstick, meter stick, tape measure	No Sampler Item
	Use time, money and temperature to solve real-world and mathematical problems. **MCA III** **4 – 5 Items**	3.3.3.1	Tell time to the minute, using digital and analog clocks. Determine elapsed time to the minute. *For example*: Your trip began at 9:50 a.m. and ended at 3:10 p.m. How long were you traveling? Item Specifications • Elapsed time must be within a two-hour span • Vocabulary allowed in items: a.m., p.m.	Mai Ka starts reading a book at the time shown on the clock. What time does Mai Ka stop reading? A. 4:08 B. 4:44 C. 5:04 D. 5:08 She stops reading 1 hour and 12 minutes later.
		3.3.3.2	Know relationships among units of time. *For example*: Know the number of minutes in an hour, days in a week and months in a year. Item Specifications • Allowable conversions: minutes to hours, hours to minutes, hours to days, days to hours, days to weeks, weeks to days, months to years, years to months • Items may require finding a conversion with mixed units in the answer (e.g., 12 days = 1 week and 5 days) • Vocabulary allowed in items: unit	A movie is 2 hours and 28 minutes long. How many minutes long is the movie? A. 88 minutes B. 120 minutes C. 148 minutes D. 228 minutes
		3.3.3.3	Make change up to one dollar in several different ways, including with as few coins as possible. *For example*: A chocolate bar costs $1.84. You pay for it with $2. Give two possible ways to make change. Item Specifications • Allowable coins: penny, nickel, dime, quarter • Allowable notation: $5, $0.75, 75¢ • When calculating change, the amount tendered is $10, at most • Vocabulary allowed in items: greatest, least, fewest, most, value	Gina buys a snack for 59¢. She pays with a $1 bill. She receives the fewest possible coins in change. What change does Gina receive? A. 1 quarter, 1 dime, 1 nickel, and 1 penny B. 2 quarters and 1 penny C. 2 quarters, 1 nickel, and 4 pennies D. 4 dimes and 1 penny

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		3.3.3.4	Use an analog thermometer to determine temperature to the nearest degree in Fahrenheit and Celsius. *For example*: Read the temperature in a room with a thermometer that has both Fahrenheit and Celsius scales. Use the thermometer to compare Celsius and Fahrenheit readings. *Item Specifications* • Allowable notation: 15ºF, 37ºC • Temperatures must be given in whole numbers • Vocabulary allowed in items: thermometer, temperature, degrees, increase, decrease	A thermometer is shown. What temperature is shown on the thermometer? ○ A. 11ºC ○ B. 12ºF ○ C. 54ºC ○ D. 54ºF
Data Analysis **MCA III 6 – 8 Items**	Collect, organize, display, and interpret data. Use labels and a variety of scales and units in displays. **MCA III 6 – 8 Items**	3.4.1.1	Collect, display and interpret data using frequency tables, bar graphs, picture graphs and number line plots having a variety of scales. Use appropriate titles, labels and units. *Item Specifications* • Scale increments will not exceed 5 • Pictograph keys will not exceed 5 • Total number on graph or chart will not exceed 500 • Vocabulary allowed in items: pictograph, tally chart, bar graph, line plot, table, data, title, label, key, represent	Kayla asked her classmates how many video games they have. She put the information in a line plot. Then 2 new students joined the class. • James has 3 video games. • Theo has 5 video games. Complete the line plot to show the information for James and Theo. Click on the line plot where you want to put each x. Leon asked his friends to choose a favorite dessert. **Dessert Choices** How many more friends chose ice cream than pie? ○ A. 2 ○ B. 5 ○ C. 7 ○ D. 10