

Houghton Mifflin *MATHSTEPS*
 Level 5
 correlated to
 Chicago Academic Standards and Framework
 Grade 5

Curriculum Framework Statement

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State Goal 6: <i>Demonstrate and apply a knowledge and sense of numbers, including basic arithmetic operations, number patterns, ratios and proportions.</i>	
CAS A. Describe, express, and represent whole numbers, proper and improper fractions, and decimals and the relationships among them, using concrete materials, drawings, words, and mathematical symbols.	
1. Read, write, and interpret whole numbers expressed in standard form, word form, and exponential form through the hundred millions place and round to the given place.	TE: T16–20 PE: 3–4, 23
2. Read, write, and interpret whole numbers written as powers of 10.	TE: T90–93, T97 PE: 159–160, 173–174
3. Read, write, and identify decimals expressed through ten thousandths.	TE: T90–93, T97 PE: 145–146, 166, 173–174
4. Identify, model, and represent equivalent fractions and mixed numbers and their equivalent improper fractions.	TE: T60–64 PE: 1103–104, 113–114, 137–138, 166, 254
5. Formulate and solve problems involving ratios.	TE: T134–138 PE: 233–238, 255–256
6. Recognize and model relationships among fractions and decimals.	TE: T134–137, T141–142 PE: 249–250, 255
7. Write terminating decimals as fractions.	TE: T134–137, T141–142 PE: 249, 255
CAS B. Compare, order, and graph integers, fractions, and decimals, using concrete materials, drawings, and mathematical symbols.	
1. Compare (using $<$, $>$, $=$) and order quantities expressed as whole numbers, fractions, and decimals.	TE: T16–19, T21, T90–94 PE: 7–8, 23–24, 87, 145–148, 173–174
2. Describe data using ratios.	TE: T134–138 PE: 233–234, 255
3. Identify a whole number, fraction or decimal which lies between two given numbers.	TE: T16–19, T21, T90–94 PE: 7–8, 23–24, 146–147
4. Identify and represent whole numbers, decimals, and fractions on a number line.	TE: T16–20, T60–64, T90–94 PE: 5, 87, 146
CAS C. Add, subtract, multiply, and divide single- and multi-digit whole numbers, fractions, decimals, and percents and understand the relationships between these operations.	
1. Describe and demonstrate understanding of the inverse relationship between addition/subtraction and multiplication/division.	These pages prepare students to meet this objective: TE: T16–19, T30–33 PE: 17–18, 29–32

Houghton Mifflin *MATHSTEPS*
Level 5
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Chicago Academic Standards and Framework
Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

2. Multiply whole numbers and decimals by one- or two-digit numbers.	TE: T30–33, T35–36 PE: 29–36, 45–46, 155–156
3. Divide two- and three-digit numbers that are multiples of 10 and up to a three-digit dividend by a one- or two-digit division without a calculator.	TE: T44–47, T54 PE: 75–76, 81, 263
4. Add, subtract, multiply, and divide with money amounts.	TE: T44–47, T49, T90–93, T96 PE: 55–56, 153
5. Rename ratios in higher and lower terms.	TE: T134–128 PE: 233–234, 255
6. Add, subtract, and multiply fractions, with like and unlike denominators, and mixed fractions.	TE: T60–63, T67–68, T76–79, T80–81, T84 PE: 81–94, 99–100, 103–104, 106–107, 113–114, 121–122, 137–138, 141–142, 254
7. Estimate, then find exact answers to computational problems and compare estimates to exact answers.	TE: T16–19, T22, T30–33, T38, T44–47, T55 PE: 13–14, 43–44
CAS D. Identify, select and use appropriate strategies (such as using smaller numbers, modeling, guess and check, working backwards, (trial and error) to solve problems involving percentages, ratios, and proportions relevant to their experiences.	
1. Explain (orally and in writing) solutions to problems involving whole numbers and fractions and support the solutions with evidence.	TE: T20–21, T23, T34, T38, T48, T51, T53, T64–66, T68, T70, T82–84 PE: 6–8, 11–12, 16, 18–19, 28, 43–44, 52, 62, 64, 70, 88, 90, 94, 104, 110–112, 118, 127–128, 130, 134
2. Use estimation and calculators to solve problems and check answers.	TE: T16–19, T22, T30–33, T38, T44–47, T55 PE: 13–14, 43–44
CAS E. Identify, apply, and explain properties of numbers (such as prime, composite, factor, divisor, relationships between), of operations (inverse relationship, distributive property), and of mathematical logic.	
1. Write numbers as the products of primes.	TE: T52 PE: 65–68
2. Apply the rules of divisibility for 2, 3, 5, and 10.	TE: T44–47, T51 PE: 63–64, 81–82
3. Apply the order of operations and commutative property to solve problems.	TE: T16–19, T23, T30–34, T4–48, T76–79, T82 PE: 18, 29–30, 51–52, 81–82, 125–126, 296
State Goal 7: Estimate, make, and use measurements of objects, quantities, and relationships, and determine acceptable levels of accuracy.	
CAS A. Use standard (metric and customary), tools, scales, and formulas to measure distance, area, capacity, temperature, and weight/mass of objects with whole numbers, fractions, and decimals.	

Houghton Mifflin *MATHSTEPS*
 Level 5
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 Chicago Academic Standards and Framework
 Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

1. Select and use appropriate measurement units within the customary system and the metric system for length, temperature, and weight/mass of objects.	TE: T106–113 PE: 177–182, 185–190, 193
2. Determine the perimeter of a polygon, the area of a square and rectangle through a variety of means (e.g., measuring, counting squares, stacking cubes), and develop general statements which lead to formulas.	TE: T118–121, T125 PE: 214–215, 227–229
3. Differentiate among perimeter, area, and volume.	TE: T118–122, T125, T127 PE: 214–215, 223–224, 227–228
4. Discover pi, using concrete materials and models.	See Level 6
5. Measure and draw angles to the nearest 5° , using a protractor.	TE: T118–122 PE: 200–202
6. Create drawings or models which reflect given measurement specifications.	TE: T134–137, T139 PE: 239–240, 255
7. Read and interpret scale in maps or scale drawings, using the ideas of constant ratio (e.g., one inch to one mile) and use it to answer questions about actual measurements.	TE: T134–137, T139 PE: 239–240, 255
CAS B. Estimate measurements, convert units within and between customary and metric systems (e.g., a liter is about a quart), and determine relationships between measurements expressed in different systems (e.g., weight and volume) with reasonable accuracy.	
1. Determine circumstances under which overestimating or underestimating is more useful (e.g., How fence will you need to fence-in a yard 30' by 60'?)	These pages prepare students to meet this objective: TE: T83–84, T113 PE: 131–134, 140–143, 190
2. Order, compare, and convert units of distance, time, temperature, weight mass, and capacity within the customary system.	TE: T112–113 PE: 185–190
3. Convert between and compare units of distance, weight/mass, and time within the customary system and within the metric system.	TE: T110–113 PE: 177–182, 185–190
4. Approximate the area of irregular figures by counting square units.	TE: T118–121, T125 PE: 214–217, 228
5. Estimate angle measurements using 45°, 90°, and 180° as referents.	These pages prepare students to meet this objective: TE: T122 PE: 200–202

Houghton Mifflin *MATHSTEPS*
 Level 5
 correlated to
 Chicago Academic Standards and Framework
 Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

6. Estimate total area when several objects are combined or grouped (e.g., 3 rugs are placed next to each other.).	These pages prepare students to meet this objective: TE: T118–121, T125 PE: 214–215, 228
State Goal 8: <i>Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.</i>	
CAS A. Extend, create, describe, and analyze geometric and number patterns.	
1. Show how one quantity determines another quantity in a functional relationship based on a linear pattern (e.g. figure out the total number of horses if there are 100 hooves in the stable, and the total number of ears for that many hooves.).	TE: T23, T34, T36, T64, T140, T167, T170 PE: 16, 28, 37–38, 86, 241–242, 288, 299–302
2. Extend simple, non-linear patterns (e.g., 2, 4, 8, 16...)	TE: T30–33, T36, T118–121, T124 PE: 37–38, 209–210
CAS B. Describe trends, patterns, verbal rules, functions, and other mathematical relationships using tables, graphs, charts, ad open sentences created from given or student-generated data.	
1. Describe rules for given number patterns in whole numbers and fractions.	TE: T35–36 PE: 34, 37–38
2. Use simple two-dimensional coordinate systems to find locations on a map.	TE: T167 PE: 287–288
3. Create a problem situation based on a given open sentence (e.g., $\$62.10 - \$6.21 = b$).	These pages prepare students to meet this objective: TE: T23–24, T35 PE: 15–16, 19–20, 32
CAS C. Use variables and equations to solve problems.	
1. Show and describe what occurs when a change is made to one part of an equality relationship.	These pages prepare students to meet this objective: TE: T23–T35 PE: 15–21, 27–32
2. Create and solve problems to find the missing number.	TE: T23–24, T35, T48, T168 PE: 15–17, 21, 27–29, 31–32, 49–50, 291–292
CAS D. Model relationships between quantities, using tables, charts, mathematical expressions and equations, and graphs to solve problems relevant to student experiences as well as those which arise from mathematical patterns.	
1. Solve open number sentences created to show relationships between quantities.	TE: T23–24, T35 PE: 15–16, 19–20, 32

Houghton Mifflin *MATHSTEPS*
Level 5
correlated to
Chicago Academic Standards and Framework
Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

2. Describe and answer questions about simple mathematical patterns.	TE: PE: 37–38, 209–210
3. Solve problems with whole numbers and decimals, both written in exponential notation.	TE: T16–19, T21 PE: 9–10, 24, 68, 102, 148, 160, 230
4. Determine whether there is sufficient information given to solve a problem and/or whether extraneous/irrelevant information is given.	TE: T44–47, T51, T148–151, T154 PE: 61–62, 267–268
5. Interpret and give solutions to problems as exact or approximate.	These pages prepare students to meet this objective: TE: T16–19, T22, T30–33, T38, T90–93, T96 PE: 13–14, 43–44, 153–154, 173
6. Collect data, analyze information, and display data and conclusions on charts, tables, and graphs.	TE: T21–23, T34, T55, T82, T111, T140, T152–156, T170 PE: 7–8, 11–12, 16, 28, 79–80, 127–128, 183–184, 241–242, 244, 259–265, 269–272, 275–276, 302
State Goal 9: Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.	
CAS A. Draw line segments, rays, lines (one dimension) and plane figures (two dimensions), and construct solids (three dimensions).	
1. Describe and extend geometric patterns, using concrete and pictorial models.	TE: T124 PE: 209–210
2. Identify and construct three-dimensional shapes.	TE: T118–121, T126 PE: 218–220, 227–228
3. Develop methods for and draw parallel lines, perpendicular lines, the perpendicular bisector of a line segment, and an angle bisector, using appropriate tools.	TE: T118–122 PE: 197, 227–228
4. Identify and name parts of a circle (center, chord, radius, semicircle).	TE: T118–121, T125 PE: 211–213, 227–228
5. Create and use the same patterns to cover an area.	These pages prepare students to meet this objective: TE: T118–121, T125 PE: 214–215, 227–228
CAS B. Identify, describe, and categorize geometric objects by their properties (parallel, perpendicular, similar, congruent, symmetric about a line).	
1. Determine the congruence of geometric figures by comparing the measures of all sides and angles.	TE: T118–121, T123 PE: 205–206

Houghton Mifflin *MATHSTEPS*
 Level 5
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 Chicago Academic Standards and Framework
 Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

CAS C. Describe the properties of and the relationships among 1-, 2-, and 3- dimensional figures (rectangles, triangles, squares, circles, cubes, prisms, pyramids, cones, cylinders, line segments, rays, and angles).	
1. Describe the relationship among points, lines, line segments, rays, and angles by constructing all from one.	TE: T118–122 PE: 197–200, 255
2. Identify and describe parts of geometric figures (vertex, radius, diameter, angle, side, edge, face, chord, midpoint).	TE: T124–126 PE: 204, 208, 211–213, 218–220
3. Draw and two- and three-dimensional figures and compare them to similar objects or models.	These pages prepare students to meet this objective: TE: T124–126 PE: 207–208, 211–213, 218–220
4. Identify, describe, and categorize triangles by their angles (right, obtuse, acute) and by their sides (equilateral, isosceles, and scalene).	TE: T118–121, T123 PE: 203–205
5. Draw polygons, using various characteristics, including types of lines and sides, and number of sides.	These pages prepare students to meet this objective: TE: T124 PE: 208, 227–228
6. Identify, describe, and categorize angles as supplementary.	See Level 6
7. Draw and describe regular and irregular quadrilaterals and triangles.	TE: T123–124 PE: 203–204, 207–208
CAS D. Present informational logical arguments (e.g., the area of a right triangle with legs of 3" and 4" is 6 square inches because it is half the area of a 3" x 4" rectangle) using concrete objects, diagrams, and technology.	
1. Explain and give examples that demonstrate the difference between the perimeter and the area of a figure.	TE: T118–121, T125 PE: 214–215, 227–229
2. Draw and explain a simple geometric pattern.	TE: T124 PE: 209–210
3. Make generalizations about geometric models and space figures.	TE: T118–121, T126 PE: 218–220, 227
State Goal 10: <i>Collect, organize, and analyze data, using statistical methods to predict results and interpret uncertainty and chance in practical applications.</i>	
CAS A. Interpret data comparing sets of data and using tallies, tables, charts, bar graphs, line graphs, and line plots.	
1. Determine the middle (mean, median, mode), spread (range) and grouping of a set of data and use them to make descriptive statements about the data.	TE: T148–151, T153 PE: 263–264, 266, 277

Houghton Mifflin *MATHSTEPS*
 Level 5
 correlated to
 Chicago Academic Standards and Framework
 Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

2. Display in line graph format data given on a bar graph.	These pages prepare students to meet this objective: TE: T22, T82, T152 PE: 11–12, 128, 261–262
CAS B. Draw conclusions and evaluate arguments based on data analysis and data displays (tables, charts, graphs), verifying reasoning.	
1. Make statements and draw simple conclusions based on data from tables, charts, and graphs.	TE: T143, T152–155 PE: 253–254, 260–261, 264, 267–269, 272
2. Explain and describe the mean, median, mode, and range of a set of data.	TE: T50, T153 PE: 59–60, 263–264, 266
3. Compare data in order to derive and make true statements.	These pages prepare students to meet this objective: TE: T143, T152–154 PE: 253, 260, 264, 268
4. Interpret data and agree or disagree with statements made about the data.	These pages prepare students to meet this objective: TE: T143, T152–155 PE: 253–254, 260–261, 264, 267–269, 272
5. Read and interpret a transportation schedule or similar kind of guide.	TE: T111 PE: 183
CAS C. Formulate questions of interest and select ways to systematically collect, organize, and describe data appropriate to the questions.	
1. Gather, organize, and display data using tallies, tables, charts, bar graphs, line graphs, and circle graphs.	TE: T153–156 PE: 263, 270–272, 275–276
2. Analyze and communicate the results of a survey or experiment and state conclusions.	TE: T22, T140, T152–153 PE: 12, 244, 260–261, 264
3. Select a sample group and describe common characteristics of the group.	TE: T154, 156 PE: 270, 275–276
CAS D. Determine the probability of events when there are equally likely outcomes.	
1. Determine the probability distribution of an event, using concrete materials and tree diagrams representing all possible results.	TE: T148–151, T154 PE: 270, 273–277
2. Express probabilities as fractions and as decimals.	TE: T148–151, T154 PE: 269–270, 277–278
3. Compare the likelihood of events in terms of certain, more likely, less likely, equally likely, or impossible.	TE: T148–151, T154 PE: 269–270

Houghton Mifflin *MATHSTEPS*
Level 5
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Chicago Academic Standards and Framework
Grade 5

Curriculum Framework Statement

Houghton Mifflin *MATHSTEPS*

4. Find all possible arrangements involving a limited number of variables.	TE: T148–151, T154 PE: 273–277
5. Determine the probability of a simple event and express that probability as a ratio or decimal.	TE: T148–151, T154 PE: 273–277