

Houghton Mifflin *MATHSTEPS*
 Level 4
 correlated to
 Chicago Academic Standards and Framework
 Grade 4

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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 through 999,999 and round to the nearest thousand, ten thousand, and hundred thousand.	TE: T16–23 PE: 3–17
2. Explore whole-numbers powers, using powers of 10.	See Level 5
3. Read, write, and identify decimals expressed through thousandths.	TE: T118–126 PE: 213–231
4. Identify, model, and represent equivalent fractions.	TE: T72–76 PE: 113–116
5. Formulate and demonstrate relationships among simple fractions and decimals.	TE: T118–121, T124 PE: 221–222
6. Generate and round non-terminating decimals to a given place.	TE: T118–121, T124 PE: 223–224
CAS B. Compare, order, and graph integers, fractions, and decimals, using concrete materials, drawings, and mathematical symbols.	
1. Compare (<, >, =) quantities expressed as whole numbers.	TE: T16–20 PE: 5–6
2. Describe data (e.g., number of girls to boys), using models, pictures, and words.	TE: T21, T51, T97, T107–108, T150–151 PE: 9–10, 69–70, 167–168, 181–184, 261–264, 266–270
3. Identify a whole number which lies between two given numbers.	These pages prepare students to meet this objective: TE: T20–22 PE: 3–8, 11–14, 17
4. Identify and represent whole numbers on a number line.	TE: T21, T32 PE: 7, 23
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 the relationship between addition/subtraction and between multiplication/division.	TE: T48, T51, T138, T140 PE: 58, 69–70, 247, 255–256
2. Multiply whole numbers and decimals by a one-digit number.	TE: T42–45, T46–48 PE: 49–52, 55–56

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3. Divide two- and three-digit numbers that are multiples of 10 by a one- or two-digit divisor.	These pages prepare students to meet this objective: TE: T61, T136–139 PE: 80, 238, 242, 245, 249–250, 257
4. Add and subtract with money amounts.	TE: T28–31, T36 PE: 37–40
5. Add and subtract fractions with like and unlike denominators, and mixed numbers with like denominators.	TE: T72–75, T80–81 PE: 121–124, 127–128, 131–134
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 support solutions with evidence.	TE: T48 PE: 57–58
2. Use estimation to solve problems and check answers.	TE: T28–31, T34, T42–45, T49, T132–135, T140 PE: 29–30, 61–62, 253–254
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. Identify and describe prime and composite numbers.	TE: T56–59, T65 PE: 97–98
2. Describe and apply the rules of divisibility for 2, 5, and 10.	TE: T56–59, T64 PE: 95–96
3. Describe and apply the order of operations.	TE: T56–60 PE: 77–78
State Goal 7: Estimate, make, and use measurements of objects, quantities, and relationships, and determine acceptable levels of accuracy.	
CAS A. Use standard (customary and metric), tools, scales, and formulas to measure distance, area, capacity, temperature, and weight/mass of objects with whole numbers, fractions, and decimals.	
1. Select and use appropriate measurement units within the customary system and the metric system for length and temperature.	TE: T102–106, T108–109 PE: 175–178, 185–188
2. Determine the perimeter of a regular polygon and the area of squares and rectangles by measuring and constructing models.	TE: T102–105, T111 PE: 196–200
3. Differentiate between perimeter and area.	TE: T102–105, T111–112 PE: 196–202
4. Identify the parts of a circle (e.g., diameter, radius, center) and differentiate between circumference and area.	TE: T88–91, T94 PE: 153–154

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5. Identify, describe, and estimate angles (right, obtuse, and acute).	TE: T88–92, T94 PE: 145–146, 151–152
6. Measure drawings or models to determine the exact measurements (e.g., a square 6 cm on a side, a rectangle with the length of 4 cm and the width of 2 cm).	TE: T106 PE: 175
7. Measure a scale in maps or scale drawings, using the ideas of constant ratio (e.g., one inch to one mile).	See Level 5
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 the appropriateness of overestimating or underestimating in computational problems and in different contexts.	These pages prepare students to meet this objective: TE: T106–107 PE: 177, 179–180, 185–186, 188, 191
2. Compare and measures given in customary and metric units.	TE: T106–109 PE: 175–180, 185–190
3. Convert between and compare units of distance within the customary system and within the metric system.	TE: T106–109 PE: 175–178, 185–188
4. Approximate the area of an irregular figure by using concrete materials.	TE: T112 PE: 201–202
5. Estimate angle measurements using 90° and 180° as referents.	These pages prepare students to meet this objective: TE: T94 PE: 151–152
6. Count area in square units by tracing several objects on grid paper that are combined or grouped.	TE: T102–105, T111 PE: 198–200
State Goal 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.	
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 simple pattern.	These pages prepare students to meet this objective: TE: T165 PE: 299–302
2. Extend simple number patterns.	TE: T23, T123 PE: 15–16, 219–220
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.	

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1. Describe and extend given number patterns in whole numbers.	TE: T23 PE: 15–16
2. Plot points on a grid.	TE: T159–161, T165 PE: 297–298
3. Use simple two-dimensional coordinate systems to find locations on a map.	TE: T164 PE: 295–296
4. Describe a problem situation based on a given open sentence.	TE: T28–31, T33 PE: 25
CAS C. Use variables and equations to solve problems.	
1. Show that an equal or unequal relationship between two quantities remains the same as long as the same change is made to both quantities.	TE: T164 PE: 293–294
2. Find the missing number in a number sentence.	TE: T78, T163 PE: 122, 290–292
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.	TE: T28–31, T33 PE: 25
2. Use numbers to answer questions about simple mathematical patterns.	TE: T23, T123 PE: 15–16, 219–220
3. Solve problems involving whole numbers, decimals, and exponents.	TE: T33, T37, T48, T51, T64, T66, T123, T126 PE: 27–28, 41–42, 57–58, 69–70, 93–94, 101–102, 219–220, 229–230
4. Estimate, then compute, to find the answer to problems and give answers in both forms.	TE: T34, T49, T51, T124, T136–137, T140 PE: 29–30, 61–62, 67–68, 224, 235–242, 253–254
5. Collect data and analyze information; draw conclusions.	TE: T23, T51, T66, T97, T123 PE: 15–16, 70, 102, 167–168, 219
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. Extend geometric patterns, using concrete and pictorial models.	TE: T23 PE: 16

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2. Identify and draw three-dimensional shapes.	TE: T88–91, T96–97 PE: 161–166
3. Develop methods for and draw parallel lines, and perpendicular lines, using appropriate tools.	TE: T88–92 PE: 141–143
4. Identify, draw, and label parts of a circle (center, diameter, radius).	TE: T8–91, T94 PE: 153–154
5. Use same patterns to cover an area, using concrete objects.	These pages prepare students to meet this objective: TE: T102–105, T111 PE: 198–202
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 placing one figure over another.	TE: T88–91, T93 PE: 147–148
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.	TE: T88–92 PE: 141–146
2. Identify and describe parts of geometric figures (vertex, radius, diameter, angle, side, edge, face).	TE: T88–91, T94, T96 PE: 153–154, 161–163
3. Identify space figures (cube, prism, pyramid, cone, cylinder, sphere).	TE: T88–91, T96 PE: 161–166
4. Identify, describe, and categorize triangles by their angles (right, obtuse, acute) and by their sides (equilateral, isosceles, and scalene).	TE: T88–91, T95 PE: 157–158
5. Identify and describe polygons by the number of sides.	TE: T88–91, T96 PE: 159–160
6. Identify and describe complementary angles.	See Level 6
7. Draw and describe various quadrilaterals and triangles.	TE: T88–91, T96 PE: 157–161
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.	

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1. Explain and describe the difference between the perimeter and the area of a figure.	TE: T102–105, T111–112 PE: 196–202
2. Draw or construct a simple geometric model.	TE: T88–91, T97 PE: 164–165
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. Find the mean, or average, of a series of numbers.	TE: T56–59, T66, T146–150 PE: 103–104, 263–265
2. Create and describe similarities between bar graphs and line graphs and interpret data on each.	TE: T16–19, T21, T146–149, T151 PE: 9–10, 268–270
CAS B. Draw conclusions and evaluate arguments based on data analysis and data displays (tables, charts, graphs), verifying reasoning.	
1. Make statements based on data from tables, charts, and graphs.	TE: T21, T51, T97, T107–108, T150–152 PE: 9–10, 69–70, 167–168, 183–184, 261, 266–270
2. Make general statements based on a given set of data.	TE: T21, T51, T97, T107–108, T150–152 PE: 9–10, 69–70, 167–168, 181–184, 261–264, 266–270, 272
3. Organize data, then analyze it.	TE: T21, T51, T97, T107–108, T150–152 PE: 9–10, 69–70, 167–168, 181–184, 261–264, 266–270, 272
4. Interpret data and draw conclusions.	TE: T21, T51, T97, T107–108, T150–152 PE: 9–10, 69–70, 167–168, 181–184, 261–264, 266–270, 272
5. Read a familiar schedule.	TE: T108 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, and line graphs.	TE: T21, T51, T97–98, T107–108, T150–152 PE: 9–10, 69–70, 167–168, 170, 181–184, 261–264, 266–270, 272

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2. Create and give a simple survey, and tally the results.	This page prepares students to meet this objective: TE: T150 PE: 261
3. Select and survey a sample group, describing why this group was selected.	This page prepares students to meet this objective: TE: T150 PE: 261
CAS D. Determine the probability of events when there are equally likely outcomes.	
1. Determine the probability distribution of an event, using concrete materials, representing all possible results.	TE: T152–153 PE: 271–278
2. Express as a fraction the probability that a single event will occur.	TE: T152 PE: 273–274
3. Compare the likelihood of events as <i>more likely</i> or <i>less likely</i> .	TE: T152 PE: 273–274
4. Find all possible arrangements involving a limited number of variables.	TE: T153 PE: 275–276