



MISSOURI

Mathematics Grade-Level Expectations, Grades 6, 7, 8
Impact Mathematics: Algebra and More
Courses 1, 2, 3 © 2004/2005

Impact Mathematics: Algebra and More
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OBJECTIVES	PAGE REFERENCES
GRADE 6	
Number and Operations	
1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
A. Read, write and compare numbers	
compare and order integers, positive rationals and percents, including finding their approximate location on a number line ST MA 5 3.3 FR IX.b	SE: 102-103, 106-110, 120-122, 124 #24-#26, 144-145 TE: SS T103, T122 TD T103, T144
B. Represent and use rational numbers	
recognize and generate equivalent forms of fractions, decimals and percents ST MA 1 3.3 FR V.b	SE: 128-130, 131-133, 134-136, 137-141 TE: AL T130, T133 SA T131, T132 SS T133 TD T131
C. Compose and decompose numbers	
recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u> , including expanded notation ST MA 1 3.6 FR V.b	SE: 113-117, 123 #6-#11 TE: AL T115 AM T116 SS T117
D. Classify and describe numeric relationships	
use <u>factors</u> and <u>multiples</u> to describe relationships between and among numbers, including whole number <u>common factors and multiples</u> ST MA 5 1.10 FR IX.c	SE: 77-78, 79-81, 82-84, 85-87, 90-95 TE: AL T80, T81 SA T77 SS T79 TT T80
2. Understand meanings of operations and how they relate to one another	
A. Represent operations	
B. Describe effects of operations	
describe the effects of addition and subtraction on fractions and decimals ST MA 1, 5 3.4, 4.1 FR V.a, IX.a	SE: 154-156, 157-160, 161-163, 164-165, 166-170, 172-174, 175-177 TE: AL T156, T157, T158

OBJECTIVES	PAGE REFERENCES
C. Apply properties of operations	
D. Apply operations on real and complex numbers	
3. Compute fluently and make reasonable estimates	
A. Describe or represent mental strategies	
B. Develop and demonstrate fluency	
C. Compute problems	
add and subtract positive rational numbers ST MA 1 1.10, 3.3 FR V.a	SE: 154-156, 157-160, 161-163, 164-165, 166-170, 172-174, 175-177 TE: AL T156, T157, T158
D. Estimate and justify solutions	
estimate and justify the results of addition and subtraction of positive rational numbers ST MA 1 3.3, 4.1 FR V.e & h	SE: 154-156, 157-160, 161-163, 164-165, 166-170, 172-174, 175-177 TE: AL T156, T157, T158
E. Use proportional reasoning	
solve problems using equivalent ratios ST MA 1 3.3 FR V.c	SE: 99-101 TE: AM T100 SA T101
Algebraic Relationships	
1. Understand patterns, relations and functions	
A. Recognize and extend patterns	
B. Create and analyze patterns	
represent and describe patterns with tables, graphs, pictures, <u>symbolic rules</u> or words ST MA 4 1.6, 3.6 FR VIII.4.b, VIII.3	SE: 278, 436-438, 439-442, 443 #1b, 444 #4 TWE: AL T437
C. Classify objects and representations	
compare various forms of <u>representations</u> to identify a pattern ST MA 4 1.6 FR VIII.3.b	SE: 278, 436-438, 439-442, 443 #1b, 444 #4 TWE: AL T437
D. Identify and compare functions	
identify <u>functions</u> as <u>linear</u> or <u>nonlinear</u> from a table or graph ST MA 4 1.6, 3.6 FR VIII.b & c	SE: <i>Share & Summarize</i> 291
E. Describe the effects of parameter changes	
2. Represent and analyze mathematical situations and structures using algebraic symbols	
A. Represent mathematical situations	
use variables to represent unknown quantities in expressions ST MA 4 1.6, 3.1 FR VIII.2e	SE: 436-438, 439-442, 443 #1b, 444 #4 TE: AL T437
B. Describe and use mathematical manipulation	
recognize equivalent forms for simple algebraic expressions (associative, distributive properties) ST MA 5 3.6 FR IX.1	SE: 556-557, 563-564, 567 #27-#28, 568 #29-#31, 571-573, 574-575, 576-578, 579-583 TWE: T T573 TD T570

OBJECTIVES	PAGE REFERENCES
C. Utilize equivalent forms	
D. Utilize systems	
3. Use mathematical models to represent and understand quantitative relationships	
A. Use mathematical models	
model and solve problems, using multiple representations such as graphs, tables, expressions and equations ST MA 4 1.6, 3.6 FR VIII.b	SE: 302-305, 306-310 TWE: SA T303, T309 TT T304
4. Analyze change in various contexts	
A. Analyze change	
compare situations with constant or varying rates of change ST MA 2, 4 1.6, 4.1 FR VI.I, VIII.c	SE: <i>Share & Summarize</i> 291 TE: T T291
Geometric and Spatial Relationships	
1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
A. Describe and use geometric relationships	
identify the <u>properties of 1- 2- and 3-dimensional shapes</u> using the appropriate geometric vocabulary ST MA 2 1.10, 3.3 FR VI.2.a	SE: 58-60 TWE: AL T59 SA T59
B. Apply geometric relationships	
describe relationships between the <u>corresponding angles</u> and the length of <u>corresponding sides of similar triangles</u> (whole number scale factors) ST MA 2 1.6 FR VI.c	SE: 152
C. Compose and decompose shapes	
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
A. Use coordinate systems	
use coordinate geometry to construct geometric shapes ST MA 2 1.6, 1.8 FR VI.a	This objective can be met in Glencoe's <i>Geometry</i> © 2005 on pages 447-451.
3. Apply transformations and use symmetry to analyze mathematical situations	
A. Use transformations on objects	
describe the transformation from a given <u>pre-image</u> to its image using the terms <u>reflection/flips</u> , <u>rotation/turn</u> and <u>translation/slide</u> ST MA 2 3.7 FR VI.b	SE: 50-51

OBJECTIVES	PAGE REFERENCES
B. Use transformations on functions	
C. Use symmetry	
create polygons and designs with <u>rotational symmetry</u> ST MA 2 1.6 FR VI.b	This objective can be met in Glencoe's <i>Geometry</i> © 2005 on page 478.
4. Use visualization, spatial reasoning and geometric modeling to solve problems	
A. Recognize and draw three-dimensional representations	
use spatial visualization to identify <u>isometric representations of mat plans</u> ST MA 2 3.3 FR VI.a	SE: 495, 508 #3-#5
B. Draw and use visual models	
draw or use <u>visual models</u> to represent and solve problems ST MA 2 3.1 FR VI.d	SE: 482-485, 486-489, 495-497, 498-500, 505 #1-#3, 508 #3-#5, 515-517, 518-521, 528-529 TE: AL T484
Measurement	
1. Understand measurable attributes of objects and the units, systems and processes of measurement	
A. Determine unit of measurement	
identify and justify an angle as acute, obtuse, straight or right ST MA 2 3.1, 4.1 FR VI.g	SE: 43, 515, 532 #20-#21, 546 #11
B. Identify equivalent measures	
C. Tell and use units of time	
solve problems involving elapsed time (hours and minutes) ST MA 5 3.1 FR IX.d	This objective can be met in Glencoe's <i>Mathematics: Applications and Concepts Course 1</i> © 2004 page 495.
D. Count and compute money	
2. Apply appropriate techniques, tools and formulas to determine measurements	
A. Use standard or non-standard measurement	
estimate a measurement using either <u>standard</u> or <u>non-standard</u> unit of measurement ST MA 2 1.6, 3.3 FR VI.e & f	SE: 117-119, 125 #30, 209 #4, 213 #3-#8
B. Use angle measurement	
select and use <u>benchmarks</u> to estimate measurements of 0-, 45-, 90-, 180-, 360-degree angles ST MA 2 3.4 FR VI.f & g	SE: 466 TE: TD T466
C. Apply geometric measurements	
describe how to solve problems involving the area or perimeter of polygons ST MA 2 3.4, 4.1 FR VI.i & g	SE: 482-485, 486-489, 514-517, 518-521, 525-527, 528-533, 537 TE: AL T484 SA T483

OBJECTIVES	PAGE REFERENCES
D. Analyze precision	
E. Use relationships within a measurement system	
convert from one unit to another within a system of measurement (mass and weight) ST MA 2 1.6, 1.10 FR VI.e & f	SE: 117-119, 125 #30, 209 #4, 213 #3-#8
Data and Probability	
1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them	
A. Formulate questions	
formulate questions, design studies and collect data about a characteristic ST MA 3 1.2 FR VII.a	SE: 318 #1, 377 #1-#2, 391 #1-#6 <i>Think & Discuss</i> 231
B. Classify and organize data	
C. Represent and interpret data	
interpret circle graphs; create and interpret <u>stem-and-leaf plots</u> ST MA 3 1.8 FR VII.b	SE: 230-233, 245 #34, 282-285, 286-291, 343-345, 346-349, 350-352, 353-360, 361 #23 TE: T T349
2. Select and use appropriate statistical methods to analyze data	
A. Describe and analyze data	
find the <u>range</u> and <u>measures of center</u> , including <u>median</u> , <u>mode</u> and <u>mean</u> ST MA 3 3.2 FR VII.c	SE: 362-365, 368 #3, 369 #1c, 370-372, 373-376, 380-388 <i>Share & Summarize</i> 379 TE: AL T365, T375 SS T372
B. Compare data representations	
compare different representations of the same data and evaluate how well each representation shows important aspects of the data ST MA 3 3.6 FR VII.d	SE: 373 #1-#2, 374 #1, 375 #1-#2, 382 #8, 383 #10, 385 #14, 387 #18 TE: AL T375
C. Represent data algebraically	
3. Develop and evaluate inferences and predictions that are based on data	
A. Develop and evaluate inferences	
use observations about differences between 2 samples to make <u>conjectures</u> about the populations from which the samples were taken ST MA 3 3.5 FR VII.e	SE: 224

OBJECTIVES	PAGE REFERENCES
B. Analyze basic statistical techniques	
4. Understand and apply basic concepts of probability	
A. Apply basic concepts of probability	
use a model (diagrams, list, sample space or area model) to illustrate the possible outcomes of an event ST MA 3, 6 3.2 FR VII.g, X.c	SE: 640-641, 642 #1-#5, 644 #1-#3, 645 #4-#6, 646 #3b
B. Use and describe compound events	

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OBJECTIVES	PAGE REFERENCES
GRADE 7	
Number and Operations	
1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
A. Read, write and compare numbers	
compare and order integers, positive rationals and percents, including finding their approximate location on a number line ST MA 5 3.3 FR IX.b	SE: 218, 239 #50, 675 #12-#13 <i>Think & Discuss</i> 219
B. Represent and use rational numbers	
use fractions, decimals and percents to solve problems ST MA 1 3.4 FR V.d	SE: 222-225, 226-227, 228-230, 234-235, 236-241, 562-565, 566-567, 568-571, 572-574, 575-584
C. Compose and decompose numbers	
recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u> , including exponential notation ST MA 1 3.6 FR V.b	SE: 191-195
D. Classify and describe numeric relationships	
use whole number <u>factors</u> and <u>multiples</u> to describe relationships between and among numbers ST MA 5 1.10 FR IX.c	SE: 51 #19-#22, 90 #38, 107 #39, 163 #62
2. Understand meanings of operations and how they relate to one another	
A. Represent operations	
B. Describe effects of operations	
describe the effects of multiplication and division on fractions and addition and subtraction on integers ST MA 1 3.4, 4.1 FR V.a	SE: 222-227, 228-230, 231-233, 234-235, 236-241, 243 #1-#10, 252 #51-#56 TE: AL T227 SA T227 SS T235
C. Apply properties of operations	
apply <u>properties of operations</u> (including order of operations) to positive rational numbers ST MA 5 1.6, 1.10 FR IX.e	SE: 14-15, 65 #8-#19, 67 #1-#14, 70 #24-#29, 73 #65-#67, 75 #17-#19, 419-421, 422-425, 426-428, 429-433

OBJECTIVES	PAGE REFERENCES
D. Apply operations on real and complex numbers	
approximate the value of square roots to the nearest whole number ST MA 5 3.3 FR IX.f	TE: E T271
3. Compute fluently and make reasonable estimates	
A. Describe or represent mental strategies	
B. Develop and demonstrate fluency	
C. Compute problems	
multiply and divide positive rational numbers ST MA 1 1.10, 3.3 FR V.a	SE: 242-244, 248-249, 250 #60, 252 #51-#56 TE: TD T243 TT T244
D. Estimate and justify solutions	
estimate and justify the results of multiplication and division of positive rational numbers ST MA 1 3.3, 4.1 FR V.e & h	SE: 242-244, 248-249, 250 #60, 252 #51-#56 TE: TD T243 TT T244
E. Use proportional reasoning	
solve problems involving proportions, such as scaling and finding equivalent ratios ST MA 1 3.3 FR V.c & f	SE: 540-542, 543-547, 548-551, 551-553, 554-559, 566-568 TE: AL T545 AM T551 SA T543, T550
Algebraic Relationships	
1. Understand patterns, relations and functions	
A. Recognize and extend patterns	
B. Create and analyze patterns	
analyze patterns represented <u>graphically</u> or <u>numerically</u> using words or <u>symbolic rules</u> , including <u>recursive notation</u> ST MA 4 1.6, 3.6 FR VIII.4.b	SE: 245 #1-#4, 345-347, 348-350, 351-353, 365-367, 368-370, 644-647, 648-649, 652-658 <i>Think & Discuss</i> 281
C. Classify objects and representations	
compare and contrast various forms of <u>representations</u> of patterns ST MA 4 1.6 FR VIII.3.b	SE: 245 #1-#4, 345-347, 348-350, 351-353, 365-367, 368-370, 644-647, 648-649, 652-658 <i>Think & Discuss</i> 281
D. Identify and compare functions	
identify <u>functions</u> as <u>linear</u> or <u>nonlinear</u> from tables, graphs or equations ST MA 4 1.6, 3.6 FR VIII.b & c	SE: 344-347, 355 #4, 358 #13, 359 #16
E. Describe the effects of parameter changes	

OBJECTIVES	PAGE REFERENCES
2. Represent and analyze mathematical situations and structures using algebraic symbols	
A. Represent mathematical situations	
use variables to represent unknown quantities in equations and inequalities ST MA 4 1.6, 3.1 FR VIII.2.e	SE: 21 #1, 23 #8a, 24 #10, 25 #27a, 26 #34b, 28 #41, 34-36, 46 #2a, 50 #18 <i>Share & Summarize</i> 18
B. Describe and use mathematical manipulation	
generate equivalent forms for simple algebraic expressions ST MA 4 3.6 FR VIII.a	SE: 385-387, 392 #1-#7, 395-397, 410-411, 412, 413-414, 415-417, 419-421, 428 #12-#15, 430 #32-#41
C. Utilize equivalent forms	
D. Utilize systems	
3. Use mathematical models to represent and understand quantitative relationships	
A. Use mathematical models	
model and solve problems, using multiple representations such as graphs, tables, expressions, equations or inequalities ST MA 4 1.6, 3.6 FR VIII.b	SE: 351-353, 356 #5-#9, 359 #16, 364, 365-367, 368-370, 371-374, 625-626, 632-634, 635 #1
4. Analyze change in various contexts	
A. Analyze change	
compare situations with constant or varying rates of change ST MA 2, 4 1.6, 4.1 FR VI.I, VIII.c	SE: 321-325, 326-327, 328-329 TE: SA T326 TD T326
Geometric and Spatial Relationships	
1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
A. Describe and use geometric relationships	
classify 2- and 3-dimensional shapes based on their <u>properties</u> ST MA 2 3.6 FR VI.2.a	SE: 109, 122 #3-#4, 475, 516 #8 <i>Explore</i> 129 TE: TD T109
B. Apply geometric relationships	
describe relationships between <u>corresponding sides</u> , <u>corresponding angles</u> and corresponding perimeters of <u>similar polygons</u> ST MA 2 1.6 FR VI.c	SE: 482-484, 485-489, 489-491, 492 #1-#4, 494 #10 TE: AL T487 AM T486
C. Compose and decompose shapes	
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
A. Use coordinate systems	
given ordered pairs, identify geometric shapes in the <u>coordinate plane</u> using their properties ST MA 2 1.6, 1.8 FR VI.c	SE: 254-258, 259-261, 262-263, 264-266, 279 #29, 348-350, 351-353, 356 #5-#10, 496 #26

OBJECTIVES	PAGE REFERENCES
3. Apply transformations and use symmetry to analyze mathematical situations	
A. Use transformations on objects	
reposition shapes under <u>informal</u> transformations, such as reflection (flip), rotation (turn) and translation (slide) ST MA 2 3.6 FR VI.b	SE: 259-262
B. Use transformations on functions	
describe the relationship between the scale factor and the perimeter of the image using a <u>dilation</u> (<u>contractions-magnifications</u>) (stretching/shrinking) ST MA 2 3.6 FR VI.b & g	SE: 482-484, 485-488, 489-491, 492-495, 515 #6-#7, 516 #8 TE: AL T487 SA T491 SS T488
C. Use symmetry	
determine all lines of symmetry of polygons ST MA 2 1.6 FR VI.b	This objective can be met in Glencoe's <i>Geometry</i> © 2005 on pages 466 and 478.
4. Use visualization, spatial reasoning and geometric modeling to solve problems	
A. Recognize and draw three-dimensional representations	
use spatial visualizations to identify various 2-dimensional views of <u>isometric drawings</u> ST MA 2 3.3 FR VI.a	SE: 94-96, 97-99, 100-102, 129-130, 131-133, 134-135, 136-140 TE: I T131
B. Draw and use visual models	
draw or use <u>visual models</u> to represent and solve problems ST MA 2 3.1 FR VI.d	SE: 116-119, 146-148, 149-152, 152-155, 156-159, 160-163, 395-397, 398-401 TE: AL T151 TD T117
Measurement	
1. Understand measurable attributes of objects and the units, systems and processes of measurement	
A. Determine unit of measurement	
identify and justify the unit of measure for volume (customary and metric) ST MA 2 3.1, 4.1 FR VI.f & g	SE: 98-99 <i>Chapter Summary</i> 141 <i>Remember</i> 103
B. Identify equivalent measures	
identify the equivalent area measures within a system of measurement (e.g., sq ft. to sq in.) ST MA 2 1.6 FR VI.i	SE: 334 #1, 494 #12, 495 #14
C. Tell and use units of time	
solve problems involving addition and subtraction of time (hours, minutes and seconds) ST MA 5 3.1 FR IX.d	This objective can be met in Glencoe's <i>Mathematics: Applications and Concepts Course 1</i> © 2004 pages 494-497.
D. Count and compute money	

OBJECTIVES	PAGE REFERENCES
2. Apply appropriate techniques, tools and formulas to determine measurements	
A. Use standard or non-standard measurement	
B. Use angle measurement	
use tools to measure angles to the nearest degree ST MA 2 1.4, 3.2 FR VI.f	SE: 451-453, 474-475 <i>Explore 471</i> TE: AL T475 SA T452 T T453 TT T475
C. Apply geometric measurements	
describe how to solve problems involving circumference and/or area of a circle ST MA 2 3.4, 4.1 FR VI.i & g	SE: 39 #5, 113 #3a, 120 #3-#4, 489 #1, 636 #6a <i>Remember 132</i>
D. Analyze precision	
analyze <u>precision</u> and accuracy in measurement situations ST MA 2 1.7, 3.8 FR VI.f	SE: 98-99 <i>Chapter Summary 141</i> TE: AL T452 SA T452
E. Use relationships within a measurement system	
convert from one unit to another within a system of measurement (capacity) ST MA 2 1.6, 1.10 FR VI.e & f	SE: 98-99, 135 #3-#4, 301-302, 314 #2, 317 #7, 318 #10, 539 #48 <i>Chapter Summary 141</i> <i>Lab Investigation 119</i> TE: SA T452
Data and Probability	
1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them	
A. Formulate questions	
formulate questions, design studies and collect data about a characteristic ST MA 3 1.2 FR VII.a	SE: 312-313
B. Classify and organize data	
C. Represent and interpret data	
select, create and use appropriate graphical representation of data, including circle graphs, histograms and box plots (box and whiskers) ST MA 3 1.8, 3.6 FR VII.b	SE: 675 #14, 709, 710-713, 715 #36, 716 #2b, 718-722
2. Select and use appropriate statistical methods to analyze data	
A. Describe and analyze data	
find, use and interpret <u>measures of center</u> and spread, including ranges and <u>interquartile range</u> ST MA 3 3.4	SE: 703 #11a, 711 #3-#4, 713 #2, 719 #3a, 720 #9a-#9b, 721 #10b-#10d, 727 #5e

OBJECTIVES	PAGE REFERENCES
B. Compare data representations	
compare different representations of the same data and evaluate how well each representation shows important aspects of the data ST MA 3 3.6 FR VII.d	SE: 709-713, 714-717, 720 #6, 722 #13
C. Represent data algebraically	
3. Develop and evaluate inferences and predictions that are based on data	
A. Develop and evaluate inferences	
use observations about differences between samples to make <u>conjectures</u> about the populations from which the samples were taken ST MA 3 3.5 FR VII.e	SE: 692-694, 694-696, 697-699, 703 #10, 704 #14, 707 #19 TE: T T696
B. Analyze basic statistical techniques	
4. Understand and apply basic concepts of probability	
A. Apply basic concepts of probability	
use models to compute the probability of an event ST MA 3, 6 3.3 FR VII.h & g, X.c	SE: 676-677, 678-679, 680-682, 683-685, 686-690, 693 #1, 694 #2, 700-701 <i>Explore 692</i>
B. Use and describe compound events	

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OBJECTIVES	PAGE REFERENCES
GRADE 8	
Number and Operations	
1. Understand numbers, ways of representing numbers, relationships among numbers and number systems	
A. Read, write and compare numbers	
compare and order rationals and percents, including finding their approximate locations on a number line ST MA 5 3.3 FR IX.b	SE: 224 #19 <i>Remember</i> 118, 227 TE: D T151
B. Represent and use rational numbers	
use fractions, decimals and percents to solve problems ST MA 1 3.4 FR V.d	SE: 201 #1-#4, 617 #4
C. Compose and decompose numbers	
recognize equivalent representations for the same number and generate them by <u>decomposing and composing numbers</u> , including scientific notation ST MA 1 3.6 FR V.b	SE: 148 #1-#3, 152 #1-#3, 156-158, 159-161, 162 #1, 164 #44, 165 #45 TE: TD T156
D. Classify and describe numeric relationships	
use <u>factors</u> and <u>multiples</u> to describe relationships between and among numbers and justify characteristics of numbers ST MA 5 1.10 FR IX.c	SE: 312 #12
2. Understand meanings of operations and how they relate to one another	
A. Represent operations	
B. Describe effects of operations	
describe the effects of multiplication and division on integers ST MA 1 3.4, 4.1 FR V.a	SE: 146-148, 149-152, 154-155 TE: SS T149
C. Apply properties of operations	
apply <u>properties of operations</u> to rational numbers, including order of operations and inverse operations ST MA 5 1.6, 1.10 FR IX.e	SE: 150 #6, 220 #8
D. Apply operations on real and complex numbers	
apply the relationship between squares and square roots and cubes and cube roots to solve a problem ST MA 5 1.6, 3.4 FR IX.f	SE: 190-192, 193-196, 197-199, 203-206 TE: AM T190

OBJECTIVES	PAGE REFERENCES
3. Compute fluently and make reasonable estimates	
A. Describe or represent mental strategies	
B. Develop and demonstrate fluency	
C. Compute problems	
apply all operations on rational numbers ST MA 1 1.10, 3.3 FR V.a	SE: 403-406, 411-413, 414-416, 421-423 TE: SA T405, T412 SS T406, T417
D. Estimate and justify solutions	
estimate and justify the results of all operations on rational numbers ST MA 1 3.3, 4.1 FR V.e & h	SE: 403-406, 411-413, 414-416, 421-423 TE: SA T405, T412 SS T406, T417
E. Use proportional reasoning	
solve problems involving proportions, such as scaling and finding equivalent ratios ST MA 1 3.3 FR V.c & f	SE: 6-9, 206 #58, 207 #60, 330-333 TE: AL T53
Algebraic Relationships	
1. Understand patterns, relations and functions	
A. Recognize and extend patterns	
B. Create and analyze patterns	
generalize patterns represented <u>graphically</u> or <u>numerically</u> using words or <u>symbolic rules</u> , including <u>recursive notation</u> ST MA 4 1.6, 3.6 FR VIII.4.b	SE: 51-55, 61 #27, 62 #28, 74-75, 76-77, 78-79 TE: SA T77
C. Classify objects and representations	
compare and contrast various forms of <u>representations</u> of patterns ST MA 4 1.6 FR VIII.3.b	SE: 51-55, 61 #27, 62 #28, 74-75, 76-77, 78-79 TE: SA T77
D. Identify and compare functions	
compare <u>properties</u> of linear functions between or among tables, graphs and equations ST MA 4 1.6, 3.6 FR VIII.b & c	SE: 14-15, 66 #12, 490 #6 TE: SA T15 SS T15 T T15
E. Describe the effects of parameter changes	
2. Represent and analyze mathematical situations and structures using algebraic symbols	
A. Represent mathematical situations	
use <u>symbolic algebra</u> to represent and solve problems that involve linear relationships, including <u>recursive relationships</u> ST MA 4 1.6, 3.1 FR VIII.2.e	SE: 358-361, 362-365, 368-369, 629 #23-#25 TE: SA T360, T361, T363 T T365
B. Describe and use mathematical manipulation	
generate equivalent forms for linear expressions ST MA 4 3.6 FR VIII.a	SE: 217-219, 223 #1-#9, 225 #22 <i>Think & Discuss</i> 216

OBJECTIVES	PAGE REFERENCES
C. Utilize equivalent forms	
D. Utilize systems	
3. Use mathematical models to represent and understand quantitative relationships	
A. Use mathematical models	
model and solve problems, using multiple representations such as graphs, tables, equations or inequalities ST MA 4 1.6, 3.6 FR VIII.b	SE: 14-15, 66 #12, 217-219, 223 #1-#9, 225 #22, 490 #6 <i>Think & Discuss</i> 216 TE: SA T15 SS T15 T T15
4. Analyze change in various contexts	
A. Analyze change	
analyze the nature of changes (including slope and intercepts) in quantities in linear relationships ST MA 2, 4 1.6, 4.1 FR VI.I, VIII.c	SE: 24-28, 29-30, 34 #1-#6, 35 #7, 41 #29-#30, 42 #30 TE: AL T31 AM T26 SA T25
Geometric and Spatial Relationships	
1. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
A. Describe and use geometric relationships	
describe, classify and generalize relationships between and among types of a) 2-dimensional objects and b) 3-dimensional objects using their defining <u>properties</u> including ▶ Pythagorean Theorem ▶ <u>cross-section</u> of a 3-dimensional object results in what 2-dimensional shape ST MA 2 1.6, 3.6 FR VI.c	SE: 76 #1-#4, 77 #5-#6, 290 #1, 291 #2, 297 #1-#4, 299 #13, 465 #36 <i>Just the Facts</i> 77 <i>Remember</i> 311
B. Apply geometric relationships	
apply relationships between the <u>corresponding sides and corresponding areas</u> of <u>similar polygons</u> to solve problems ST MA 2 1.6, 3.6 FR VI.c	SE: 206 #58, 280 #33-#38, 329-333
C. Compose and decompose shapes	
2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
A. Use coordinate systems	
use coordinate geometry to analyze <u>properties of right triangles</u> and quadrilaterals ST MA 2 3.6 FR VI.f	SE: 660-662, 663-666, 677 #21 <i>Share & Summarize</i> 670

OBJECTIVES	PAGE REFERENCES
3. Apply transformations and use symmetry to analyze mathematical situations	
A. Use transformations on objects	
reposition shapes under <u>formal</u> transformations, such as reflection, rotation and translation ST MA 2 3.6 FR VI.b	SE: 288-291, 292-294, 295-296, 297-301, 302-304, 305-306, 307-308, 309-312, 313-315, 316-318
B. Use transformations on functions	
describe the relationship between the scale factor and the area of the image using a <u>dilation</u> (stretching/shrinking) ST MA 2 3.6 FR VI.b & g	SE: 329-333, 334-337 TE: AL T331, T333
C. Use symmetry	
identify the number of rotational symmetries of regular polygons ST MA 2 1.6 FR VI.b	SE: 302-304, 305-306, 309-311 TE: AL T304
4. Use visualization, spatial reasoning and geometric modeling to solve problems	
A. Recognize and draw three-dimensional representations	
create <u>isometric drawings</u> from a given <u>net plan</u> ST MA 2 3.3 FR VI.a	This objective can be met in Glencoe's <i>Impact Mathematics Course 2</i> © 2004 on pages 94-102.
B. Draw and use visual models	
draw or use <u>visual models</u> to represent and solve problems ST MA 2 3.1 FR VI.d	SE: 215, 217 #1a, 215, 219-222, 373-375, 376-378, 384 #1-#7, 488-491, 492-496 <i>Share & Summarize</i> 380 <i>Think & Discuss</i> 358
Measurement	
1. Understand measurable attributes of objects and the units, systems and processes of measurement	
A. Determine unit of measurement	
B. Identify equivalent measures	
identify the equivalent volume measures within a system of measurement (e.g., m ³ to cm ³) ST MA 2 1.6 FR VI.i	This objective can be met in Glencoe's <i>Impact Mathematics Course 2</i> © 2004 on pages 334, 494, 495.
C. Tell and use units of time	
D. Count and compute money	
2. Apply appropriate techniques, tools and formulas to determine measurements	
A. Use standard or non-standard measurement	
B. Use angle measurement	
use tools to determine the measure of <u>reflex</u> angles to the nearest degree ST MA 2 1.4, 3.2 FR VI.f	This objective can be met during teacher/class discussion.

OBJECTIVES	PAGE REFERENCES
C. Apply geometric measurements	
describe how to solve problems involving surface area and/or volume of a rectangular or triangular prism, or cylinder ST MA 2 3.4, 4.1 FR VI.i & g	SE: 62 #30, 63 #32, 72-73, 338 #21-#22, 502-503
D. Analyze precision	
analyze <u>precision</u> and accuracy in measurement situations and determine number of significant digits ST MA 2 1.7, 3.8 FR VI.f	This objective can be met in Glencoe's <i>Impact Mathematics Course 2</i> © 2004 on pages 98-99.
E. Use relationships within a measurement system	
convert square or cubic units to equivalent square or cubic units within the same system of measurement ST MA 2 1.6, 1.10 FR VI.e & f	This objective can be met in Glencoe's <i>Impact Mathematics Course 2</i> © 2004 on pages 334, 494, and 495.
Data and Probability	
1. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them	
A. Formulate questions	
formulate questions, design studies and collect data about a characteristic ST MA 3 1.2 FR VII.a	SE: <i>Think & Discuss</i> 51
B. Classify and organize data	
C. Represent and interpret data	
select, create and use appropriate graphical representation of data (including <u>scatter plots</u>) ST MA 3 1.8, 3.6	SE: 352 #18, 410 #36, 537 #60, 570 #6
2. Select and use appropriate statistical methods to analyze data	
A. Describe and analyze data	
find, use and interpret <u>measures of center</u> , <u>outliers</u> and spread, including range and <u>interquartile range</u> ST MA 3 3.4 FR VII.c	SE: 45 #46b, 53 #2a, 338 #20, 537 #60 <i>Remember</i> 45, 53
B. Compare data representations	
compare different representations of the same data and evaluate how well each representation shows important aspects of the data ST MA 3 3.6 FR VII.d	SE: 602-604, 605-607, 608-612, 613-615, 616-630, 631-634
C. Represent data algebraically	

OBJECTIVES	PAGE REFERENCES
3. Develop and evaluate inferences and predictions that are based on data	
A. Develop and evaluate inferences	
make <u>conjectures</u> about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data and approximate lines to fit ST MA 3 3.5 FR VII.e	SE: 51-55, 58 #15, 61 #27, 62 #28, 66 #13 TE: AM T52
B. Analyze basic statistical techniques	
4. Understand and apply basic concepts of probability	
A. Apply basic concepts of probability	
make <u>conjectures</u> (based on theoretical probability) about the results of experiments ST MA 3 3.5 FR VII.g	SE: 372 #46, 482 #25, 582-584, 585-586
B. Use and describe compound events	

Codes Used for TWE Pages

Course 1		Course 2		Course 3	
AL	Access for All Learners	AL	Access for All Learners	AL	Access for All Learners
AM	About the Mathematics	AM	About the Mathematics	AM	About the Mathematics
SA	On the Spot Assessment	E	Example	D	Develop
SS	Share & Summarize	I	Investigation	SA	On the Spot Assessment
T	Troubleshooting	SA	On the Spot Assessment	SS	Share & Summarize
TD	Think & Discuss	SS	Share & Summarize	T	Troubleshooting
TT	Tips from Teachers	T	Troubleshooting	TD	Think & Discuss
		TD	Think & Discuss		
		TT	Tips from Teachers		