



McDougal Littell  
**Pre-Algebra**

***correlated to the***

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**Missouri Mathematics  
Grade-Level Expectations**

**Grade 8**



# Introduction

to

## *McDougal Littell Pre-Algebra* © 2005

*McDougal Littell Pre-Algebra* focuses on the important goal of preparing for future algebra courses while including foundations in geometry and data analysis. The clearly written lessons make even difficult math concepts and methods understandable by providing numerous stepped-out examples. Each lesson's exercise set includes a wide variety of exercises, ranging from basic exercises that help develop and practice skills to challenging exercises that involve logical reasoning and problem solving. Use of technology is integrated throughout when appropriate.

*McDougal Littell Pre-Algebra* also features built-in guidance in the text and in the supporting materials on how to take notes, what to include in your notes, and how to review or study for a test. The text and ancillary materials address the needs of students studying independently, absent students, new teachers, and parents by providing support for both in-class and at-home learning.

### Special Features

- **Chapter Openers**—The openers draw students into the chapter by providing dramatic photos of math applications and relevant Math in the Real World questions that set the stage for the topics the students will learn.
- **Before, Now, Why?**—This feature looks at what prior knowledge is needed to begin the chapter/lesson, lists what will be learned in the chapter/lesson, and provides real world connections that will be studied in the lessons.
- **Notetaking Strand**—The notetaking strand gives students helpful suggestions on notetaking strategies. Note Worthy provides students with helpful hints that they need to include in their notebooks. Important concepts are indicated in notebook boxes.
- **Student Help**—This feature provides additional support to the student through margin notes such as *Study Strategy*, *Reading Algebra*, *Homework Help*, *Review Help* and *Watch Out*.
- **Focus on Problem Solving**—This feature helps students develop problem solving strategies such as identifying relevant and irrelevant information, using multiple methods, solving problems with many or no solutions, and extending and generalizing solutions.
- **Building Test Taking Skills**—This unique feature helps students understand and practice test-taking skills. Strategies are provided for learning to answer short response, multiple choice, and extended response questions. Teachers and students are guided through the process of how rubrics are used for scoring. Additional problems for reinforcement are provided.

Teachers are supported by a wealth of ancillary materials. A complete listing of all program components is provided on the following page.

***McDougal Littell Pre-Algebra* © 2005**  
**Components**

Pupil's Edition  
Teacher's Edition

Teacher's Resource Package

Chapter Resource Books  
Professional Development Book  
Poster Package  
Special Activities Book  
Assessment Book  
Worked-Out Solution Key  
Practice Workbook TE  
Notetaking Guide TE  
Warm-Up Transparencies and Daily Homework Quiz

Workbooks

Notetaking Guide (PE)  
Practice Workbook (PE)  
Spanish Study Guide  
Exercises in Spanish Workbook  
English/Spanish Chapter Reviews and Tests  
Multi-Language Glossary

Transparencies

English-Spanish Problem Solving Transparencies  
Answer Transparencies for Checking Homework  
Notetaking Guide Transparencies

Additional Resources

Tutor Place  
Overhead Manipulatives Kit  
Manipulatives Kits

Technology

eEdition CD-ROM  
eEdition Plus Online  
eWorkbook Plus Online  
eTutorial CD-ROM  
eTutorial Plus Online  
Test and Practice Generator CD-ROM  
Electronic Lesson Presentations CD-ROM  
EasyPlanner CD-ROM (ancillaries included)  
EasyPlanner Plus Online  
ClassZone Website  
Chapter Audio Summaries CD  
Chapter Audio Summaries in Spanish CD  
Chapter Audio Summaries CD English & Spanish

# ***McDougal Littell Pre-Algebra***

correlated to the

## **Missouri Mathematics GRADE-LEVEL EXPECTATIONS 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.

PE/TE: 20 (#40–42), 22–26, 27 (#18), 33 (#64–66), 53, 57 (#6), 188–191, 192 (#22–25), 207 (#40–43, 48–51), 213 (#46–47), 214 (#13–16, 30–33), 220–221, 258, 263 (#2), 378 (#6), 773

#### **B. REPRESENT AND USE RATIONAL NUMBERS**

Use fractions, decimals and percents to solve problems.

PE/TE: 182–186, 211, 214, 215, 225–229, 231–235, 237–241, 243–246, 259–261, 262, 263, 269–274, 275–279, 280–284, 300–304, 306–311, 318–321, 322, 323, 329–333, 335–339, 340–344, 345–349, 350, 352–356, 357–361, 362–366, 367, 368–371, 372, 373

#### **C. COMPOSE AND DECOMPOSE NUMBERS**

Recognize equivalent representations for the same number and generate them by decomposing and composing numbers, including scientific notation.

PE/TE: 204–208, 209, 213, 214 (#26–29), 220–224, 258, 262 (#1–8), 284 (#48–50), 329–333, 339 (#37–40), 340–344, 368–369, 372 (#1–8), 373 (#1, 3), 378 (#7), 435 (#34–37), 778, 806 (#45–52), 807 (#1–12)

#### **D. CLASSIFY AND DESCRIBE NUMERIC RELATIONSHIPS**

Use factors and multiples to describe relationships between and among numbers and justify characteristics of numbers.

PE/TE: 171, 172–176, 177–181, 186 (#61–63), 187–191, 192, 193, 198 (#68–75), 210–212, 214, 215, 378 (#2, 4), 772

2. Understand meanings of operations and how they relate to one another.

**B. DESCRIBE EFFECTS OF OPERATIONS**

Describe the effects of multiplication and division on integers.

PE/TE: 41, 42–46, 51 (#39–42), 52–53, 55, 56 (#30–37), 57 (#9, 11), 64–68,  
71–74, 108 (#8–9), 109 (#11–12), 112 (#2, 12)

**C. APPLY PROPERTIES OF OPERATIONS**

Apply properties of operations to rational numbers, including order of operations and inverse operations.

PE/TE: 16–20, 21, 26 (#72–74), 27 (#10–17), 38 (#56–61), 53 (#21–23),  
56 (#10–17), 57 (#3–4), 63–68, 91–95, 97–101, 108, 110–111, 112, 113,  
164 (#4–5), 533 (#35–37), 803 (#9–12), 804

**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.

PE/TE: 453–457, 458–461, 465–469, 472, 475 (#10–13), 476–481, 500–502, 504,  
505, 575, 811

3. Compute fluently and make reasonable estimates.

**C. COMPUTE PROBLEMS**

Apply all operations on rational numbers.

PE/TE: 16–20, 21, 26 (#72–74), 27, 28, 29–33, 34–38, 41, 42–46, 51 (#39–42),  
52–55, 56, 57, 63–68, 89, 102–107, 108, 111, 112, 113, 164,  
181 (#53–60), 225–229, 230, 231–235, 236, 237–241, 242, 243–246,  
247–251, 253–257, 258–261, 262, 263, 771–776, 778–780, 803, 807

**D. ESTIMATE AND JUSTIFY SOLUTIONS**

Estimate and justify the results of all operations on rational numbers.

PE/TE: 26 (#66–71), 32 (#42–44), 103 (#7), 135 (#38a), 208 (#53d),  
232 (Study Strategy), 301 (#2), 303 (#42), 304, 305 (#3),  
336 (Study Strategy), 341, 771–772

**E. USE PROPORTIONAL REASONING**

Solve problems involving proportions, such as scaling and finding equivalent ratios.

PE/TE: 269–274, 275–279, 280–284, 288–292, 293–297, 298, 299, 300–304,  
317 (#24–27), 318–321, 322, 323, 324–325, 329–333, 334, 335–339,  
347 (Summary), 368–369, 747–751, 755, 756 (#20), 757 (#9), 808,  
809 (#9–12)

## **ALGEBRAIC RELATIONSHIPS**

1. Understand patterns, relations and functions.

### **B. CREATE AND ANALYZE PATTERNS**

Generalize patterns represented graphically or numerically using words or symbolic rules, including recursive notation.

PE/TE: 692–697, 701, 702 (#27–31), 703 (#9–10), 713 (#42–44), 763 (#19–20), 796, 814 (#41–44)

### **C. CLASSIFY OBJECTS AND REPRESENTATIONS**

Compare and contrast various forms of representations of patterns.

PE/TE: 385–390, 391–396, 397, 398–402, 404–409, 412–417, 418, 419–424, 425, 426–430, 431–435, 436–441, 442–445, 446, 447, 679–684, 685, 686–691, 692–697, 700–701, 702, 703

### **D. IDENTIFY AND COMPARE FUNCTIONS**

Compare properties of linear functions between or among tables, graphs and equations.

PE/TE: 385–390, 391–396, 397, 398–402, 412–417, 418, 419–424, 426–430, 431–435, 442–445, 446, 447, 574, 810

2. Represent and analyze mathematical situations and structures using algebraic symbols.

### **A. REPRESENT MATHEMATICAL SITUATIONS**

Use symbolic algebra to represent and solve problems that involve linear relationships, including recursive relationships.

PE/TE: 391–396, 397, 398–402, 412–417, 418, 419–424, 426–430, 431–435, 443–445, 446, 447, 574, 605 (#19–21), 693, 697 (#40)

### **B. DESCRIBE AND USE MATHEMATICAL MANIPULATION**

Generate equivalent forms for linear expressions.

PE/TE: 71–75, 79–82, 83, 84, 89 (#47–52), 109, 112 (#18–25), 113 (#5), 124 (#37–40), 165 (#16, 19), 661 (#41–44), 804 (#20–31)

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.

*This standard is addressed repeatedly throughout the text. Representative citations are listed.*

PE/TE: 385–390, 391–396, 397, 398–402, 404–409, 412–417, 418, 419–424, 426–430, 431–435, 436–441, 442–445, 446, 581–586, 587, 588–592, 593, 594–595, 596–600, 679–684, 686–691

4. Analyze change in various contexts.

**A. ANALYZE CHANGE**

Analyze the nature of changes (including slope and intercepts) in quantities in linear relationships.

PE/TE: 392–394, 396 (#42), 397, 398–402, 403, 404–409, 412–417, 418, 426–430, 443–444, 446, 447, 574

**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 properties including:

- Pythagorean Theorem
- cross-section of a 3-dimensional object results in what 2-dimensional shape.

PE/TE: 465–469, 475 (#10–13), 498 (#30–32), 501, 504 (#13–16), 505 (#7–9, 11), 506–507, 537, 538–543, 545–549, 550–551, 575 (#14, 24), 619 (#45–47), 811 (#13–16), 812 (#17–20)

**B. APPLY GEOMETRIC RELATIONSHIPS**

Apply relationships between corresponding sides and corresponding areas of similar polygons to solve problems.

PE/TE: 287, 288–292, 293–297, 298 (#15–17), 299, 300–304, 311 (#29–30), 320, 322 (#16–21), 323 (#5, 9), 379 (#22–24), 747–751, 755, 756 (#20), 757 (#9), 808 (#21–24), 815 (#20–21)

2. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

**A. USE COORDINATE SYSTEMS**

Use coordinate geometry to analyze properties of right triangles and quadrilaterals.

PE/TE: 287, 476, 729–733, 734–738, 741–746, 747–751, 754–755, 756 (#17–20),  
757 (#7, 9, 11), 764 (#29–31)

3. Apply transformations and use symmetry to analyze mathematical situations.

**A. USE TRANSFORMATIONS ON OBJECTS**

Reposition shapes under formal transformations, such as reflection, rotation and translation.

PE/TE: 729–733, 734–738, 739, 740, 741–746, 747–751, 754–755, 756 (#17–20),  
757 (#7, 9, 11), 764

**B. USE TRANSFORMATIONS ON FUNCTIONS**

Describe the relationship between the scale factor and the area of the image using a dilation (stretching/shrinking).

PE/TE: 747–751, 755, 756 (#20), 757 (#9), 761 (#10), 764 (#29), 815 (#20–21)

**C. USE SYMMETRY**

Identify the number of rotational symmetries of regular polygons.

PE/TE: 735, 737 (#14–17), 743, 745, 756 (#14–16), 764 (#27)

4. Use visualization, spatial reasoning and geometric modeling to solve problems.

**A. RECOGNIZE AND DRAW THREE-DIMENSIONAL REPRESENTATIONS**

Create isometric drawings from a given net plan.

PE/TE: 551–552

**B. DRAW AND USE VISUAL MODELS**

Draw or use visual models to represent and solve problems.

PE/TE: 90, 96, 119, 130, 389, 390 (#26a), 392–394, 397, 420–421, 422 (#7),  
423 (#26), 424 (#33), 537, 550–551, 594–595, 596–600, 812 (#17–20)

## **MEASUREMENT**

1. Understand measurable attributes of objects and the units, systems and processes of measurement.

### **B. IDENTIFY EQUIVALENT MEASURES**

Identify the equivalent volume measures within a system of measurement (e.g.,  $m^3$  to  $cm^3$ ).

PE/TE: 677 (#47–48)

2. Apply appropriate techniques, tools and formulas to determine measurements.

### **B. USE ANGLE MEASUREMENT**

Use tools to determine the measure of reflex angles to the nearest degree.

PE/TE: 595, 792

### **C. APPLY GEOMETRIC MEASUREMENTS**

Describe how to solve problems involving surface area and/or volume of a rectangular or triangular prism, or cylinder.

PE/TE: 537, 538–543, 552–556, 557, 563 (#30–31), 566–567, 568, 569 (#6–8), 576 (#30, 34), 592 (#17–18), 812

### **D. ANALYZE PRECISION**

Analyze precision and accuracy in measurement situations and determine number of significant digits.

PE/TE: 287, 490 (#2), 491–493, 495, 496 (#4), 497–498, 499, 504 (#20–22), 505 (#11), 527, 528–533, 565, 568 (#15), 569, 787–788, 790–792

### **E. USE RELATIONSHIPS WITHIN A MEASUREMENT SYSTEM**

Convert square or cubic units to equivalent square or cubic units within the same system of measurement.

PE/TE: 66 (#35), 67 (#39), 677 (#44–49)

## **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.

PE/TE: 601–605, 606–607, 642, 646–647

**C. REPRESENT AND INTERPRET DATA**

Select, create and use appropriate graphical representation of data (including scatter plots).

PE/TE: 13 (#43), 37 (#34), 48, 49 (#7), 50 (#27), 57 (#12), 164 (#13), 420–421, 422 (#7), 423 (#26), 424 (#33), 425, 446 (#17), 581–586, 587, 588–592, 593, 594–595, 596–600, 606–607, 611, 612 (#9), 614, 619 (#48), 625 (#37–38), 640–641, 644 (#1–3), 645 (#9–10), 647 (Present Your Results), 760 (#2), 762, 768 (#118–119), 781–783, 813 (#1–4)

2. Select and use appropriate statistical methods to analyze data.

**A. DESCRIBE AND ANALYZE DATA**

Find, use and interpret measures of center, outliers and spread, including range and interquartile range.

PE/TE: 39–40, 45 (#28), 56 (#38), 57 (#11), 59 (#7), 312, 582, 585, 588–592, 593, 641, 645 (#10), 762 (#9)

**B. COMPARE DATA REPRESENTATIONS**

Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.

PE/TE: 596–600, 607, 641, 644 (#4), 813 (#1, 3–4)

3. Develop and evaluate inferences and predictions that are based on data.

**A. DEVELOP AND EVALUATE INFERENCES**

Make conjectures about possible relationships between 2 characteristics of a sample on the basis of scatter plots of the data and approximate lines of fit.

PE/TE: 421, 422 (#7), 423 (#26), 424 (#33), 425, 446 (#17)

4. Understand and apply basic concepts of probability.

**A. APPLY BASIC CONCEPTS OF PROBABILITY**

Make conjectures (based on theoretical probability) about the results of experiments.

PE/TE: 305, 306–311, 321, 322 (#22), 323 (#6), 344 (#67), 377 (#16), 380 (#27), 619 (#44), 635–639, 643, 760 (#1c)

