## Sadlier: School

## Sadlier Math ${ }^{\text {m }}$

Correlation to the Alabama 2019 Course of Study Mathematics

## Grade 3



## OPERATIONS AND ALGEBRAIC THINKING

Grade 3 Content Standards

## Sadlier Math, Grade 3

Represent and solve problems involving multiplication and division.

1. [3.OA.1] Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each.

Example: Describe a context in which a total number of objects can be expressed as $5 \times 7$.

Chapter 4: 4-1 through 4-3, 4-7

- 4-1 Represent Multiplication as Repeated Addition-pp. 66-67
- 4-2 Represent Multiplication on a Number Line—pp. 68-69
- 4-3 Represent Multiplication as Arrays-pp. 70-71
- 4-7 Problem Solving: Write an Equation-pp. 80-81


## Chapter 5: 5-1 through 5-4

- 5-1 Multiply by 2-pp. 88-89
- 5-2 Multiply by 5-pp. 90-91
- 5-3 Multiply by 9-pp. 92-93
- 5-4 Multiply by 1 and 0-pp. 96-97


## Chapter 6: 6-2 through 6-6

- 6-2 Multiply by 3-pp. 114-115
- 6-3 Multiply by 4-pp. 116-117
- 6-4 Multiply by 6-pp. 118-119
- 6-5 Multiply by 7-pp. 120-121
- 6-6 Multiply by 8-pp. 122-123


## Chapter 8: 8-7 \& 8-8

- 8-7 Fact Families-pp. 176-177
- 8-8 Use Facts to Solve Problems-pp. 178-179


## Chapter 4: 4-5 \& 4-6

- 4-5 Represent Division by Sharing-pp. 76-77
- 4-6 Represent Division by Repeated Subtraction-pp. 78-79


## Chapter 7: 7-2 through 7-5

- 7-2 Divide by 2-pp. 144-145
- 7-3 Divide by 3-pp. 146-147
- 7-4 Divide by 4-pp. 150-151
- 7-5 Divide by 5-pp. 152-153


## Chapter 8: 8-1 through 8-8

- 8-1 Divide by 6-pp. 162-163
- 8-2 Divide by 7-pp. 164-165
- 8-3 Divide by 8-pp. 166-167
- 8-4 Divide by 9—pp. 168-169
- 8-5 One and Zero in Division-pp. 172-173
- 8-6 Problem Solving: Work Backward-pp. 174-175
- 8-7 Fact Families-pp. 176-177
- 8-8 Use Facts to Solve Problems—pp. 178-179

3. [3.OA.3] Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (Diagram will be added at a later date.)

## Chapter 4: 4-1 through 4-7

- 4-1 Represent Multiplication as Repeated Addition-pp. 66-67
- 4-2 Represent Multiplication on a Number Line—pp. 68-69
- 4-3 Represent Multiplication as Arrays-pp. 70-71
- 4-4 Multiply with the Commutative Property-pp. 74-75
- 4-5 Represent Division by Sharing-pp. 76-77
- 4-6 Represent Division by Repeated Subtraction-pp. 78-79
- 4-7 Problem Solving: Write an Equation-pp. 80-81

Chapter 5: 5-1 through 5-5, 5-7 \& 5-8

- 5-1 Multiply by 2-pp. 88-89
- 5-2 Multiply by 5-pp. 90-91


## OPERATIONS AND ALGEBRAIC THINKING

Grade 3 Content Standards

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|  | - 5-3 Multiply by 9-pp. 92-93 <br> - 5-4 Multiply by 1 and 0-pp. 96-97 <br> - 5-5 Multiply by 10-pp. 98-99 <br> - 5-7 Solve for Unknowns-pp. 102-103 <br> - 5-8 Problem Solving: Use a Model-pp. 104-105 <br> Chapter 6: 6-1 through 6-9 <br> - 6-1 Break Apart to Multiply -pp. 112-113 <br> - 6-2 Multiply by 3-pp. 114-115 <br> - 6-3 Multiply by 4-pp. 116-117 <br> - 6-4 Multiply by 6-pp. 118-119 <br> - 6-5 Multiply by 7-pp. 120-121 <br> - 6-6 Multiply by 8-pp. 122-123 <br> - 6-7 Use a Bar Model to Multiply - pp. 126-127 <br> - 6-8 Problem Solving: Make a Table—pp. 128-129 <br> - 6-9 Use the Associative Property to Multiply - pp. 130-131 <br> Chapter 7: 7-1 through 7-6 <br> - 7-1 Relate Multiplication and Division-pp. 142-143 <br> - 7-2 Divide by 2-pp. 144-145 <br> - 7-3 Divide by 3-pp. 146-147 <br> - 7-4 Divide by 4-pp. 150-151 <br> - 7-5 Divide by 5-pp. 152-153 <br> - 7-6 Problem Solving: Use Drawings to Solve Problems-pp. 154-155 <br> Chapter 8: 8-1 through 8-5, 8-8 <br> - 8-1 Divide by 6-pp. 162-163 <br> - 8-2 Divide by 7-pp. 164-165 <br> - 8-3 Divide by 8-pp. 166-167 <br> - 8-4 Divide by 9—pp. 168-169 <br> - 8-5 One and Zero in Division-pp. 172-173 <br> - 8-8 Use Facts to Solve Problems-pp. 178-179 |
| :---: | :---: |
| 4. [3.OA.4] Determine the unknown whole number in a multiplication or division equation relating three whole numbers. <br> Example: Determine the unknown number that makes the equation true in each of the equations, $8 \times ?=48,5=\square \div 3$, and $6 \times 6=$ ? | Chapter 5: 5-7 <br> - 5-7 Solve for Unknowns-pp. 102-103 <br> Chapter 6: 6-6 \& 6-9 <br> - 6-6 Multiply by 8-pp. 122-123 <br> - 6-9 Use the Associative Property to Multiply—pp. 130-131 <br> Chapter 7: 7-1 <br> - 7-1 Relate Multiplication and Division-pp. 142-143 |

Understand properties of multiplication and the relationship between multiplication and division.
5. [3.OA.5] Develop and apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.)

Examples:
Commutative property of multiplication: If $6 \times$ $4=24$ is known, then $4 \times 6=24$ is also known.
continued

Chapter 4: 4-4

- 4-4 Multiply with the Commutative Property-pp. 74-75


## Chapter 5: 5-4

- 5-4 Multiply by 1 and 0-pp. 96-97


## Chapter 6: 6-1 through 6-9

- 6-1 Break Apart to Multiply-pp. 112-113
- 6-2 Multiply by 3-pp. 114-115
- 6-3 Multiply by 4-pp. 116-117
- 6-4 Multiply by 6-pp. 118-119
- 6-5 Multiply by 7-pp. 120-121
continued


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## OPERATIONS AND ALGEBRAIC THINKING

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Associative property of multiplication: $3 \times 5 \times$ 2 can be found by $3 \times 5=15$, then $15 \times 2=30$, or by $5 \times 2=10$, then $3 \times 10=30$.

Distributive property: Knowing that $8 \times 5=40$ and $8 \times 7=56$, one can find $8 \times 12$ as $8 \times(5+$ $7)=(8 \times 5)+(8 \times 7)=40+56=96$.

Inverse relationship between multiplication and division: If $6 \times 4=24$, then $24 \div 4=6$ and $24 \div 6=4$
6. [3.OA.6] Understand division as an unknownfactor problem.

Example: Find $32 \div 8$ by finding the number that makes 32 when multiplied by 8 .

- 6-6 Multiply by 8-pp. 122-123
- 6-7 Use a Bar Model to Multiply—pp. 126-127
- 6-8 Problem Solving: Make a Table—pp. 128-129
- 6-9 Use the Associative Property to Multiply-pp. 130-131


## Chapter 7: 7-1 through 7-6

- 7-1 Relate Multiplication and Division-pp. 142-143
- 7-2 Divide by 2-pp. 144-145
- 7-3 Divide by 3-pp. 146-147
- 7-4 Divide by 4-pp. 150-151
- 7-5 Divide by 5-pp. 152-153
- 7-6 Problem Solving: Use Drawings to Solve Problems-pp. 154-155


## Chapter 8: 8-1 through 8-8

- 8-1 Divide by 6-pp. 162-163
- 8-2 Divide by 7-pp. 164-165
- 8-3 Divide by 8-pp. 166-167
- 8-4 Divide by 9-pp. 168-169
- 8-5 One and Zero in Division-pp. 172-173
- 8-6 Problem Solving: Work Backward—pp. 174-175
- 8-7 Fact Families-pp. 176-177
- 8-8 Use Facts to Solve Problems-pp. 178-179

Multiply and divide within 100.
7. [3.OA.7] Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5=40$, one knows $40 \div 5=8$ ) or properties of operations. By the end of Grade 3, fluently know all products of two one-digit numbers.

## Chapter 5: 5-1 through 5-7

- 5-1 Multiply by 2-pp. 88-89
- 5-2 Multiply by 5-pp. 90-91
- 5-3 Multiply by 9-pp. 92-93
- 5-4 Multiply by 1 and 0-pp. 96-97
- 5-5 Multiply by 10-pp. 98-99
- 5-6 Find Patterns in the Multiplication Table-pp. 100-10
- 5-7 Solve for Unknowns-pp. 102-103


## Chapter 6: 6-1 through 6-11

- 6-1 Break Apart to Multiply—pp. 112-113
- 6-2 Multiply by 3-pp. 114-115
- 6-3 Multiply by 4-pp. 116-117
- 6-4 Multiply by 6-pp. 118-119
- 6-5 Multiply by 7-pp. 120-121
- 6-6 Multiply by 8-pp. 122-123
- 6-7 Use a Bar Model to Multiply—pp. 126-127
- 6-8 Problem Solving: Make a Table-pp. 128-129
- 6-9 Use the Associative Property to Multiply-pp. 130-131 continued


## OPERATIONS AND ALGEBRAIC THINKING

Grade 3 Content Standards

## Sadlier Math, Grade 3

|  | - 6-10 Find More Multiplication Patterns-pp. 132-133 <br> - 6-11 Multiply by Multiples of 10-pp. 134-135 <br> Chapter 7: 7-1 through 7-5 <br> - 7-1 Relate Multiplication and Division-pp. 142-143 <br> - 7-2 Divide by 2-pp. 144-145 <br> - 7-3 Divide by 3-pp. 146-147 <br> - 7-4 Divide by 4-pp. 150-151 <br> - 7-5 Divide by 5-pp. 152-153 <br> Chapter 8: 8-1 through 8-9 <br> - 8-1 Divide by 6-pp. 162-163 <br> - 8-2 Divide by 7-pp. 164-165 <br> - 8-3 Divide by 8-pp. 166-167 <br> - 8-4 Divide by 9-pp. 168-169 <br> - 8-5 One and Zero in Division-pp. 172-173 <br> - 8-6 Problem Solving: Work Backward-pp. 174-175 <br> - 8-7 Fact Families-pp. 176-177 <br> - 8-8 Use Facts to Solve Problems-pp. 178-179 <br> - 8-9 Use Order of Operations-pp. 180-181 |
| :---: | :---: |
| 8. [3.OA.8] Solve two-step word problems using the four operations. Represent these problems using equations with letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations). | Chapter 2: 2-8 <br> - 2-8 Problem Solving: Use a Model-pp. 38-39 <br> Chapter 6: 6-8 <br> - 6-8 Problem Solving: Make a Table-pp. 128-129 <br> Chapter 8: 8-6 <br> - 8-6 Problem Solving: Work Backward-pp. 174-175 |
| 9. [3.OA.9] Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain using properties of operations. <br> Example: Observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. | Chapter 2: 2-2 <br> - 2-2 Explore Addition Patterns-pp. 24-25 <br> Chapter 5: 5-5 \& 5-6 <br> - 5-5 Multiply by 10-pp. 98-99 <br> - 5-6 Find Patterns in the Multiplication Table-pp. 100-101 <br> Chapter 6: 6-10 <br> - 6-10 Find More Multiplication Patterns-pp. 132-133 |

## Sadlier School

## NUMBER AND OPERATIONS IN BASE TEN

## Grade 3 Content Standards

## Sadlier Math, Grade 3

Use place value understanding and properties of operations to perform multi-digit arithmetic. (A range of algorithms may be used.)
10. [3.NBT.1] Use place value understanding to round whole numbers to the nearest 10 or 100.
11. [3.NBT.2] Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/ or the relationship between addition and subtraction.

## Chapter 1: 1-4 \& 1-5

- 1-4 Round Numbers to the Nearest Ten—pp. 10-11
- 1-5 Round Numbers to the Nearest Hundred-pp. 12-13


## Chapter 1: 1-6

- 1-6 Problem Solving: The Four-Step Process-pp. 14-15

Chapter 2: 2-1, 2-3 through 2-7

- 2-1 Use Addition Properties-pp. 22-23
- 2-3 Estimate Sums-pp. 26-27
- 2-4 Add with Partial Sums-pp. 30-31
- 2-5 Use Place Value to Add: Regroup Once-pp. 32-33
- 2-6 Use Place Value to Add: Regroup Twice-pp. 34-35
- 2-7 Add with Three or More Addends-pp. 36-37

Chapter 3: 3-1 through 3-6

- 3-1 Estimate Differences-pp. 46-47
- 3-2 Relate Addition and Subtraction-pp. 48-49
- 3-3 Subtract with Partial Differences-pp. 50-51
- 3-4 Subtract Three-Digit Numbers-pp. 54-55
- 3-5 Subtract Across Zeros-pp. 56-57
- 3-6 Problem Solving: Write and Solve an Equation-pp. 58-59


## Chapter 6: 6-11

- 6-11 Multiply by Multiples of 10-pp. 134-135
by multiples of 10 in the range 10-90 (e.g., 9 $\times 80,5 \times 60$ ) using strategies based on place value and properties of operations.


## NUMBER AND OPERATIONS - FRACTIONS

Develop understanding of fractions as numbers.
13. [3.NF.1] Understand a fraction $1 / b$ as the quantity formed by 1 part when a whole (a single unit) is partitioned into $b$ equal parts; understand a fraction $a / b$ as the quantity formed by a parts and size $1 / b$.

## Chapter 9: 9-1, 9-2 \& 9-4

- 9-1 Understand Equal Parts-pp. 188-189
- 9-2 Name Unit Fractions of a Whole-pp. 190-191
- 9-4 Name Fractions of a Whole-pp. 196-197


## NUMBER AND OPERATIONS - FRACTIONS

## Grade 3 Content Standards

## Sadlier Math, Grade 3

14. [3.NF.2] Understand a fraction as a number on the number line; represent fractions on a number line diagram.
a. Represent a fraction $1 / b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $1 / b$ and that the endpoint of the part based at O locates the number $1 / b$ on the number line.
b. Represent a fraction $a / b$ on a number line diagram by marking off a lengths $1 / b$ from O. Recognize that the resulting interval has size $a / b$ and that its endpoint locates the number $a / b$ on the number line.

## Chapter 9: 9-3

- 9-3 Find Unit Fractions on a Number Line-pp. 192-193


## Chapter 9: 9-5

- 9-5 Find Fractions on a Number Line-pp. 198-199

15. [3.NF.3] Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
b. Recognize and generate simple equivalent fractions, e.g., $1 / 2=2 / 4,4 / 6=2 / 3$ ). Explain why the fractions are equivalent, e.g., by using a visual fraction model such as area models, fraction strips, and number lines.
c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Examples: Express 3 in the form 3 = 3/1; recognize that $6 / 1=6$; locate $4 / 4$ and 1 at the same point of a number line diagram.

## Chapter 10: 10-2 \& 10-3

- 10-2 Find Equivalent Fractions-pp. 212-213
- 10-3 Find Equivalent Fractions on a Number Line-pp. 214-215


## Chapter 10: 10-2 \& 10-3

- 10-2 Find Equivalent Fractions-pp. 212-213
- 10-3 Find Equivalent Fractions on a Number Line-pp. 214-215


## Chapter 9: 9-6

- 9-6 Use a Fraction to Find the Whole-pp. 200-201


## Chapter 10: 10-1

- 10-1 Whole Numbers and Fractions-pp. 210-211


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## NUMBER AND OPERATIONS - FRACTIONS

## Grade 3 Content Standards

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Examples: $1 / 2$ of the paint in a small bucket could be less paint than $1 / 3$ of the paint in a large bucket, but $1 / 3$ of a ribbon is longer than $1 / 5$ of the same size ribbon because when the ribbon is divided into three equal parts, the parts are longer than when the ribbon is divided into 5 equal parts.

## Sadlier Math, Grade 3

## Chapter 10: 10-4 through 10-6

- 10-4 Compare Fractions with the Same Denominator-pp. 218-219
- 10-5 Compare Fractions with the Same Numerator-pp. 220-221
- 10-6 Order Fractions-pp. 222-223

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
16. [3.MD.1] ell and write time to the nearest minute, and measure time intervals in minutes (within 90 minutes.) Solve real word problems involving addition and subtraction of time intervals (elapsed time) in minutes, e.g., by representing the problem on a number line diagram.

Chapter 13: 13-1 through 13-4

- 13-1 Tell Time to the Minute-pp. 276-277
- 13-2 Measure Elapsed Time-pp. 278-279
- 13-3 Find Start and End Times-pp. 282-283
- 13-4 Operations with Time-pp. 284-285


## MEASUREMENT AND DATA

## Grade 3 Content Standards

## Sadlier Math, Grade 3

17. [3.MD.2] Measure and estimate liquid volumes and masses of objects using standard metric units of grams ( g ), kilograms (kg), and liters (I). (Excludes compound units such as cm 3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same metric units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes multiplicative comparison problems [problems involving notions of "times as much].")

## Chapter 11: 11-2 through 11-5

- 11-2 Estimate and Measure Liquid Volume-pp. 234-235
- 11-3 Operations with Liquid Volume-pp. 236-237
- 11-4 Estimate and Measure Mass-pp. 240-241
- 11-5 Operations with Mass-pp. 242-243

Represent and interpret data.
18. [3.MD.3] Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and twostep "how many more" and "how many less" problems using information presented in scaled bar graphs.
19. [3.MD.4] Generate measurement data by

## Chapter 12: 12-7 \& 12-8

- 12-7 Read Line Plots-pp. 266-267
- 12-8 Make Line Plots-pp. 268-269 with halves and fourths of an inch. Record


## Chapter 12: 12-1 through 12-5

- 12-1 Read Picture Graphs-pp. 252-253
- 12-2 Make Picture Graphs-pp. 254-255
- 12-3 Read Bar Graphs-pp. 256-257
- 12-4 Make Bar Graphs-pp. 258-259
- 12-5 Data and Two-Step Problems-pp. 260-261 and show the data by making a line plot where the horizontal scale is marked off in appropriate units - whole numbers, halves, or fourths.


## Sadlier School

## MEASUREMENT AND DATA

## Grade 3 Content Standards

## Sadlier Math, Grade 3

## Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

20. [3.MD.5] Recognize area as an attribute of plane figures, and understand concepts of area measurement.
a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
b. A plane figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.
21. [3.MD.6] Measure areas by counting unit squares (square cm , square m , square in, square ft , and improvised/non-standard units).

## Chapter 15: 15-1

- 15-1 Understand Area-pp. 312-313


## Chapter 15: 15-1

- 15-1 Understand Area-pp. 312-313


## Chapter 15: 15-1 through 15-3

- 15-1 Understand Area-pp. 312-313
- 15-2 Find Area Using Standard Units-pp. 314-315
- 15-3 Find the Area of a Rectangle and a Square-pp. 316-317

22. [3.MD.7] Relate area to the operations of multiplication and addition.
a. Find the area of a rectangle with wholenumber side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b+c$ is the sum of $a$ $\times \mathrm{b}$ and c . Use area models to represent the distributive property in mathematical reasoning.

## Chapter 15: 15-3

- 15-3 Find the Area of a Rectangle and a Square-pp. 316-317


## Chapter 15: 15-3

- 15-3 Find the Area of a Rectangle and a Square—pp. 316-317

Chapter 15: 15-4

- 15-4 Find Area Using the Distributive Property—pp. 320-321


## Sadlier School

## MEASUREMENT AND DATA

## Grade 3 Content Standards

## Sadlier Math, Grade 3

d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.

## Chapter 15: 15-5

- 15-5 Find Area of Composite Shapes-pp. 322-323

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
23. [3.MD.8] Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

## Chapter 16: 16-1 through 16-6

- 16-1 Understand Perimeter-pp. 332-333
- 16-2 Find Perimeter-pp. 334-335
- 16-3 Find Unknown Side Lengths-pp. 336-337
- 16-4 Problem Solving: More Than One Way-pp. 340-341
- 16-5 Same Perimeter, Different Areas-pp. 342-343
- 16-6 Same Area, Different Perimeters-pp. 344-345


## GEOMETRY

Grade 3 Content Standards

## Reason with shapes and their attributes.

24. [3.G.1] Recognize that shapes in different categories (e.g., rhombuses, rectangles,

## Chapter 14: 14-1 through 14-3

- 14-1 Classify Polygons-pp. 294-295
- 14-2 Classify Quadrilaterals-pp. 296-297
- 14-3 Draw Quadrilaterals-pp. 298-299


## GEOMETRY

## Grade 3 Content Standards

## Sadlier Math, Grade 3

25. [3.G.2] Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Example: Partition a shape into 4 parts with equal area, and describe the area of each part as $1 / 4$ of the area of the shape.

## Chapter 9: 9-1

- 9-1 Understand Equal Parts-pp. 188-189


## Chapter 15: 15-2

- 15-2 Find Area Using Standard Units—pp. 314-315

