

Freetown Lakeville Public Schools

Grade 3 Mathematics Unit Guide

8/20/2002

Grade 3 Mathematics Curriculum Guideline

Unit: Addition and Subtraction

Topic: Computation

Student Learning Objectives

- 30212** Add and subtract (up to four-digit numbers) accurately and efficiently.
- 30214** Use conventional strategies for solving addition and subtraction (up to four-digit numbers).

Textbook References, Resources and Materials

- (VI, Ch 3) pp 76-89
(V2, Ch4) pp 110-121, 126-137
- (VI, Ch 3) pp 76-89
(V2, Ch4) pp 110-121, 126-137

Suggested Instructional Strategies

Use manipulatives to show regrouping.
Drill and practice.
Use a calendar or number chart to show patterns by highlighting.

Assessment

Shows work: Solution is visible; process is shown, is complete and is correct; information shown is relevant.
Accuracy: Answer is correct and complete.
Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.
Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Grade 3 Mathematics Curriculum Guideline

Topic: Using

Student Learning Objectives

- 30219** Create, describe, extend, and identify the rule of patterns (e.g. pattern blocks, numbers), including addition/subtraction patterns.

Textbook References, Resources and Materials

(V1, Ch2) pp 46-47

Suggested Instructional Strategies

Use manipulatives to show regrouping.
Drill and practice.
Use a calendar or number chart to show patterns by highlighting.

Assessment

Shows work: Solution is visible; process is shown, is complete and is correct; information shown is relevant.
Accuracy: Answer is correct and complete.
Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.
Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Grade 3 Mathematics Curriculum Guideline

Unit: Division Computation

Topic:

Student Learning Objectives

- 30213** Divide up to a two-digit whole number with a single-digit divisor (without remainders) accurately and efficiently.
- 30213** Divide simple numbers (e.g. $13/2$) with remainders. Interpret any remainders.
- 30215** Use long division to solve a two-digit whole number with a single-digit divisor (with or without remainders).

Textbook References, Resources and Materials

- (V3, Ch9) pp 306-315
(V3, Ch10) pp 330-337
- (V3, Ch10) pp 346-349
- (V3, Ch9) pp 306-315
(V3, Ch10) pp 330-337

Suggested Instructional Strategies

Use DMS (Divide, Multiply, Subtract).
Use manipulatives or role playing to show actual grouping.
Have kids refer to list of multiplication tables.

Assessment

Shows work: Solution is visible; process is shown, is complete and is correct; information shown is relevant.
Accuracy: Answer is correct and complete.
Understanding of Concept: Interprets remainder; appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.
Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Grade 3 Mathematics Curriculum Guideline

Unit: Fractions and Decimals

Topic:

Student Learning Objectives

- 30203** Demonstrate an understanding of fractions ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$) as parts of unit wholes, as parts of a collection, and as locations on the number line.
- 30204** Select, use, and explain models to relate common fractions ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$), decimals (e.g. with money, to tenths and hundredths), and order fractions with a common denominator.
- 30205** Convert between decimals and fractions (e.g. with money .25, .10, .50).
- 30206** Read, name, and write decimals between 0 and 1 up to the common hundredths (e.g. with money .25, .75).
- 30217** Use concrete objects and visual models to represent common fractions.

Textbook References, Resources and Materials

- (V3, Ch11) pp 360-365
- (V3, Ch11) pp 374-377, 380-387
- (V3, Ch11) pp 392-393
- (V3, Ch11) pp 380-393
- (V3, Ch11) pp 360-363

Suggested Instructional Strategies

Activity Master 21.
Use candy or food to demonstrate fractions and how they are related.

Assessment

Shows work: Solution is visible; process is shown, is complete and is correct; information shown is relevant.

Accuracy: Answer is correct and complete.

Understanding of Concept: Interprets remainder; appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.

Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Uses appropriate terminology for: Numerator, denominator, tenths, hundredths

Grade 3 Mathematics Curriculum Guideline

Unit: Geometry

Topic:

Student Learning Objectives

- 30225** Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles and symmetry) of two- and three-dimensional geometric shapes.
- 30226** Describe, model, draw, compare, and classify two- and three-dimensional shapes, e.g., circles, polygons-especially triangles and quadrilaterals-cubes, and spheres.
- 30227** Recognize similar figures (similar as different from congruent).
- 30228** Identify right angles.
- 30231** Use reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.
- 30232** Identify and describe line symmetry in two-dimensional shapes.
- 30233** Predict and validate (by doing) the results of partitioning, folding, and combining two- dimensional shapes.

Textbook References, Resources and Materials

(V3, Ch8) pp 254-263

(V3, Ch8) pp 254-263

(V3, Ch8) pp 266-267

(V3, Ch8) pp 262-263

(V3, Ch8) pp 254-263

(V3, Ch8) pp 464-465

(V3, Ch8) pp 258-261

Suggested Instructional Strategies

Activity Master 15.
Uses classroom objects to identify shape and attributes.
Fold and cut paper to compare shapes to show congruency and symmetry.
Use corner of paper and classroom objects to show right angles.

Assessment

Observational assessment of Activity Master 15.
Shows work: Process is complete and is correct.
Accuracy: Answer is correct and complete.
Understanding of Concept: Interprets remainder; appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept; uses appropriate terminology
Organization: Figure is legible.

Grade 3 Mathematics Curriculum Guideline

Unit: Measurement

Topic:

Student Learning Objectives

- 30130** Measure common objects using metric and English units of length measurements up to 1/4 inch or centimeter.
- 30234** Select the appropriate type of unit for measuring length, area, weight, and volume.
- 30235** Carry out simple unit conversions within a system of measurement using customary units, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.
- 30237** Estimate and find area and perimeter of a rectangle, or triangle using diagrams, models, and grids or by measuring.
- 30238** Identify and use appropriate metric and English (customary) units and tools (e.g., ruler, thermometer) to measure, and solve problems involving length, area, volume, time, and temperature.

Textbook References, Resources and Materials

- (V2, Ch5) pp 156-157, 160-161
- (V2, Ch5) pp 156-173 (length and area)
(V3, Ch8) pp 272-285 (weight and volume)
- (V3, Ch8) pp 274-281 (capacity)
(V2, Ch5) pp 150-159 (time and length)
- (V2, Ch5) pp 168-169
- (V2, Ch5) pp 150-165, 170-171 (time, length, area, temperature), 174-175
(V3, Ch8) pp 272-273, 284-285

Suggested Instructional Strategies

Display units of measure in classroom.
Measure objects in room using metric and English units of length.

Assessment

Shows work: Process is complete and is correct through teacher observation.
Accuracy: Answer is correct and complete within one minute or one degree, as appropriate.
Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.
Organization: Answer is legible; appropriate label is used.

Grade 3 Mathematics Curriculum Guideline

Unit: Money

Topic:

Student Learning Objectives

- 30210** Select and use an appropriate operation(s) (addition, subtraction)) to solve problems involving money.
- 30210** Use addition and subtraction to count money and make change correctly.
- 30216** Select and use a variety of strategies (e.g., front-end and rounding) to estimate quantities, measures, and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$100, and to judge the reasonableness of the answer.
- 30235** Carry out simple unit conversions within a system of measurement using customary units, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.

Textbook References, Resources and Materials

- (V4, Ch12) pp 422-423
- (V4, Ch12) pp 416-425
- (V4, Ch 12) pp 428-429
- (V3, Ch8) pp 274-281 (capacity)
(V2, Ch5) pp 150-159 (time and length)

Suggested Instructional Strategies

Use toy money with bank and store to make change, add money, and estimate amounts.

Assessment

Shows work: Process is complete and is correct through teacher observation.

Accuracy: Answer is correct and complete within one minute or one degree, as appropriate.

Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.

Organization: Answer is legible; appropriate label is used.

Grade 3 Mathematics Curriculum Guideline

Unit: Multiplication and Division Facts

Topic: Knowing

Student Learning Objectives

- 30211** Know multiplication facts through 10×10 and related division facts. Use these facts to solve related multiplication problems.

Textbook References, Resources and Materials

See standard 4N8
(V2, Ch6) pp 188-209
(V2, Ch7) pp 220-237

Suggested Instructional Strategies

Flash cards, multiples, math games, drill and practice.

Assessment

Shows work: Solution is visible.
Accuracy: Answer is correct and complete.
Organization: Answer is legible.
Efficiency: 3 seconds per problem.

Topic: Using

Student Learning Objectives

- 30126** Relate geometric ideas to numbers, e.g., seeing rows in an array as a model of repeated addition.
- 30208** Select, use, and explain various meanings and models of multiplication and division of whole numbers.
- 30208** Use the inverse relationship between the two operations to check their work or to figure out the answer.
- 30209** Select, use, and explain the commutative ($3 \times 2 = 2 \times 3$) and identity ($4 \times 1 = 4$ $4 \times 0 = 0$) properties of operations on whole numbers in problem situations.
- 30210** Select and use an appropriate operation(s) (multiplication and division) to solve problems.

Textbook References, Resources and Materials

(V2, Ch6) pp 192-193

Multiplication
(V2, Ch6) pp 188-199, 202-205, 208-209
(V2, Ch7) pp 220-237

Division
(V3, Ch9) pp 306-315
(V3, Ch10) pp 330-337

(V2, Ch6) pp 188

(V3, Ch9) pp 318-319
(V2, Ch6) pp 208-209

(V2, Ch7) pp 220-223



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- 30210** Use addition, subtraction, multiplication and division to count money and make change correctly. (V2, Ch7) pp 224-225
(V1, Ch3) pp 74-75
(V3, Ch10) pp 342-343
(V4, Ch13) pp 458-459
(V4, Ch15) pp 22-523
- 30213** Divide up to a two-digit whole number with a single-digit divisor (without remainders) accurately and efficiently. (V3, Ch9) pp 306-315
(V3, Ch10) pp 330-337

Suggested Instructional Strategies

Word problems: draw picture before solving and present operation "clue words" on poster board all year.
Commutative properties: show array by holding 2 different positions. Write the fact.
Families of facts to show inverse relationships.

Assessment

Shows work: Solution is visible, process is complete and is correct; information shown is relevant.

Accuracy: Answer is correct and complete.

Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.

Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Grade 3 Mathematics Curriculum Guideline

Unit: Multiplication Computation

Topic:

Student Learning Objectives

- 30212** Multiply (up to three digits by one digits) accurately and efficiently.
- 30214** Use conventional strategies for multiplication (up to three digits by one digits) problems.
- 30223** Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).

Textbook References, Resources and Materials

(V4, Ch13) pp450-461

(V4, Ch13) pp450-461

(V4, Ch15) pp506-507

Suggested Instructional Strategies

Paper and pencil activity - drill and practice with color-coded place values.
Divide play money using chart and students.

Assessment

Shows work: Solution is visible, process is complete and is correct; information shown is relevant.

Accuracy: Answer is correct and complete.

Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.

Organization: Answer is legible; problem structure (set-up) and alignment is correct.

Grade 3 Mathematics Curriculum Guideline

Unit: Number Sense

Topic:

Student Learning Objectives

30201 Read, model, write, and interpret whole numbers to at least 100,000.

Demonstrating an understanding of the values of the digits (e.g. "There are 10 ones in 10 and 10 tens in 100").

Compare and order numbers up to 100,000.

30202 Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation, (e.g., $853 = 8 \times 100 + 5 \times 10 + 3$), standard form (853), and word form (eight hundred fifty-three).

30207 Identify whether a number is odd or even.

Give examples of odd or even numbers.

30216 Select and use a variety of strategies (e.g., front-end and rounding) to estimate quantities and the results of whole-number computations up to three-digit whole numbers and amounts of money to \$100, and to judge the reasonableness of the answer.

30218 Round whole numbers up through 1000 to the nearest 10, 100, 1000.

30220 Use symbols (e.g., +, -, <, >) to represent unknown operations.

Textbook References, Resources and Materials

(V1, Ch2) pp 36-45

(V1, Ch2) pp 54-61

(V1, Ch1) pp 18-19

(VI, Ch 2) pp 48-49
(V4, Ch 12) pp 428-429

Suggested Instructional Strategies

Use place value charts with blocks, beans and cups.
Relate value of digit to money.
Use dividing objects into groups to show odd and even.
Use rollercoaster chart to show rounding.
Use role playing with numbers and symbols to make equations.

Assessment

Shows work: Solution is visible, process is complete and is correct; information shown is relevant.
Accuracy: Answer is correct and complete.
Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.
Organization: Answer is legible; problem structure (set-up) and alignment is correct.
Use Appropriate Terminology for: expanded notation, standard form, word form.

Grade 3 Mathematics Curriculum Guideline

Unit: Statistics, Graphing and Probability

Topic:

Student Learning Objectives

- 30222** Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.
- 30230** Using ordered pairs of numbers and/or letters, graph, locate, identify points, and describe paths (first quadrant).
- 30239** Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.
- 30240** Match a representation of a data set (e.g. graph) with the actual set of data.
- 30241** Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, circle graphs, pictographs, line graphs, line plots, and tallies.
- 30242** Represent the possible outcomes for a simple probability situation, e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles.

Textbook References, Resources and Materials

- (V4, Ch14) p 488
- (V4, Ch14) pp 472-486
- (V4, Ch14) pp 472-486
- (V4, Ch14) pp 472-489
- (V4, Ch14) pp 490-495

Suggested Instructional Strategies

Treasure Hunt (p. 488 in Manual).
Activity Master 27 p. 472A and graph information.
Probability: do experiments on pp. 494-495.

Assessment

Shows work: Solution is visible, process is complete and is correct; information shown is relevant.
Accuracy: Answer is correct and complete.
Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept; interviews/surveys are student-conducted.
Organization: Answer is legible; graph/table is clear and concise

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Unit: Time

Topic:

Student Learning Objectives

30235 Carry out simple unit conversions within a system of measurement using customary units, e.g., hours to minutes, cents to dollars, yards to feet or inches, etc.

30236 Identify time to the minute on analog and digital clocks using a.m. and p.m.

Compute elapsed time using a clock (e.g., hours and minutes since...) and using a calendar (e.g., days since...).

Textbook References, Resources and Materials

(V3, Ch8) pp 274-281 (capacity)
(V2, Ch5) pp 150-159 (time and length)

(V2, Ch5) pp 150-155

Suggested Instructional Strategies

Use of clocks and calendars.

Assessment

Shows work: Process is complete and is correct through teacher observation.

Accuracy: Answer is correct and complete within one minute or one degree, as appropriate.

Understanding of Concept: Appropriate strategy is used; explanation (either oral or written) is clear and shows complete understanding of concept.

Organization: Answer is legible; appropriate label is used.