

FUNDAMENTALS OF MATHEMATICS 2007-2008

Course: Fundamentals of Mathematics

Instructor: William Plamann

Credits: 1

Instructional Level: Grade 9

Textbooks: *Essentials for High School Mathematics* (1992)

Prerequisites: Placement by Math and Science Department

Course Description:

The purpose of this course is to review and reinforce basic computational and problem-solving skills essential for high school mathematics.

Course Scope:

The students will:

1. Manage a business and maintain a portfolio entitled “Sound Foundations” over the first semester. The “Sound Foundations” portfolio will cover operations with whole numbers, fractions, and decimals, which will include a variety of problem-solving skills applicable to running a business. The portfolio is due as a first semester culminating activity.
2. Review and reinforce computation and problem-solving skills necessary to successfully complete the *Basic Math Skills Competency Test* administered by the MPS as a high school exit test given to seniors. Preparation for this exam will take place throughout the third quarter. The exam is taken at the end of the third quarter.
3. Students will be introduced to a wide range of problems that cover geometry, measurement, statistics, probability, and elementary algebra.

Course Requirements:

Fundamentals of Science is required with Fundamentals of Math. These two courses are taught in adjacent time slots to allow the flexibility needed to best meet the needs of the students.

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Whole Numbers and Decimals <ul style="list-style-type: none"> • Planning a band tour • Working with whole numbers • Working with decimals • Review whole numbers • Review decimals 	6	Worksheet[WS] 1 Practice Master [PM] 1:1, 10:1 Activity 1 Text, pp. 4 (18-38), 18 (1-8) , 228 (1-12)	Start “Sound Foundations” portfolio [SFP] <ul style="list-style-type: none"> • Worksheet [WS] 1 • Practice Master [PM] 1:1 • PM 10:1 • AS 1 • Benchmark 1 Quiz	2 3 4	3.1,2 5.1	A.12.1,2
Rounding and Ordering Whole Numbers and Decimals <ul style="list-style-type: none"> • Rounding whole numbers and decimals • Ordering decimals • Writing checks 	6	PM 2:1, 10:2,3,7 Activities 2,3,4 Text, pp. 27,28,217,219	SFP <ul style="list-style-type: none"> • PM 10:2 • PM 10:3 • PM 10:7 • AS 3 • Activity 2 • Activity 3 • Benchmark 2 Quiz	2 4	1.1,2 2.3,5.1	B.12.1,2
Adding and Subtracting Decimals <ul style="list-style-type: none"> • Adding decimals • Band Tour Map • Mapping trip and calculating distance in miles and kilometers • Subtracting decimals 	6	PM 11:1,3 Map USA Tour Info. WS Maps A-J Text, pp. 231 (1-14), 249 (1-14)	SFP: <ul style="list-style-type: none"> • PM 11:1 • Band Tour Map • Maps A-J • PM 11:3 • Benchmark 3 Quiz	2 4	2.1,2,3 5.1	B.12.2,3,5

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Multiplying Decimals <ul style="list-style-type: none"> • By a whole number • By 10, 100, or 1000 • By a decimal • Calculating cost of gas 	6	PM 12:1,2,3 Activity 6 WS 3 Text (even), pp. 253 (1-24), 256 (1-30), 258 (1-30), 264,271,272	SFP: <ul style="list-style-type: none"> • PM 12:1 • PM 12:2 • PM 12:3 • Activity 6 • WS 3 • Benchmark 4 Quiz	2 4	2.1,2,3	B.12.2,3,5
Dividing by Decimals <ul style="list-style-type: none"> • By a whole number • By 10, 100, or 1000 • By a decimal • Annual salary 	6	PM 13:1,2,3,7 Text, p. 291 (1-20,35,36)	SFP: <ul style="list-style-type: none"> • PM 13:1 • PM 13:2 • PM 13:3 • PM 13:7 • Benchmark 5 Quiz	2 4	2.1,2,3	B.12.2,3,5
Percents, Decimals, & Fractions <ul style="list-style-type: none"> • Percent concepts • Percents and decimals • Writing percents as fractions • Writing fractions as percents 	6	PM 16:1,2,3,4 Review WS	SFP: <ul style="list-style-type: none"> • PM 16:1 • PM 16:2 • PM 16:3 • PM 16:4 • Benchmark 6 Quiz	2 4	2.1,2,3	B.12.2,3

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Percent of a Number: Sales Tax and Discounts <ul style="list-style-type: none"> • Finding percent of a number • Cost of gas • Discounts and sales tax • Catalogue buying • Truck purchase • Truck options • Band equipment • PA systems • Lighting and special effects 	10	PM 16:5,11 PM 12:8 Activities 6,7,12,19,20 Band tour WS 4,5,6,7,8,9	SFP: <ul style="list-style-type: none"> • PM 16:5 • Activity 7 • Activity 6 • WS 4 • PM 16:11 • Activity 12 • PM 12:8 • Activity 19 • Band Tour Trucks • Activity 20 • WS 5 • WS 6 • WS 7 • WS 8 • WS 9 • Benchmark 7 Quiz	2 3 4 6	2.1,2,3 3.1 4.1	B.12.3,5,6
Weekly Pay and Deductions <ul style="list-style-type: none"> • Weekly pay • Payroll deductions • Band tour payroll 	4	PM 12:6,7 WS 10,11	SFP: <ul style="list-style-type: none"> • PM 12:6 • WS 12 • PM 12:7 • WS 11 Quiz			

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Band Tour Bookkeeping	5		SFP <ul style="list-style-type: none"> Benchmark 8 	2 3 4 5	1.1 2.2 3.1 4.1,3	B.12.3,4,5,6
Area	2	PM 22:6,7 Activity 38	SFP: <ul style="list-style-type: none"> WS 22-6 WS 22-7 Activity 38 			C.12.2
Volume	2	PM 23:3 Activity 39	SFP: <ul style="list-style-type: none"> WS 23-3 Activity 39 			C.12.2
Art and Text Layout for Band Publicity	3	Activity 33, 1 and 2	SFP: <ul style="list-style-type: none"> Activity 33 			C.12.1,2
Portfolio Final Evaluation	2	SFP Checklist	Submit portfolio	3 4 7	3.1 5.1,2,3	B.12.5,6
Fraction Concepts <ul style="list-style-type: none"> Writing fractions Equivalent fractions Lowest terms Comparing fractions Fractions and mixed numerals Using more than one operation Fractions of the day Music-reading notes 	10	PM 6:1,2,3,4,6,7, 8,9 Text, p. 141	Test	2 4	2.1,2,3	B.12.2,3

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Multiplying and Dividing Fractions <ul style="list-style-type: none"> • Multiplying fractions • Multiplying with mixed numbers • Adjusting recipes • Scale on a map 	8	PM 7:1,3,4,5,6 PM 15:6 Text, p. 163	Test	2 4	2.1,2,3	B.12.2,3,4
Adding and Subtracting Fractions <ul style="list-style-type: none"> • Adding and subtracting fractions with common denominators • Adding and subtracting fractions with different denominators • Adding mixed numbers • Subtracting mixed numbers • Time cards • Carpenter problems 	8	PM 8:1,2,4,5,6 Text, pp. 185-187	Test	2 4	2.1,2,3 3.1	B.12.2,3,5
Percent Concepts <ul style="list-style-type: none"> • Finding the percent one number is of another • Finding a number when percent of it is known • Percent and proportions • Percent of increase or decrease • Commission 	8	PM 17:1,2,3,4,5 Text, p. 384	Test	2 4	2.1,2,3 3.1	B.12.2,3

Content/Concept/Skill	Range of Days	Source(s)	Performance Assessment	School Outcomes	Department Outcomes	State Standards
Preparation for <i>Basic Math Skills Competency Test</i>	4-6 weeks	<i>Basic Math Skills Competency Test</i> Notebook – Process noted for types of problems on competency test	<i>Basic Math Skills Competency Test</i> Notebook – Process noted for types of problems on competency test	2 3 4 5 6	1.1 2.1,2,3 4.1,3	A.12.1-5 B.12.1-5
Adding and Subtracting Integers <ul style="list-style-type: none"> • Writing and comparing integers • Adding integers • Subtracting integers 	5	PM 20:4,5 Text, p. 458 (1-38)	Quiz	2 4	2.1,2,3 5.3	F.12.1,2
Multiplying and Dividing Integers <ul style="list-style-type: none"> • Multiplying integers • Dividing integers 	4	PM 21:1,2 Text, p. 458 (39-56)	Quiz	2 4	2.1,2,3 5.3	F.12.1,2
Solving One-Step Equations <ul style="list-style-type: none"> • Addition and subtraction • Multiplication and division 	4	PM 21:1,2 Text, pp. 465,467	Quiz	2 4	2.1,2,3 5.3	F.12.3

APPENDIX – MATH DEPARTMENT OUTCOMES

Unit One: Whole Numbers and Decimals

3. A decision maker who:
 - 3.1 Integrates the use of mathematics into other academic and real-life areas
 - 3.2 Contrasts choices using God's principles
5. Self-directed learners who:
 - 5.1 Use available resources to acquire knowledge and achieve a goal

Unit Two: Rounding and Ordering Whole Numbers and Decimals

1. A God-centered thinker who:
 - 1.1 Distinguishes the proper place and role of mathematics in their mission to serve God
 - 1.2 Recognizes God's logical order and expression in creation as evidenced in the structure of mathematics.
2. An innovative problem solver who:
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions
5. Self-directed learners who:
 - 5.1 Use available resources to acquire knowledge and achieve a goal

Unit Three: Adding and Subtracting Decimals

2. An innovative problem solver who:
 - 2.1 Develops a repertoire of problem solving techniques.
2. An innovative problem solver who:
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions
5. Self-directed learners who:
 - 5.1 Use available resources to acquire knowledge and achieve a goal

Unit Four: **Multiplying Decimals** Unit Five: **Dividing by Decimals** Unit Six: **Percents, decimals and Fractions**

2. An innovative problem solver who:
 - 2.1 Develops a repertoire of problem solving techniques.
2. An innovative problem solver who:
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions

Unit Seven: **Percent of a Number, Sales Tax and Discounts** Unit Eight: **Weekly Pay and Deductions**

2. An innovative problem solver who:
 - 2.1 Develops a repertoire of problem solving techniques.
2. An innovative problem solver who:
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions
3. A decision maker who:
 - 3.1 Integrates the use of mathematics into other academic and real-life areas
4. An effective communicator who:
 - 4.1 Orally justifies a solution to a problem.

Unit Nine: **Band Tour Bookkeeping** Unit Ten: **Area, Volume, Art and Text Layout for Band Publicity**

1. A God-centered thinker who:
 - 1:1 Distinguishes the proper place and role of mathematics in their mission to serve God
2. An innovative problem solver who:
 - 2:2 Produce beneficial and God-pleasing solutions to the diversity of real-life problems
3. A decision maker who:
 - 3.1 Integrates the use of mathematics into other academic and real-life areas
4. An effective communicator who:
 - 4.1 Orally justifies a solution to a problem.
 - 4:3 Effectively express mathematical ideas in written form

Unit Eleven: Portfolio Final Evaluation

3. A decision maker who:

3:1 Integrates the use of mathematics into other academic and real-life areas

5. Self-directed learners who:

5:1 Use available resources to acquire knowledge and achieve a goal

5:2 Use their god-given talents to the fullest

5:3 Are prepared for their next higher level of mathematics in their educational and life endeavors

Unit Twelve: Fraction Concepts Unit Thirteen: Multiplying and Dividing Fractions

2. An innovative problem solver who:

2.1 Develops a repertoire of problem solving techniques.

2. An innovative problem solver who:

2.3 Is a logical thinker and uses the principles of logic to:

2.3.1 deduce tentative conclusions to real-life problems

2.3.2 justify the validity of conclusions

2.3.3 derive valid solutions

Unit Fourteen: Adding and Subtracting Fractions**Unit Fifteen: Percent Concepts**

2. An innovative problem solver who:

2.1 Develops a repertoire of problem solving techniques.

2. An innovative problem solver who:

2.3 Is a logical thinker and uses the principles of logic to:

2.3.1 deduce tentative conclusions to real-life problems

2.3.2 justify the validity of conclusions

2.3.3 derive valid solutions

3. A decision maker who:

3:1 Integrates the use of mathematics into other academic and real-life areas

Unit Sixteen: Preparation for Basic Math Skill Competency Test

1. A God-centered thinkers who:
 - 1:1 Distinguishes the proper place and role of mathematics in their mission to serve God
2. An innovative problem solver who:
 - 2.1 Develops a repertoire of problem solving techniques.
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions
4. An effective communicator who:
 - 4.1 Orally justifies a solution to a problem.
 - 4:3 Effectively express mathematical ideas in written form

Unit Seventeen: Adding and Subtracting Integers Unit Eighteen: Multiplying and Dividing Integers

Unit Nineteen: Solving One-Step Equations

2. An innovative problem solver who:
 - 2.1 Develops a repertoire of problem solving techniques.
 - 2.3 Is a logical thinker and uses the principles of logic to:
 - 2.3.1 deduce tentative conclusions to real-life problems
 - 2.3.2 justify the validity of conclusions
 - 2.3.3 derive valid solutions
5. Self-directed learners who:
 - 5:3 Are prepared for their next higher level of mathematics in their educational and life endeavors