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M 132.B01: Numbers and Operations for Elementary School Teachers

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NUMBERS AND OPERATIONS FOR ELEMENTARY SCHOOL TEACHERS
MATHEMATICS 132 SECTION B01 - CRN 72589

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WEBPAGE `http://umonline.umt.edu/`

GOALS Upon successful completion of this course, a student will be able to:

1. Develop as a mathematician and teacher with the ability to explain reasoning (both verbally and in writing) while solving problems, and participating with confidence in mathematical activity,

2. View mathematics as the human activity of structuring the world, by demonstrating knowledge of the historical development of number and number systems including contributions from diverse cultures and its use in describing the world around us,

3. Become a more-central participant in the community of mathematics teachers,

4. Develop a meaning of addition, subtraction, multiplication, and division and provide multiple models for whole number operations and their applications,

5. Recognize commutativity, associativity, distributivity, identities, and inverses as properties of operations on a given domain and appreciate that a small set of rules governs all of arithmetic,

6. Recognize the meaning and use of place value in efficiently representing whole numbers and finite decimals, comparing and ordering numbers, and understand the relative magnitude of numbers,

7. Demonstrate proficiency in and understanding of multi-digit computation using standard and alternative/invented algorithms, mental mathematics, and computational estimation. Explain the difference in understanding required for various algorithmic processes,

8. Analyze integers and rational numbers, their relative size, and how operations with whole numbers extend to integers and rational numbers, and,

9. Evaluate student work regarding numbers and operations, determine the mathematical reasoning and strategies used, and recognize some common mistakes, including the reasoning that makes these mistakes sensible. Formulate feedback and identify instructional activities to further student learning.

GENERAL EDUCATION This course satisfies the University of Montana's general education mathematical literacy requirement. Upon completion of the mathematical literacy requirement, a student will be able to apply effectively mathematical or statistical reasoning to a variety of applied or theoretical problems.

TEXT Mathematics for Elementary School Teachers with Activities, 5th Edition (Sybilla Beckmann)

LETTER GRADE Your letter grade in the course will be determined by assessment of your ***understanding*** of predefined learning standards. For each standard, I will write an assessment that will provide me with the ability to assess your understanding on a 4-point scale according to:

Score	Student demonstrates...	Classification
4	...mastery beyond the learning target	Beyond Proficient
3	...full mastery of the learning target	Proficient
2	...partial mastery of the learning target	Nearing Proficient
1	...minimal mastery of the learning target	Novice

LETTER GRADE	Each mid-semester exam will assess 4 or 5 standards. You will have the opportunity to "challenge" each standard's first assessment results once. I also will assign several projects - each will assess 1 standard. You will not have the opportunity to challenge any project assessment results. Letter grades will be assigned according to:

Grade	Semester's Assessment Results
A	All 3s and 4s with a majority of 4s
B	All 3s and 4s with a minority of 4s
C	A mix of 1s, 2s, 3s and 4s with a minority of 1s and 2s
D	A mix of 1s, 2s, 3s and 4s with a majority of 1s and 2s
F	A mix of 1s, 2s, 3s and 4s with a 2/3 majority of 1s and 2s

± GRADE

Your plus/minus grade will be determined by assessment of your **effort** in the course. This aspect will be measured through the collection of homework practice. Let T be the proportion of homework practice and reading quizzes earned out of the total possible, then, your plus-minus grade will be assigned according to:

$$
\begin{aligned}
0.90 &\leq T < 1.00 &\Rightarrow &\quad + \\
0.80 &\leq T < 0.90 &\Rightarrow &\quad \\
0 &\leq T < 0.80 &\Rightarrow &\quad -
\end{aligned}
$$

Please note that there is no "$A+$" grade given at the University of Montana.

HONESTY

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at the following web address: `http://life.umt.edu/vpsa/student_conduct.php`.

ACCOMMODATION

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors and Disability Services for Students (DSS). If you think that you may have a disability adversely affecting you academic performance, and you have not already registered with DSS, please contact DSS in Lommassen 154. I will work with you and DSS to provide an appropriate accommodation.

POLICIES

You must earn a C- or better in this course to pass the requirement in the School of Education. You may change to Credit/No Credit up the last day of the class. Credit will be awarded to students earning a D- or better.

DIGITAL ACCESS

Digital devices are becoming increasingly important to success in college. In this course, you will need a digital device to access readings, complete and submit written assignments, complete online quizzes, verify your attendance, take in-class polls, coordinate with other students regarding group projects, complete and submit group projects. I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students. Given those challenges, I encourage students to contact me if they experience a technology-related problem that interferes with their work in this course. This will enable me to assist students in accessing support.

SEMESTER SCHEDULE

Monday	Wednesday	Friday
	19-Aug Introduction	21-Aug Section 1-1
24-Aug Section 1-2	26-Aug Section 1-3	28-Aug Section 1-4
31-Aug Section 2-1	2-Sep Section 2-2	4-Sep Section 2-3
7-Sep Labor Day	9-Sep Section 2-4	11-Sep Section 2-5
14-Sep Project 1 and Review	16-Sep Assessment	18-Sep Section 3-1
21-Sep Section 3-2	23-Sep Section 3-3	25-Sep Section 3-4
28-Sep Section 3-5	30-Sep Section 4-1	2-Oct Section 4-2
5-Oct Section 4-3	7-Oct Section 4-4	9-Oct Section 4-5
12-Oct Section 4-6	14-Oct Section 4-6	16-Oct Project 2 and Review
19-Oct Assessment	21-Oct Section 5-1	23-Oct Section 5-2
26-Oct Section 5-3	28-Oct Section 5-4	30-Oct Section 6-1
2-Nov Section 6-2	4-Nov Section 6-3	6-Nov Section 6-3
9-Nov Section 6-4	11-Nov Veteran's Day	13-Nov Section 6-5
16-Nov Section 6-6	18-Nov Project 3 and Review	
Final Assessment Wednesday, November 25th, 8:00-10:00		

Other Important Dates: September 9th is the last day to drop the course using Cyberbear. October 21st is the last day to drop with instructor and advisor signatures (W appears on transcript). November 18th is the last day to drop the course or change grading option using a late drop form (WP/WF appears on transcript). Acceptable reasons for a late drop are listed in the university catalog and are limited to: accident, illness, family emergency or a change in work schedule. The following examples are not considered sufficient for a late drop: protecting GPA, forgetting to turn in the change slip, losing financial aid, losing eligibility to engage in sports.

HOMEWORK ASSIGNMENTS

Section	Problems for Section	Due Date
1.1	3,7,9	2-Sept
1.2	1,2,7,8,12,15*	2-Sept
1.3	3,6,10,11,13,15*	2-Sept
1.4	2,3,4,6	2-Sept
2.2	2,5,7,11,16,18,20*	16-Sept
2.3	1,3,4,10,15,19,25*	16-Sept
2.4	2,3,4,6,7,10,11,18,19*	16-Sept
2.5	3,4,9,10,15,20,22*	16-Sept
3.1	1,3,5	2-Oct
3.2	3,4,5,6,8,10,11,12*	2-Oct
3.3	2,3,4,7,9,12*,14*	2-Oct
3.4	2,3,4,6,11,12,14,27*	2-Oct
3.5	2,3,4	2-Oct
4.1	1,2,3,4,8,9	19-Oct
4.2	1,2,3,4*	19-Oct
4.3	1,2,6,7,8,10,13,14,20	19-Oct
4.4	5,6,7,8,9,18*	19-Oct
4.5	2,3,7,8,10,12,16,17*	19-Oct
4.6	1,3,4,7,12	19-Oct
5.1	1,3,5,7,8,11,15,19*	2-Nov
5.2	1,3,4,5,6,9	2-Nov
5.3	1,2,3	2-Nov
5.4	1,2,3,5,9,10	2-Nov
6.1	1,2,3,4,5	25-Nov
6.2	1,4,6,7,9,11*	25-Nov
6.3	1,2,3,4,5,8,10,19,25*	25-Nov
6.4	2,4,7,9,11,15,16*	25-Nov
6.5	3,6,7,8,9,10,11	25-Nov
6.6	3,5,6,7,13	25-Nov

* - indicates optional challenging problem

Homework Philosophy

I view homework assignments as *formative* assessments. Formative assessments are meant to give students feedback so that adjustments in learning can be made to improve learning outcomes measured in *summative* assessments (i.e. quizzes and exams). As such, I expect you to correct your own homework assignments before handing them in for credit. This arrangement gives you immediate feedback on your understanding of course content and the opportunity to correct your misunderstandings *before* grades are recorded.

Homework Policies

- Homework must be submitted on quad ruled loose leaf paper without frayed edges, homework must be done in pencil, and multiple pages must be neatly stapled.

- Homework solution keys will be provided on our class webpage. Use a colored pen to correct your homework and make notes to yourself. Your homework effort will only be counted if every problem has been attempted and corrected.

- Corrected homework for each section is due at the start of the class period on the date indicated above. I do not accept late homework for any reason.