

Topics/Objectives Lists tell what I'll expect of you on exams, and give an outline for creating your own, detailed study guide. Compare this list to your notes, in-class materials, reading, online links, Bonus Study Prompts, Weekly Assessments, Required Practice, and extra problems - you might want to recopy key definitions and explanations, rewrite thorough examples of tasks and solutions, jot down warnings of what not to do, etc. Strive to master concepts, explanations, and computational techniques in general; memorizing specific examples is seldom successful. Using problem flashcards, studying together, and seeing me or the MAC tutors can help.

For exams in math, science, psychology, etc., starting to study well in advance and putting in good time can help you tame test anxiety by feeling well-prepared to recall what you understand. Strong students can probably get by with an hour a day at first, then 2 hours per day for the last two days. But if you've been struggling, expand those estimates!

Whole Number/Numeration Basics: Remember all Number Sentence Terminology from Exam #1.

1. Know the difference between whole numbers and counting numbers.
2. Explain the difference between a number and a numeral. (See notes.)
3. Understand the term "digit" in context.
4. Explain what a system of numeration is. (See notes.)
5. Name our modern system of numeration. (Spell closely.)
6. Name AND describe the three key features of our system of numeration.
7. Define the CONCEPT "place value" (not what it means as a location). (See notes.)
8. Answer child-content questions like those in HW #21.
9. Put a list of place values in order by size, as on WA and Bonus Study Prompt.
10. Convert between forms for numerals: standard, word, all three types of expanded.
11. Find one or more Hindu-Arabic numerals that satisfy a given set of clues.

Word Problem Scenarios:

1. Define the term *scenario* as we use it in the context of word problems.
2. Memorize names of scenarios from Summary #3 and their characteristics.
3. Given a whole number word problem, prepare for any or all of these tasks:
 - (a) Write the complete number sentence it requires.
 - (b) Name the operation it requires.
 - (c) Name the scenario it illustrates.
 - (d) Tell whether the problem uses objects or measurements.
4. Create an original word problem (remember to ask a question!) that requires a given computation and scenario. When asked, also use measurements vs. objects.

Arithmetic Algorithms and Manipulatives: *Algorithms must display PERFECT markings, suited to a teacher.*

1. Clearly define the terms "algorithm" and "manipulative."
2. Explain ALL steps to find sums, differences using base blocks. (Blocks will be available.)
 - (a) You MUST tell WHY we make any trades that occur.
3. Add, subtract, multiply, divide using the Standard Algorithms.
4. Remember to cross OUT a number if it's been changed during by-hand work.
5. Demonstrate Scratch Addition, Lattice Addition, Balancing Subtraction (Equal Addends).
6. Add/subtract mixed measurements such as inches-feet-yards, time, etc., as in text practice.
7. Demonstrate: Lattice Multiplication, Partial Products Algorithm, Area Model for multiplication.
8. Demonstrate the Partial Quotients Algorithm for division (expect around 6 steps).
9. Analyze variations/errors in by-hand algorithms and imitate or explain errors, as in text practice.
10. Fill in the blanks in partway-done algorithms; create largest/smallest answers, as in practice and WAs.

Rounding and Counting in Hindu-Arabic:

1. Round whole numbers to a given place. Identify whether you rounded up versus down.
2. Find/create one or more numbers that round TO a desired result, including rounding up vs. down and clues about other positions.
3. Fill in missing numbers in a counting grid (10s grid), possibly with only certain squares showing.
 - (a) Indicate if any numbers are impossible because they go “out of bounds.”
4. List Hindu-Arabic numerals that precede or follow given ones, both immediately and when we skip-count.

Historical Systems of Numeration: Correctly spell the name for ours.

1. CLEARLY explain meanings of: number, numeral, place value, base ten.
 - (a) Identify and explain the three key features of Hindu-Arabic, Egyptian.
2. MEMORIZE and use the digits for Egyptian numerals.
3. Convert between Hindu-Arabic and Egyptian numerals.
4. Identify largest, smallest numeral in a mixed list of Hindu-Arabic, Egyptian numerals.
5. Write one or more numerals - in the same system - that follow or precede a given Hindu-Arabic or Egyptian numeral, including counting by 1s, 10s, 100s, etc.
6. As in practice list, identify largest/smallest of numerals among Hindu-Arabic, Egyptian.

You will have the entire class period to take the exam. When you finish, you may hand it in and leave.

You may use a basic calculator (not cell phone, no alphabet), but no other aids are permitted.

Students with documented accommodations should speak with me and process ODS requests ASAP.
ODS should proctor your accommodations since our classroom and my schedule are not automatically free.