

Carefully study these topics, referring to your notes, activities, readings, quizzes, and practice homework.

More About Sets: Skills from Exam #1 will be needed again as indicated.

1. Write in words exactly how to read set-builder notation aloud. Convert between roster vs. set-builder.
2. Describe what a one-to-one correspondence is. Draw one or more between two given sets.
3. Clearly address both match-up needs to describe how one-to-one correspondence helps us spot less/more.
Example: (1) nobody uses more than one chair, and (2) no chairs hold more than one person, but there are still chairs left over, so we have more chairs in our room.
4. Know, understand, use notation related to Cartesian product, including $n(\)$, \in , \notin , \subseteq , \subsetneq , \emptyset .
5. Find the Cartesian product of two sets, including mixed with \cup , \cap , \bar{A} , $A - B$. Understand universal sets.
6. Predict number of elements or subsets of a given Cartesian product. Know, use the word disjoint.
7. List some/all subsets of a given Cartesian product; list some with certain properties or cardinality.
8. Know, use: you can't repeat elements in a set, but you can repeat coordinates in an ordered pair.
9. Make up sets whose Cartesian product has certain qualities. When not possible, explain.

Numeration and Place Value: Tell what a "numeration system" is; correctly spell the name for ours.

1. CLEARLY explain: (1) difference between number and numeral, (2) meaning of phrase "place value."
2. List the four features that our system uses. Answer questions like those in HW #21.
3. Convert between forms for base ten numerals: standard, word, all three types of expanded.
4. Round a given numeral to a given position. Recognize when you rounded up versus rounded down.
5. Find one or more base ten numerals - including largest/smallest - that satisfy a given set of clues.
6. Write in words the names of the first four or five positions in an unusual base.
7. Convert a number written in another base into what it's worth in base ten.
8. Given an equality using numerals in base ten and in an unknown base, find the value of the base.
9. Count in bases other than ten; memorize the extra digits in bases twelve and sixteen.
10. Prepare to work in *unfamiliar* other bases such as eleven, thirteen, etc. I will give you necessary extra digits or the pattern for creating them (as in the base fourteen quiz).
11. Explain THE MATH for why bases such as twelve need extra digits. (Blank rules such as "You're supposed to use T for ten" or "You need digits for zero through eleven" are NOT good enough.)
12. Explain THE MATH for why the base itself is never written as just a single digit. ("You're not allowed to write a 4 in base four" or "You only use digits for zero through three" are NOT good enough.)
13. Beware creating numerals that use inappropriate digits for their bases.
14. List one or several numerals that precede or follow given numerals in a specific base.
15. Determine largest or smallest in a list of numerals, possibly in a mixture of bases. (See text HW.)
16. Tell clearly how to represent a numeral with base blocks, abacus, or place value card, as in HW #25.

Whole Number Arithmetic Scenarios, Terms, and Definitions: Name the four operations.

1. Name the set operations that correspond to the set-based definitions of number operations.
2. Make set-based observations about numbers of elements when we add, subtract, etc., as in 3-2A/B #2-5.
3. Complete statements to illustrate constructivist definitions, as in HW.
4. Know when division involving 0 is possible/not; use PRECISE definitions to explain. - On Tues, 10/30
5. Given a number sentence or just a list of 3 numbers, write the associated Fact Family.
6. Memorize and spell the terminology for parts of number sentences.
7. Create number sentences having given numbers in specified roles; recognize when you cannot.
8. Create whole number sentences w/more general constraints, explain impossibles, as in HW.
9. Memorize names of the scenarios for each operation listed in the Scenario Summary.
10. Identify by name the scenario and/or operation represented in a given word problem.
11. Write the complete number sentence represented in a given word problem.
12. Make up an original word problem requiring a given computation and scenario.
13. Distinguish between "objects" vs. "measurements" in reading or writing a word problem.

Bring an approved calculator: not cell phone, no text-based memory.

If you forget, you may borrow mine - for a THREE point deduction.