

Math 212, Exam THREE Review

Exam THREE is an in-class exam given on Tuesday, March 10, 2009

- For Exam Three you should study your assigned homework, the examples in our textbook and the class activities (including the new material on *Permutations and Combinations*) we have done in class for §7.3, §8.1 and §8.2.
- Exam Three is a mix of multiple choice and short answer questions.
- You will need to use your calculator during the exam.
- You may use your personal manipulative kit during the exam.
- You may not use a cell phone or any other non-academic electronic device during the exam.
- You may use one 3" x 5" notecard on this exam with notes on one side

CONCEPTS TO KNOW

- Chapter 7 Review Items, page 511
 - #5: Measures of Relative Standing
 - #6: Sampling
 - #7: Distributions
- Chapter 8 Review Items, page 550
 - #1: Probability
 - #2: Events
 - #3: Odds and Simulations
 - #4: Multistage Experiments
 - #5: Permutations and Combinations (see next page)

Practice Problems: Chapter 7 Test, page 513 & 514

9 - 14

Practice Problems: Chapter Eight Test, page 559 & 560

1 – 15, new questions #16, 17 (see next page)

I will feel free to draw from all assigned homework & class activities! Pay particular attention to:

- The Text One Page Math Activities: §7.3, §8.1 and §8.2.
- Activity Sets: §7.3, §8.1 and §8.2

Study Ideas

- Work problems from the text and the activity book; don't just read over already done work. The more problems you can work, the more confident you will be during the exam.
- Work with a study group, discuss ideas.

Chapter 8 Review Item

5. Multiplication Principle, Permutations and Combinations

- Multiplication Principle** If event A can occur in m ways and then event B can occur in n ways, no matter what happens in event A, then event A followed by event B can occur in $m \times n$ ways.
- The product of the whole numbers from 1 through n is written as $n!$ and called **n factorial**.
- A **permutation of objects** is an arrangement of these objects into a particular order.
- Permutation Theorem** The number of permutations of n objects taken r objects at a time, where $0 \leq r \leq n$, is

$${}_n P_r = \frac{n!}{(n-r)!}$$

- A collection of objects for which order is not important is called a **combination**.
- Combination Theorem** The number of combinations of n objects taken r objects at a time, where $0 \leq r \leq n$, is

$${}_n C_r = \frac{n!}{(n-r)!r!}$$

Chapter 8 Practice Test—two new questions

- A family of mother, father, older sister, brother and younger sister will be randomly assigned seats A, B, C, D and E, in a row, for their flight to Chicago. Seat A is next to the window.
 - In how many different ways can the family be assigned seats?
 - In how many different ways can the family be assigned seats, if the older sister is assigned the Seat A next to the window?
 - What is the probability that the older sister will be assigned Seat A?
 - What is the probability that the older sister will not be assigned Seat A?
- A jar contains 45 balls numbered 1 to 45.
 - How many different sets of five balls can be randomly taken from the jar?
 - How many different sets of five balls containing the ball numbered 42 can be taken from the jar?
 - What is the probability that a five ball set will contain the ball numbered 42?
 - What is the probability that a five ball set will not contain the ball numbered 42?