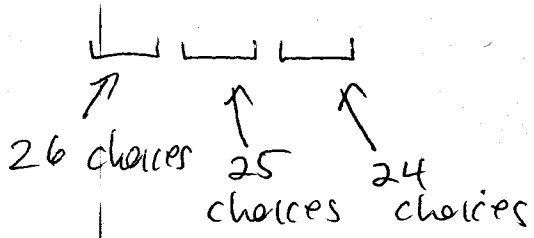
MATH 110 – QUIZ 4 – 25 SEPTEMBER 2009

Answer all of the following questions in the space provided.

1. (3 pts.) How many different three-letter words (including nonsense words) can be formed from the 26 letters of the alphabet if all three letters must be distinct?



$26 \cdot 25 \cdot 24 = 15600$ //

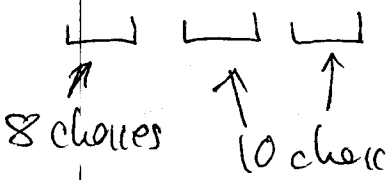
Multiplication Principle

2. (3 pts.) A fraternity has 20 members. In how many ways can it choose a 3-member board of directors?

$$\binom{20}{3} = \frac{20 \cdot 19 \cdot 18}{3 \cdot 2} = 1140 \text{ //}$$

Note: Order does not matter.

2. (3 pts.) An area code is a three–digit number whose first number cannot be 0 or 1. How many different area codes are possible?



$8 \cdot 10 \cdot 10 = 800$ //

Multiplication Principle.

3. (1 pt. each) Compute the following.

(a) $P(5,5)$

$$P(5,5) = 5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 120 \text{ //}$$

(b) $C(6,5)$

$$C(6,5) = \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2}{5 \cdot 4 \cdot 3 \cdot 2} = 6 \text{ //}$$

or $C(6,5) = C(6,1) = 6$ //