

## UNIVERSITY OF TEXAS AT AUSTIN

## Quiz # 1

Common sense. Prerequisite material.

Provide your complete solutions for the following problems.

**Problem 1.1.** (5 points) Harry graduated with an art degree 10 years ago. He subsequently became an actuary. Which one of the following statements do you think is more likely to apply to Harry:

- a. Harry now works at a consultancy.
- b. Harry now works at a consultancy and enjoys volunteering at the Museum of Modern Art on the weekends.

Substantiate your choice with a short explanation.

a is more likely to be true because in b there are 2 conditions that have to be true for all of b to be true. In statement a, it is more likely to satisfy the one condition.



**Problem 1.2.** (3 pts) Harry is on a diet. He is allowed to eat  $\frac{1}{4}$  of a pound of turkey breast for dinner. On the other hand, he knows that three slices of turkey breast weigh  $\frac{1}{3}$  of a pound. How many slices is he allowed to eat?

Harry is allowed to eat 2 slices so as to not go over his  $\frac{1}{4}$  lb limit

$$\frac{1}{9}x \leq \frac{1}{4} \quad x \leq \frac{9}{4}, \text{ greatest integer is } 2$$

**Problem 1.3.** (5 points) Twelve people enter the elevator on the ground floor of a ten-story building and start riding up. By the time the elevator reaches the top floor, all the people have exited the elevator. What is the probability that at least two people exited the elevator on the same floor?

There are more people than there are floors.  
Probability 2 people exited on same floor is 100% according to the Pigeon hole principle.

**Problem 1.4.** (2 points) Harry has so far earned 60 out of the so far available 70 points in a course he is taking. The total number of points in the course is 100. What percentage score (at least) does he need to earn in the final exam in order to get at least 80 total points available in the course and get a B on his transcript?

$$1 - \frac{10}{30} = 0.6667 = 67\% \text{ at least to make a B}$$