

Props to bring:

Toys from WRQ as xmas gifts (I have a bunch of old marketing gimmicks to give away after the quiz, just for fun, as our last meeting before 2-week Xmas break).

Circulate attendance sheet

Hand out every corrected paper I have – take one for friends, please.

8:10 Warmups:

Today's math club is brought to you by the number 7! (*7 factorial!*)

- 1) Deposit homework, consume doughnut
- 2) If a music system is offered at \$90, which is 25% off its original price, then what was its original price?  $X * \frac{3}{4} = \$90$ . *A:  $90 \times \frac{4}{3} = \$120$*
- 3) Suppose that five friends each throw one snowball at a target. Each person is accurate  $\frac{2}{3}$  of the time.
  - a) What is the probability that everyone hits the target? *A:  $(\frac{2}{3})^5 = 13.2\%$*
  - b) That nobody hits the target? *A:  $(\frac{1}{3})^5 = 0.41\%$*
  - c) That somebody hits the target? *A:  $1 - (\frac{1}{3})^5 = 0.59\%$*
- 4) I only have one 10-sided dice, but I want to allow for totals from 1 to 20. Can I just roll it once and add the top and bottom? *A: Outcome is always 11, because opposite sides of a fair dice always add to 11. They are not statistically independent.*
- 5) Suppose you're playing some game of chance, and you're doing well. Does "luck" mean you will continue to do well, or does "the law of averages" mean you will suddenly do poorly?  
*A: No, it means that starting now you should expect to get the 'fair' probability of success.*
- 6) ***Insert your math joke here!***

8:30 Discuss top homework #9 problems:

7) Laura and Steve: What is  $P(2 \text{ boys}, 2 \text{ girls})$ ?  $P(3 \text{ of one}, 1 \text{ of the other})$ ?

Discuss top homework #10 problems:

4) Escaping the Evil King:  $P(\text{escape}) = \frac{1}{2} * 40\% * \frac{3}{4} = 0.15$

5) Security from Evil King:  $P(\text{unsafe}) = 10\% * \frac{1}{1000} = \frac{1}{10,000}$

8:40 Ask for dedication to homework – it's  $\frac{2}{3}$  of the class! A new year's resolution.

This is the most difficult lesson yet.

9:00 Times 100 quiz (give prize)

### **Footnote to Parents**

This is one of the most advanced topics in Math Club. Please keep it in perspective – we do not expect mastery of the subject. Your student might not see this again until around eighth grade.

Our goals are to learn the vocabulary, and understand these types of problems exist. Their skills should include solving problems with factorials, and using the statistical functions on a calculator. They are not expected to memorize these equations, and they should not blame themselves if they don't understand.