

HW KEY

4:07 PM

1. Uh-oh! Tom didn't study for his quiz that has ten true-false questions. If he randomly guesses on all ten questions, what is the probability Tom earns a score of exactly 70% on the quiz?

$$\frac{10C7}{2^{10}}$$

2. If a shiny 2015 Lincoln penny is tossed 6 times, what is the probability of tossing:

- a. No heads?

← All tails

$$\frac{1}{2^6}$$

or

$$\frac{6C0}{2^6}$$

or $\frac{6C6}{2^6}$

- b. exactly 2 heads?

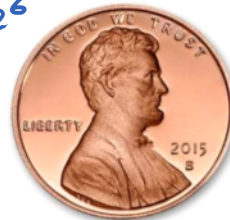
← 2H 4T

$$\frac{6C2}{2^6}$$

- c. At least 2 heads?

$$1 - \left(\frac{1}{2^6}\right) - \left(\frac{6C1}{2^6}\right) \text{ or } \frac{6C2 + 6C3}{2^6}$$

0 heads 1 Head 2 Head 3 head



3. The town of Mathemagiland includes 8 men and 7 women. If a 4 person committee is to be formed at random, what is the probability the committee includes 2 men and 2 women?

$$\frac{8C2 \cdot 7C2}{15C4}$$

























4. Given the integers 1 through 50, what is the probability that an integer that ends in 5 is a multiple of 3?

$$\frac{2}{50} = \frac{1}{25}$$

↑ 15, 45

5. A "stripped" deck of cards is made up of 24 cards – the 9, 10, J, Q, K, and Ace of each of the four suits. If a four card hand is dealt from a "stripped" deck, what is the probability the hand contains:

Sample Space: $24C4$

SUIT	9	10	Jack	Queen	King	Ace
Spades						
Hearts						
Diamonds						
Clubs						

- a. Only red cards?

$$\frac{12C4}{24C4}$$

- b. Only hearts?

$$\frac{6C4}{24C4}$$

- c. 3 red cards and 1 black card?

$$\frac{12C3 \cdot 12C1}{24C4}$$

- d. No face cards (J, Q, K)?

$$\frac{12C4}{24C4}$$

6. On his bookshelf, Lucy Reader has ten books: two mysteries, four romance novels, and four mathematics textbooks.

- a. If Lucy selects one book, what is the probability that it is a math textbook?

$$\frac{4C1}{10C1} = \frac{4}{10}$$

- b. If Lucy selects two books, what is the probability that they are both the same type?

$$\frac{2C2 + 4C2 + 4C2}{10C2}$$

- c. If Lucy selects two books, what is the probability that neither is a math textbook?

$$\frac{6C2}{10C2}$$