

$A \cup B$: Union

$A \cap B$: Intersection

FST 6.1-6.3 Quiz Review

In 1-2, consider the sample space when 2 fair 6-sided dice are tossed. $\rightarrow 36$ outcomes

1. Find $P(\text{the sum is } 3)$

3: $\{(1,2), (2,1)\}$

$$\frac{2}{36} = \frac{1}{18}$$

2. Find $P(\text{doubles or the sum is } 4)$

D: $\{(1,1), (2,2), (3,3), (4,4), (5,5), (6,6)\}$

4: $\{(1,3), (2,2), (3,1)\}$

$$P(D) + P(4) - P(D \cap 4)$$

$$\frac{6}{36} + \frac{3}{36} - \frac{1}{36} = \frac{8}{36} = \frac{2}{9}$$

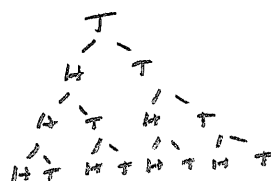
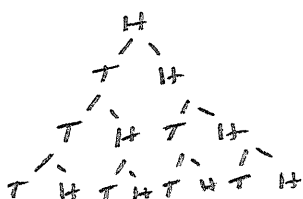
3. Suppose the sample space for an experiment is all 52 playing cards in a standard deck.

Let A be the event: Face Card. Describe the complement of A.

Not a face card: $\{A, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

In 4-5, consider an experiment in which a coin is tossed 4 times

4. Write the experiment's sample space.



$$\underbrace{2 \cdot 2 \cdot 2 \cdot 2}_{\text{outcomes}} = 16$$

H T T T
H T T H
H T H T
H T H H

T H H H
T H H T
T H T H
T H T T

5. What is the probability of exactly 3 heads showing up?

$$\frac{4}{16} = \frac{1}{4}$$

6. A test has 8 true-false questions and 12 multiple-choice questions each with 4 choices. What is the probability of answering all questions correctly if you randomly guess on each?

$$\frac{1}{2^8 \cdot 4^{12}} = \frac{1}{4,294,967,296} = 2.33 \times 10^{-10}$$

7. A car showroom has enough room to display 5 cars in a row.

a. How many ways can the five cars be arranged?

$$5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 120$$

b. How many ways can the cars be arranged if the most expensive car is in the middle?

$$\frac{4}{\quad} \frac{3}{\quad} \frac{1}{\quad} \frac{2}{\quad} \frac{1}{\quad} = 24$$