

1. Joy has a stack 30 cards numbered 1 through 30

a. What's the probability that a card chosen at random is number 10?

$$\boxed{\frac{1}{30}}$$

b. What's the probability that a card chosen at random is an even card?

$$\{2, 4, 6, \dots, 28, 30\}$$

$$P(\text{even}) = \frac{15}{30} = \boxed{\frac{1}{2}}$$

c. What's the probability that a card chosen at random is a multiple of 5?

$$S = \{5, 10, 15, 20, 25, 30\}$$

$$\frac{6}{30} = \boxed{\frac{1}{5}}$$

d. What's the probability that a card chosen at random number ends with a 0?

$$S = \{10, 20, 30\}$$

$$P(\text{ends w/ } 0) = \frac{3}{30} = \boxed{\frac{1}{10}}$$

2. A bag contains 4 red marbles, 2 green marbles, 1 white, and 6 yellow marbles. Suppose you select one marble at random. Find each probability.

Size: 13

a)  $P(\text{red}) = \frac{4}{13}$

b)  $P(\text{blue}) = \frac{0}{13} = 0$

c)  $P(\text{green}) = \frac{2}{13}$

d)  $P(\text{not blue}) = \frac{13}{13} = 1$

e)  $P(\text{green or yellow}) = \frac{2}{13} + \frac{6}{13}$   
 $= \frac{8}{13}$

f)  $P(\text{not yellow}) = 1 - P(Y)$   
 $= 1 - \frac{6}{13}$   
 $= \boxed{\frac{7}{13}}$

3. A 6-sided dice is rolled. Find each probability.

a)  $P(2) = \frac{1}{6}$

b)  $P(\text{even}) = \frac{3}{6} = \frac{1}{2}$

c)  $P(\text{less than 5})$   
 $S = \{1, 2, 3, 4\}$

$$P(< 5) = \frac{4}{6} = \frac{2}{3}$$

d)  $P(\text{greater than 6}) = \frac{0}{6} = 0$

4. In a standard casino dice game, a player rolls two standard 6-sided dice.

a) Make an area model or a tree diagram of all the possible outcomes of the sum of the 2 dice.

	1	2	3	4	5	6	2nd die
1st die	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
	3	4	5	6	7	8	9
	4	5	6	7	8	9	10
	5	6	7	8	9	10	11
	6	7	8	9	10	11	12

b) Find the probabilities:

a.  $P(9) = \frac{4}{36} = \frac{1}{9}$

b.  $P(1) = 0$

c.  $P(\text{less than 5}) = \frac{6}{36} = \frac{1}{6}$   
 $S = \{2, 3, 4\}$

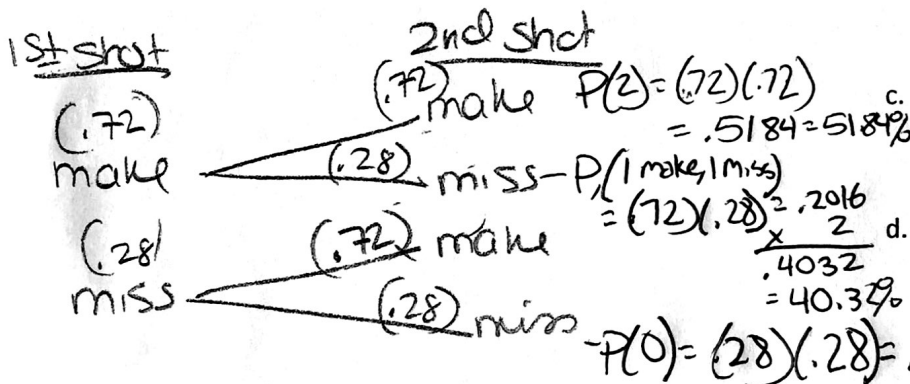
d.  $P(\text{even}) = \frac{18}{36} = \frac{1}{2}$

e.  $P(7) = \frac{6}{36} = \frac{1}{6}$

f.  $P(\text{greater than 12}) = 0$

5. Hakeem Olajuwon of the Houston Rockets has a 72 % free throw average. If he is shooting 2 free throws:

a. Draw an area model or a tree diagram to represent all possible outcomes.



b. Find  $P(2 \text{ makes}) =$

$(.72)(.72) = .5184 = 51.84\%$

c. Find  $P(1 \text{ make, 1 miss}) =$

$(.72)(.28) = .2016 = 20.16\%$

d. Find  $P(2 \text{ misses}) =$

$(.28)(.28) = .0784 = 7.84\%$

Example set of 52 poker playing cards

Suit	Ace	2	3	4	5	6	7	8	9	10	Jack	Queen	King
Clubs													
Diamonds													
Hearts													
Spades													

6. Find the probability of the following events when pulling one card from a standard deck of cards:

a) Getting an Ace

$= \frac{4}{52} = \frac{1}{13}$

b) Getting a Spade

$= \frac{13}{52} = \frac{1}{4}$

c) Getting red card

$= \frac{26}{52} = \frac{1}{2}$

d) Getting an heart or a face card

$= P(\heartsuit) + P(\text{face}) - P(\heartsuit \cap \text{face})$   
 $= \frac{13}{52} + \frac{12}{52} - \frac{3}{52} = \frac{22}{52} = 42.3\%$

e) Getting a club And an Ace

$P(\clubsuit \cap \text{Ace}) = \frac{1}{52} = 1.9\%$