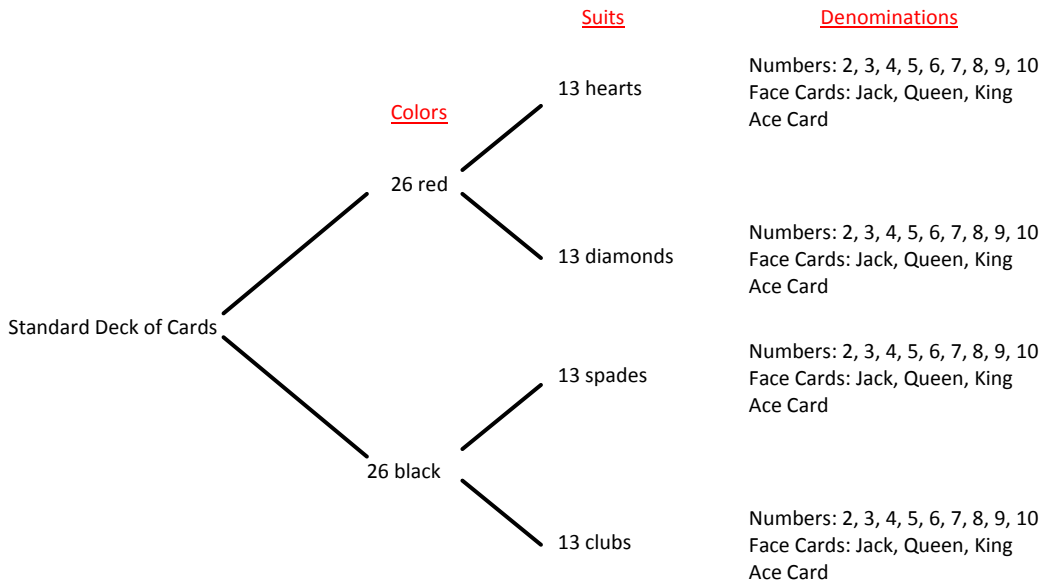
Probability with "And" and "Or"



Sample Space - the possible outcomes

Hearts

2H, 3A, 4H
5H, 6H, 7H
8H, 9H, 10H
JH, QH, KH
AH

13

Seven

7H, 7D
7S, 7C

4

Heart "and" a Seven

7H

1

Heart "or" a Seven

2H, 3H, 4H, 5H, 6H
7H, 8H, 9H, 10H, JH
QH, KH, AH, 7D, 7S, 7C

16

Face Card

JH, QH, KH
JD, QD, KD
JC, QC, KC
JS, QS, KS

12

Black Card

2S, 3S, 4S, 5S
6S, 7S, 8S, 9S
10S, JS, QS, KS
AS, 2C, 3C, 4C
5C, 6C, 7C, 8C
9C, 10C, JC, QC
KC, AC

26

Face "and" a black card

JS, QS, KS
JC, QC, KC

6

Face "or" a black card

JC, QC, KC, JS, QS, KS
JD, QD, KD, JH, QH, KH
2S, 3S, 4S, 5S, 6S, 7S, 8S
9S, 10S AS, 2C, 3C, 4C
5C, 6C, 7C, 8C, 9C, 10C
AC

32

1. A card is drawn from a standard deck of cards. Find the probability that you will draw a:

a) A heart or a seven

$\frac{16}{52} \div 4 = \frac{4}{13}$

b) A heart and a face

JH, QH, KH

$\frac{3}{52}$

c) A jack or a king

JC, JS, JH, JD
KC, KS, KH, KD

$\frac{8}{52} \div 4 = \frac{2}{13}$

d) A spade or a nine

2S, 3S, 4S, 5S, 6S
7S, 8S, 9S, 10S, JS
QS, KS, AS
9D, 9H, 9C

$\frac{16}{52} \div 4 = \frac{4}{13}$

2. In a freshman class, students are enrolled in either Algebra 1 or Geometry. Use the table to answer each question.

	Algebra 1	Geometry	Total
Girls	50	33	83
Boys	65	32	97
Total	115	65	180

a) How many students are freshmen?

180

b) How many students are taking Algebra 1?

115

c) What is the probability that a student takes Geometry?

$\frac{65}{180} \div 5 = \frac{13}{36}$

d) What is the probability that a student is a girl and takes geometry?

$\frac{33}{180} \div 3 = \frac{11}{60}$

e) What is the probability that a student is a boy or takes geometry?

$\frac{97 + 65 - 32}{180} = \frac{130}{180} = \frac{13}{18}$