Three Keywords, Five Rules

1. *OR*
   a. Addition rule
   b. Special addition rule
      i. Exclusive
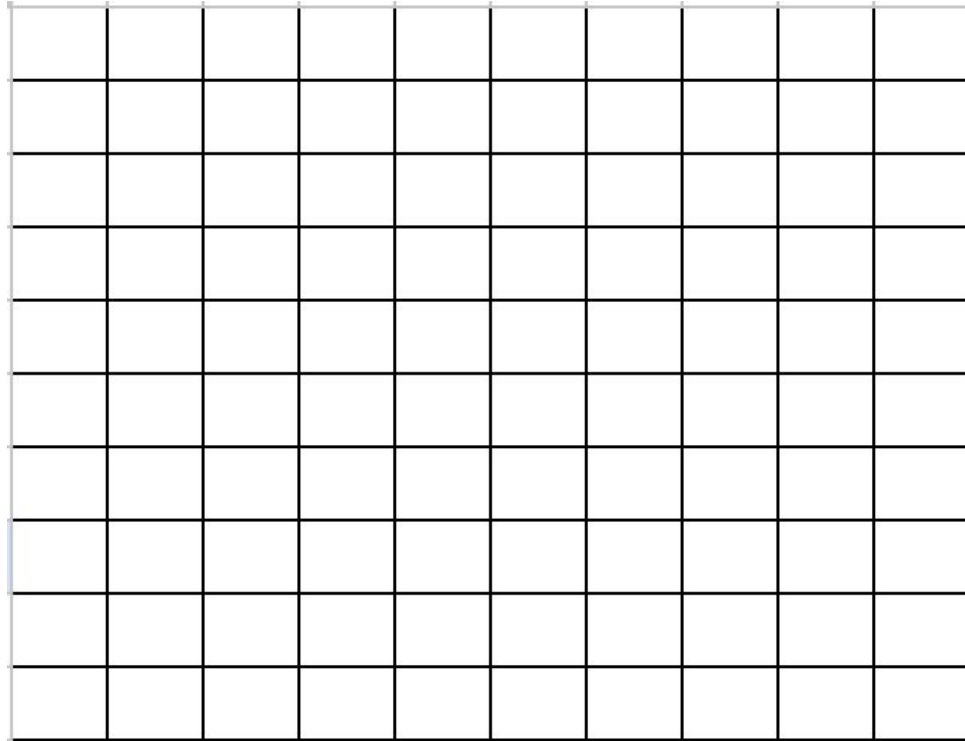2. *NOT*
   a. Subtraction rule
3. *AND*
   a. Multiplication rule
   b. Special multiplication rule
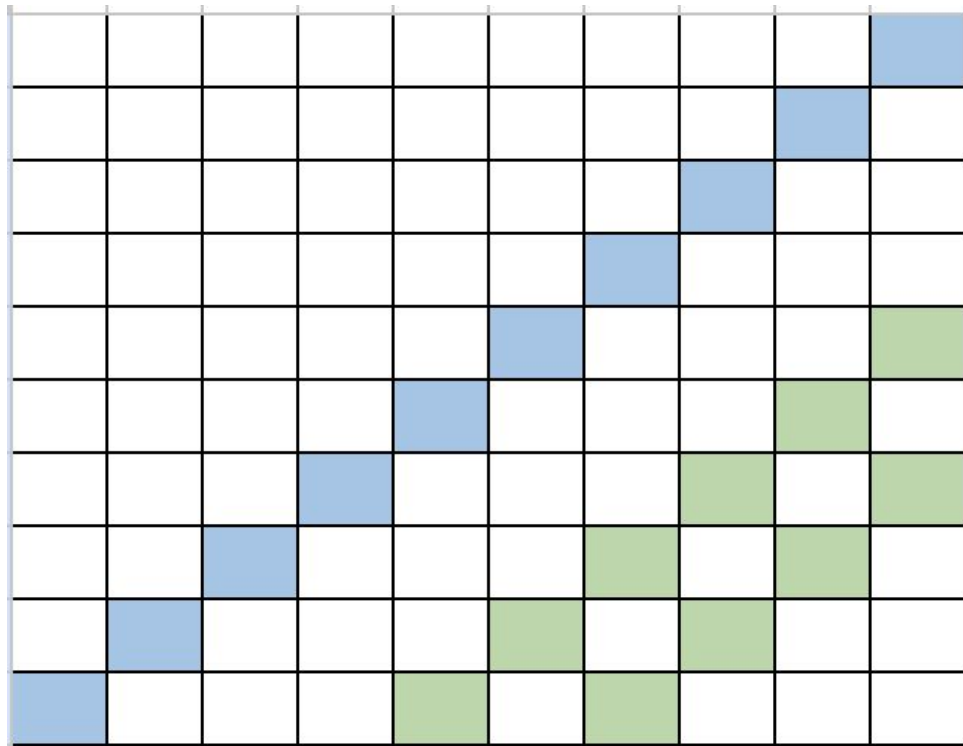   i. Independent

Event Space   P(*event*) = 1.0

Addition Rule: P(E *or* F) = P(E) + P(F) − P(E *and* F)

$$= .1 + .1 - .01$$

$$= .19$$

	P(E)	0.10
	P(F)	0.10
*	P(E AND F)	0.01

Special Addition Rule: P(E *or* F) = P(E) + P(F)

= .1 + .1

= .2

	P(E)		0.10
	P(F)		0.10

Subtraction Rule: P(*not* E) = 1 - P(E)
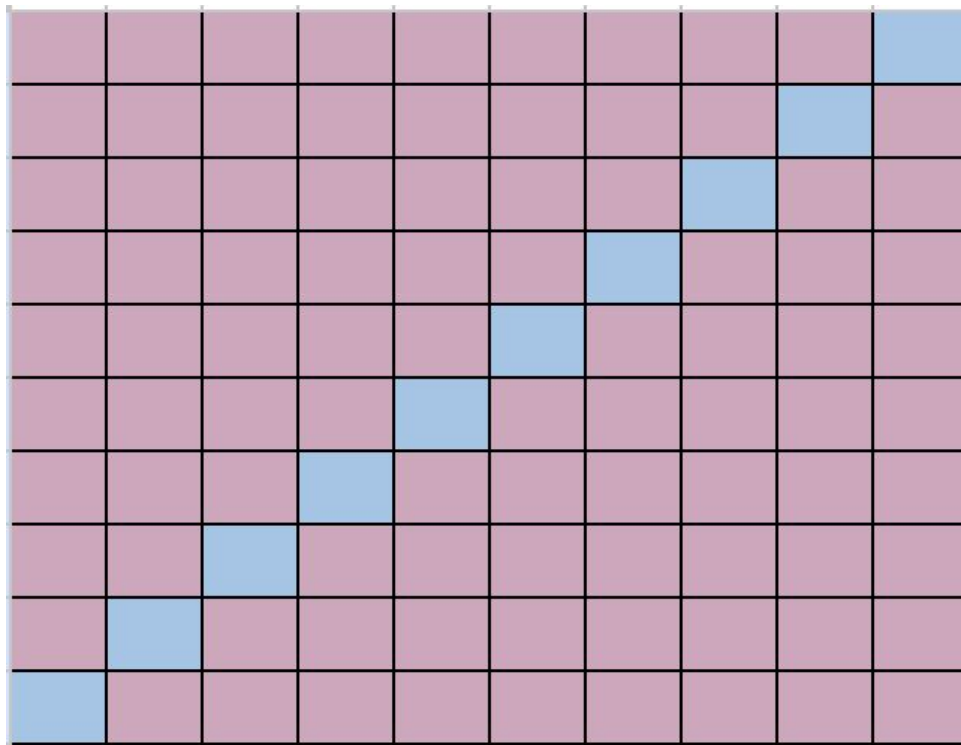
$= 1 - .1$

$= .9$

	P(E)	0.10
	P(NOT E)	0.90

Multiplication Rule: P(E *given* F) = P(E|F) * P(F)
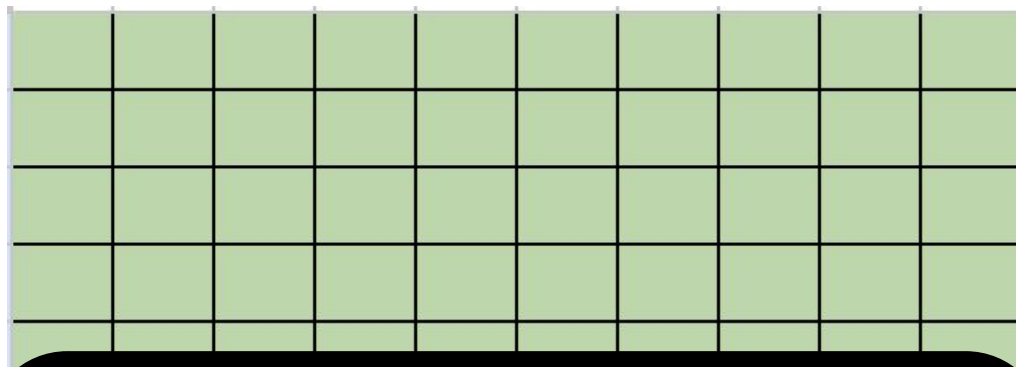
$$= .5 * .5$$

$$= .25$$
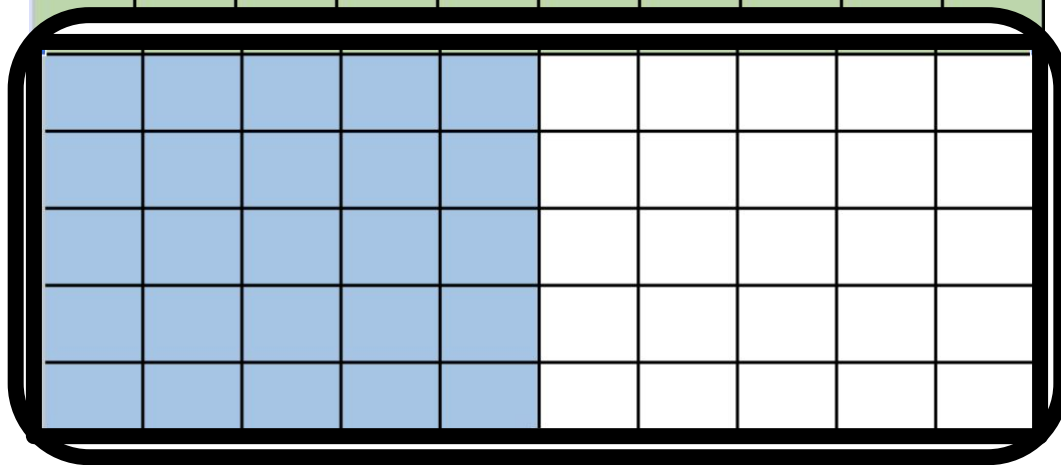
	P(E|F)	0.50
	P(F)	0.50

Special Multiplication Rule: P(E *and* F) = P(E) * P(F)

= .25*.5

= .125

	P(E)	0.25
	P(F)	0.50