

1/22 Algebra 1 - Downing

11.4 B Compound Events

Single Event: Describes a single outcome

Compound Event: Made up of 2 or more single events

Mutually Exclusive Events: Events that cannot both occur in the same

trial of an experiment (Ex: Draw a card $\boxed{A \quad \text{FC}}$ cannot draw an Ace or a Facecard at the same time)

Inclusive Event: Events have 1 or more outcomes in common

Ex) Draw a card $\boxed{K \quad \text{FC}}$ Facecard \rightarrow King

Ex) $\boxed{\text{Heart} \quad \text{King}}$ Heart + King

Probability of Compound Events (Doing 1 trial)

Mutually Exclusive

• No overlap

Ex) $P(\text{heart or club})$

$$P(\text{heart}) + P(\text{club})$$

Inclusive

• overlap

Ex) $P(\text{heart or facecard})$

$$P(\text{heart}) + P(\text{facecard}) - P(\text{heart facecard})$$

Ex) Find the probability on a number cube (die) of rolling a 4 or an even number.

$$P(\text{roll } 4) + P(\text{even}) - P(\text{even } 4)$$

$$\frac{1}{6} + \frac{3}{6} - \frac{1}{6} = \frac{3}{6} = \boxed{\frac{1}{2}}$$

Ex) $P(\text{odd number or number greater than 2})$

$$P(\text{odd}) + P(\# > 2) - P(\text{odd } > 2)$$

$$= \frac{3}{6} + \frac{4}{6} - \frac{2}{6} = \boxed{\frac{5}{6}}$$

Ex) of 1560 students surveyed, 840 were seniors and 630 read a daily paper.

The rest of the students were juniors. Only 215 of the paper readers were juniors.

What is the probability that a student was a senior or read a daily paper?

make a chart using data \searrow Next Page

Ex(cont)

	Jrs	Srs	Total	
Read	215	415	630	$P(\text{Senior or read paper})$
Don't Read	505	425	930	$= P(\text{Senior}) + P(\text{read}) - P(\text{Senior Reader})$
Total	720	840	1560	$\frac{840}{1560} + \frac{630}{1560} - \frac{415}{1560} = 68\%$

Ex) Of 350 people, 200 are married and 50 are single. The rest of the people are divorced. 54 of those married, smoke, 39 of those single are non smokers. There are 38 divorced smokers and 62 divorced non smokers. Find each probability.

Make a table:

	Married	Single	Divorced	Total
Smoker	54	11	38	103
Non-Smoker	146	39	62	247
Total	200	50	100	350

Find $P(\text{smoker and married}) = \frac{54}{350} = .15$ or 15%

Find $P(\text{divorced or single}) = \frac{50}{350} + \frac{100}{350} = \frac{150}{350} = .43 = 43\%$

HW- Worksheet (frontside only)