

1. Problem

In a deck of strange cards, there are 341 cards. Each card has an image and a color. The amounts are shown in the table below.

	black	pink	violet
bike	14	36	73
cat	50	53	26
pig	33	25	31

- (a) What is the probability a random card is violet?
- (b) What is the probability a random card is either a bike or pink (or both)?
- (c) What is the probability a random card is a pig?
- (d) What is the probability a random card is pink given it is a bike?
- (e) What is the probability a random card is a pig given it is pink?
- (f) What is the probability a random card is both a cat and pink?

2. Problem

In a deck of strange cards, there are 590 cards. Each card has an image and a color. The amounts are shown in the table below.

	pink	red	teal	yellow
cat	11	36	57	99
gem	31	53	20	97
pig	72	14	83	17

- (a) What is the probability a random card is a gem given it is pink?
- (b) What is the probability a random card is red?
- (c) What is the probability a random card is pink given it is a gem?
- (d) What is the probability a random card is a gem?
- (e) What is the probability a random card is either a pig or yellow (or both)?
- (f) What is the probability a random card is both a cat and red?

3. Problem

In a deck of strange cards, there are 576 cards. Each card has an image and a color. The amounts are shown in the table below.

	black	green	red
bike	60	23	18
cat	34	20	85
dog	27	46	19
gem	21	13	26
tree	38	67	79

- (a) What is the probability a random card is black?
- (b) What is the probability a random card is both a bike and red?
- (c) What is the probability a random card is a dog given it is black?
- (d) What is the probability a random card is a tree?
- (e) What is the probability a random card is either a gem or red (or both)?
- (f) What is the probability a random card is red given it is a tree?

4. Problem

In a deck of strange cards, there are 787 cards. Each card has an image and a color. The amounts are shown in the table below.

	blue	indigo	violet
dog	30	78	44
flower	17	37	93
horn	66	72	69
shovel	47	57	42
wheel	16	67	52

- (a) What is the probability a random card is blue?
- (b) What is the probability a random card is either a shovel or blue (or both)?
- (c) What is the probability a random card is both a horn and indigo?
- (d) What is the probability a random card is blue given it is a wheel?
- (e) What is the probability a random card is a dog?

- (f) What is the probability a random card is a wheel given it is indigo?

5. Problem

In a deck of strange cards, there are 1324 cards. Each card has an image and a color. The amounts are shown in the table below.

	blue	green	indigo	violet	white
flower	37	33	61	12	66
gem	45	25	65	29	94
pig	27	72	47	34	44
shovel	95	56	75	19	43
tree	58	85	42	98	62

- (a) What is the probability a random card is blue?
- (b) What is the probability a random card is a tree given it is indigo?
- (c) What is the probability a random card is both a tree and indigo?
- (d) What is the probability a random card is either a gem or violet (or both)?
- (e) What is the probability a random card is a pig?
- (f) What is the probability a random card is indigo given it is a gem?

6. Problem

In a deck of strange cards, there are 1022 cards. Each card has an image and a color. The amounts are shown in the table below.

	green	indigo	pink	red	yellow
cat	63	61	71	37	90
gem	56	32	11	68	46
shovel	84	20	13	38	97
tree	12	18	69	88	48

- (a) What is the probability a random card is indigo given it is a shovel?
- (b) What is the probability a random card is a gem given it is indigo?
- (c) What is the probability a random card is both a gem and pink?
- (d) What is the probability a random card is indigo?
- (e) What is the probability a random card is either a tree or red (or both)?
- (f) What is the probability a random card is a gem?

7. Problem

In a deck of strange cards, there are 855 cards. Each card has an image and a color. The amounts are shown in the table below.

	blue	gray	orange	pink
cat	44	45	96	62
horn	43	91	39	80
shovel	12	32	34	13
tree	90	52	97	25

- (a) What is the probability a random card is either a tree or orange (or both)?
- (b) What is the probability a random card is both a shovel and pink?
- (c) What is the probability a random card is blue?
- (d) What is the probability a random card is gray given it is a shovel?
- (e) What is the probability a random card is a tree given it is blue?
- (f) What is the probability a random card is a shovel?

8. Problem

In a deck of strange cards, there are 881 cards. Each card has an image and a color. The amounts are shown in the table below.

	green	indigo	pink	teal	violet
dog	19	35	99	65	83

	green	indigo	pink	teal	violet
shovel	47	27	95	25	63
tree	67	10	93	87	66

- (a) What is the probability a random card is indigo given it is a dog?
- (b) What is the probability a random card is either a shovel or pink (or both)?
- (c) What is the probability a random card is both a dog and violet?
- (d) What is the probability a random card is a tree?
- (e) What is the probability a random card is teal?
- (f) What is the probability a random card is a tree given it is pink?

9. Problem

In a deck of strange cards, there are 781 cards. Each card has an image and a color. The amounts are shown in the table below.

	blue	indigo	pink	violet
cat	21	39	14	61
shovel	46	18	44	70
tree	68	96	37	43
wheel	88	26	31	79

- (a) What is the probability a random card is a tree given it is pink?
- (b) What is the probability a random card is both a shovel and violet?
- (c) What is the probability a random card is either a tree or pink (or both)?
- (d) What is the probability a random card is pink?
- (e) What is the probability a random card is violet given it is a wheel?
- (f) What is the probability a random card is a shovel?

10. Problem

In a deck of strange cards, there are 681 cards. Each card has an image and a color. The amounts are shown in the table below.

	black	indigo	red	violet	yellow
pig	43	54	55	56	10
tree	89	25	42	21	83
wheel	44	26	61	32	40

- What is the probability a random card is a wheel?
- What is the probability a random card is either a pig or red (or both)?
- What is the probability a random card is both a tree and violet?
- What is the probability a random card is violet given it is a tree?
- What is the probability a random card is a tree given it is black?
- What is the probability a random card is red?

11. Problem

In a deck of strange cards, there are 786 cards. Each card has an image and a color. The amounts are shown in the table below.

	orange	pink	violet
dog	69	62	45
flower	76	92	77
horn	55	28	80
tree	43	72	87

- What is the probability a random card is pink given it is a tree?
- What is the probability a random card is a tree?
- What is the probability a random card is either a dog or violet (or both)?
- What is the probability a random card is both a dog and violet?
- What is the probability a random card is orange?
- What is the probability a random card is a dog given it is pink?

12. Problem

In a deck of strange cards, there are 1419 cards. Each card has an image and a color. The amounts are shown in the table below.

	blue	green	red	white	yellow
bike	47	58	87	18	97
cat	59	35	85	54	53
gem	81	13	94	36	86
pig	82	39	84	89	28
wheel	11	31	76	55	21

- (a) What is the probability a random card is red?
- (b) What is the probability a random card is a bike?
- (c) What is the probability a random card is either a wheel or green (or both)?
- (d) What is the probability a random card is a cat given it is yellow?
- (e) What is the probability a random card is green given it is a gem?
- (f) What is the probability a random card is both a gem and green?

13. Problem

In a deck of strange cards, there are 1194 cards. Each card has an image and a color. The amounts are shown in the table below.

	gray	indigo	teal	yellow
bike	63	98	37	92
dog	89	80	53	36
horn	99	33	24	14
shovel	48	79	49	73
wheel	58	30	93	46

- (a) What is the probability a random card is a bike given it is indigo?
- (b) What is the probability a random card is either a horn or gray (or both)?
- (c) What is the probability a random card is yellow given it is a horn?
- (d) What is the probability a random card is both a shovel and yellow?
- (e) What is the probability a random card is a wheel?

- (f) What is the probability a random card is gray?

14. **Problem**

In a deck of strange cards, there are 1038 cards. Each card has an image and a color. The amounts are shown in the table below.

	black	blue	gray	violet	yellow
bike	47	51	78	52	26
dog	89	19	36	46	99
gem	28	62	79	76	10
horn	92	34	12	86	16

- (a) What is the probability a random card is both a dog and violet?
- (b) What is the probability a random card is either a bike or gray (or both)?
- (c) What is the probability a random card is a dog?
- (d) What is the probability a random card is gray?
- (e) What is the probability a random card is a bike given it is black?
- (f) What is the probability a random card is gray given it is a gem?

1. (a) $P(\text{violet}) = \frac{73+26+31}{341} = 0.381$
 (b) $P(\text{bike or pink}) = \frac{14+36+73+36+53+25-36}{341} = 0.589$
 (c) $P(\text{pig}) = \frac{33+25+31}{341} = 0.261$
 (d) $P(\text{pink given bike}) = \frac{36}{14+36+73} = 0.293$
 (e) $P(\text{pig given pink}) = \frac{25}{36+53+25} = 0.219$
 (f) $P(\text{cat and pink}) = \frac{53}{341} = 0.155$
2. (a) $P(\text{gem given pink}) = \frac{31}{11+31+72} = 0.272$
 (b) $P(\text{red}) = \frac{36+53+14}{590} = 0.175$
 (c) $P(\text{pink given gem}) = \frac{31}{31+53+20+97} = 0.154$
 (d) $P(\text{gem}) = \frac{31+53+20+97}{590} = 0.341$
 (e) $P(\text{pig or yellow}) = \frac{72+14+83+17+99+97+17-17}{590} = 0.647$
 (f) $P(\text{cat and red}) = \frac{36}{590} = 0.061$
3. (a) $P(\text{black}) = \frac{60+34+27+21+38}{576} = 0.312$
 (b) $P(\text{bike and red}) = \frac{18}{576} = 0.0312$
 (c) $P(\text{dog given black}) = \frac{27}{60+34+27+21+38} = 0.15$
 (d) $P(\text{tree}) = \frac{38+67+79}{576} = 0.319$
 (e) $P(\text{gem or red}) = \frac{21+13+26+18+85+19+26+79-26}{576} = 0.453$
 (f) $P(\text{red given tree}) = \frac{79}{38+67+79} = 0.429$
4. (a) $P(\text{blue}) = \frac{30+17+66+47+16}{787} = 0.224$
 (b) $P(\text{shovel or blue}) = \frac{47+57+42+30+17+66+47+16-47}{787} = 0.349$
 (c) $P(\text{horn and indigo}) = \frac{72}{787} = 0.0915$
 (d) $P(\text{blue given wheel}) = \frac{16}{16+67+52} = 0.119$
 (e) $P(\text{dog}) = \frac{30+78+44}{787} = 0.193$
 (f) $P(\text{wheel given indigo}) = \frac{67}{78+37+72+57+67} = 0.215$
5. (a) $P(\text{blue}) = \frac{37+45+27+95+58}{1324} = 0.198$
 (b) $P(\text{tree given indigo}) = \frac{42}{61+65+47+75+42} = 0.145$
 (c) $P(\text{tree and indigo}) = \frac{42}{1324} = 0.0317$
 (d) $P(\text{gem or violet}) = \frac{45+25+65+29+94+12+29+34+19+98-29}{1324} = 0.318$
 (e) $P(\text{pig}) = \frac{27+72+47+34+44}{1324} = 0.169$
 (f) $P(\text{indigo given gem}) = \frac{65}{45+25+65+29+94} = 0.252$
6. (a) $P(\text{indigo given shovel}) = \frac{20}{84+20+13+38+97} = 0.0794$
 (b) $P(\text{gem given indigo}) = \frac{32}{61+32+20+18} = 0.244$

- (c) $P(\text{gem and pink}) = \frac{11}{1022} = 0.0108$
- (d) $P(\text{indigo}) = \frac{61+32+20+18}{1022} = 0.128$
- (e) $P(\text{tree or red}) = \frac{12+18+69+88+48+37+68+38+88-88}{1022} = 0.37$
- (f) $P(\text{gem}) = \frac{56+32+11+68+46}{1022} = 0.208$
7. (a) $P(\text{tree or orange}) = \frac{90+52+97+25+96+39+34+97-97}{855} = 0.506$
- (b) $P(\text{shovel and pink}) = \frac{13}{855} = 0.0152$
- (c) $P(\text{blue}) = \frac{44+43+12+90}{855} = 0.221$
- (d) $P(\text{gray given shovel}) = \frac{32}{12+32+34+13} = 0.352$
- (e) $P(\text{tree given blue}) = \frac{90}{44+43+12+90} = 0.476$
- (f) $P(\text{shovel}) = \frac{12+32+34+13}{855} = 0.106$
8. (a) $P(\text{indigo given dog}) = \frac{35}{19+35+99+65+83} = 0.116$
- (b) $P(\text{shovel or pink}) = \frac{47+27+95+25+63+99+95+93-95}{881} = 0.51$
- (c) $P(\text{dog and violet}) = \frac{83}{881} = 0.0942$
- (d) $P(\text{tree}) = \frac{67+10+93+87+66}{881} = 0.367$
- (e) $P(\text{teal}) = \frac{65+25+87}{881} = 0.201$
- (f) $P(\text{tree given pink}) = \frac{93}{99+95+93} = 0.324$
9. (a) $P(\text{tree given pink}) = \frac{37}{14+44+37+31} = 0.294$
- (b) $P(\text{shovel and violet}) = \frac{70}{781} = 0.0896$
- (c) $P(\text{tree or pink}) = \frac{68+96+37+43+14+44+37+31-37}{781} = 0.426$
- (d) $P(\text{pink}) = \frac{14+44+37+31}{781} = 0.161$
- (e) $P(\text{violet given wheel}) = \frac{79}{88+26+31+79} = 0.353$
- (f) $P(\text{shovel}) = \frac{46+18+44+70}{781} = 0.228$
10. (a) $P(\text{wheel}) = \frac{44+26+61+32+40}{681} = 0.298$
- (b) $P(\text{pig or red}) = \frac{43+54+55+56+10+55+42+61-55}{681} = 0.471$
- (c) $P(\text{tree and violet}) = \frac{21}{681} = 0.0308$
- (d) $P(\text{violet given tree}) = \frac{21}{89+25+42+21+83} = 0.0808$
- (e) $P(\text{tree given black}) = \frac{89}{43+89+44} = 0.506$
- (f) $P(\text{red}) = \frac{55+42+61}{681} = 0.232$
11. (a) $P(\text{pink given tree}) = \frac{72}{43+72+87} = 0.356$
- (b) $P(\text{tree}) = \frac{43+72+87}{786} = 0.257$
- (c) $P(\text{dog or violet}) = \frac{69+62+45+45+77+80+87-45}{786} = 0.534$
- (d) $P(\text{dog and violet}) = \frac{45}{786} = 0.0573$

$$(e) P(\text{orange}) = \frac{69+76+55+43}{786} = 0.309$$

$$(f) P(\text{dog given pink}) = \frac{62}{62+92+28+72} = 0.244$$

$$12. (a) P(\text{red}) = \frac{87+85+94+84+76}{1419} = 0.3$$

$$(b) P(\text{bike}) = \frac{47+58+87+18+97}{1419} = 0.216$$

$$(c) P(\text{wheel or green}) = \frac{11+31+76+55+21+58+35+13+39+31-31}{1419} = 0.239$$

$$(d) P(\text{cat given yellow}) = \frac{53}{97+53+86+28+21} = 0.186$$

$$(e) P(\text{green given gem}) = \frac{13}{81+13+94+36+86} = 0.0419$$

$$(f) P(\text{gem and green}) = \frac{13}{1419} = 0.00916$$

$$13. (a) P(\text{bike given indigo}) = \frac{98}{98+80+33+79+30} = 0.306$$

$$(b) P(\text{horn or gray}) = \frac{99+33+24+14+63+89+99+48+58-99}{1194} = 0.358$$

$$(c) P(\text{yellow given horn}) = \frac{14}{99+33+24+14} = 0.0824$$

$$(d) P(\text{shovel and yellow}) = \frac{73}{1194} = 0.0611$$

$$(e) P(\text{wheel}) = \frac{58+30+93+46}{1194} = 0.19$$

$$(f) P(\text{gray}) = \frac{63+89+99+48+58}{1194} = 0.299$$

$$14. (a) P(\text{dog and violet}) = \frac{46}{1038} = 0.0443$$

$$(b) P(\text{bike or gray}) = \frac{47+51+78+52+26+78+36+79+12-78}{1038} = 0.367$$

$$(c) P(\text{dog}) = \frac{89+19+36+46+99}{1038} = 0.278$$

$$(d) P(\text{gray}) = \frac{78+36+79+12}{1038} = 0.197$$

$$(e) P(\text{bike given black}) = \frac{47}{47+89+28+92} = 0.184$$

$$(f) P(\text{gray given gem}) = \frac{79}{28+62+79+76+10} = 0.31$$