

Q1:

6 sided die

$$P = ? = \text{even no} = \frac{\text{even no}}{\text{total prob}}$$

{ 1, 2, 3, 4, 5, 6 }

$$P_{\text{even}} = \frac{3}{6} = \left(\frac{1}{2}\right) \text{ or } (50\%) \text{ probability}$$

Q2:

2 coins

P_2 = two heads

$$\text{coin}_1 = \frac{1}{2} \quad \{ HT, TH, (HH), TT \}$$

$$\text{coin}_2 = \frac{1}{2}$$

$$P_{2\text{heads}} = \left(\frac{1}{4}\right) \text{ or } (25\%) \text{ probability}$$

Q3:

Which is not a probability:

a. -0.0001 x

c. 1.001 x

d. 0 ✓

e. 1 ✓

f. 20% ✓

* (a) is not a probability b/c it is negative

* (c) is not a probability b/c it is more than 1.0 or more than 100%

Q4:

2 dies

a) Prob₁ = ? = of sum 1

$$P_{\text{sum 1}} = 0\%$$

b) Prob₄ = ? = of sum 4

$$P_{\text{sum 4}} = \frac{3}{36} = \frac{1}{12} \text{ or } 8.33\%$$

c) Prob_B = ? = Σ less than B

$$P_{\Sigma < B} = 100\% \text{ or } 1$$

since all cases are $\Sigma < B$

(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

Q5 : 3 red
7 green
10 white

Total = 20

a.) $P_{\text{white}} = \frac{10}{20} = \boxed{\frac{1}{2} \text{ or } 50\%}$ P_{white}

b.) $P_{\text{red}} = \frac{3}{20} = \boxed{\frac{3}{20} \text{ or } 15\%}$ P_{red}

c.) $P_{\text{green}} = \frac{7}{20} = \boxed{\frac{7}{20} \text{ or } 35\%}$ P_{green}

Q6:

N children	F
0	3
1	5
2	7
3	6
4	3
5	1
<hr/>	
T	25

a. $P_{3 \text{ children}} = \frac{6}{25} = 24\%$ Prob of 3 children

b. $P_{>3 \text{ children}} = \frac{3+1}{25} = \boxed{\frac{4}{25} = 16\%}$ Prob of more than 3 children

c. $P_{\leq \text{mean}} = ?$

$$\text{mean} = (3 \times 0) + (1 \times 5) + (7 \times 2) + (6 \times 3) + \frac{(4 \times 4) + (5 \times 1)}{25}$$

$$= \frac{3 + 5 + 14 + 18 + 12 + 5}{25} = \frac{57}{25}$$

$$= \boxed{2.28}$$

Q7: mean Prob of ?

0	12%	0
1	20%	20
2	28%	56
3	24%	72
4	12%	48
5	4%	20
	<hr/> 100%	<hr/> 216

$$E(y) = \text{mean}$$

$$\text{mean} = \frac{216}{100}$$

$$\boxed{\text{mean} = 2.16}$$

Q8:

y	P(y)
1	$\frac{1}{7}$
2	$\frac{1}{7}$
3	$\frac{1}{7}$
4	$\frac{1}{7}$
5	$\frac{1}{7}$
6	$\frac{2}{7}$

$$E(y) = 1\left(\frac{1}{7}\right) + 2\left(\frac{1}{7}\right) + 3\left(\frac{1}{7}\right) + 4\left(\frac{1}{7}\right) + 5\left(\frac{1}{7}\right) + 6\left(\frac{2}{7}\right)$$

$$= \frac{1+2+3+4+5+12}{7}$$

$$= \frac{27}{7}$$

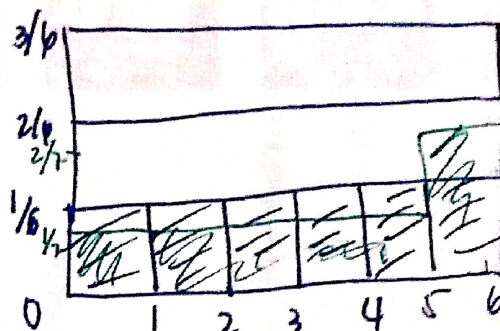
$$\boxed{E(y) = 3.857}$$

Q9:

y	$P(y)_{\text{new}}$
1	$\frac{1}{6}$
2	$\frac{1}{6}$
3	$\frac{1}{6}$
4	$\frac{1}{6}$
5	$\frac{1}{6}$
6	$\frac{1}{6}$

$$E(y) = 1\left(\frac{1}{6}\right) + 2\left(\frac{1}{6}\right) + 3\left(\frac{1}{6}\right) + 4\left(\frac{1}{6}\right) + 5\left(\frac{1}{6}\right) + 6\left(\frac{1}{6}\right)$$

$$= \frac{21}{6} = 3.5$$



Observations:

1. $P(1)$ $P(2)$ $P(3)$ $P(4)$ $P(5)$ increased
2. $P(6)$ decreased
3. $E(y)$ increased from ~~3.85~~ to 3.5

Q10:

	F	S	J	Sr.	T.
on campus	1812	1236	950	542	4540
off campus	625	906	1282	1623	4436
T	2437	2142	2232	2165	8978

note: Prob said total 8978
but data is only 8976
- using 8976 as reference total

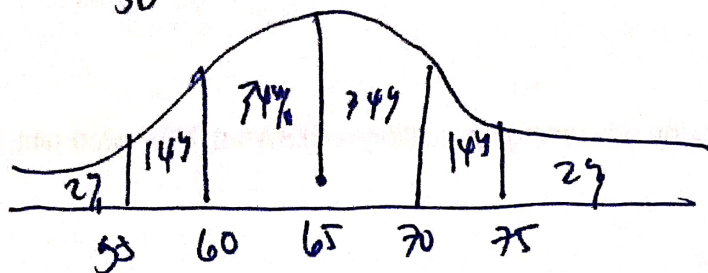
$$a) p_{\text{off}} = \frac{2437}{8976} = 27.15\%$$

$$b) p_{\text{sr}} = \frac{2165}{8976} = 24.12\%$$

$$c) p_{F \& S} = \frac{EF + ES}{\Sigma F + \Sigma S} = \frac{1812 + 1236}{2437 + 2142} = \frac{3048}{4579} = 66.56\%$$

Q11

3000 penguins
mean = 65 cm
SD = 5



a) Σ penguins bet. 65 to 75 cm

$$34\% + 14\% = 48\%$$

$$0.48 \times 3000 = \boxed{1440 \text{ penguins}}$$

b.) $P_{\text{len } 60} = ?$

$$14\% + 2\% = 16\%$$

16% or 0.16
est 0.15