Standard Deck
Assume the Ace is low. If you select a card at random, what's the probability of selecting the following: **Approximate your answer to the nearest thousandths**

1. Jack?
2. Club?
3. **Non** Jack?
4. Red Card?
5. Red jack?
6. Red face card?
7. Jack of Clubs?
8. Jack **or** Queen?
9. Jack **or** a 7?
10. Jack **given that** the card is a club?
11. Jack **given that** the card is red?
12. Red **given that** the card is red?

13. If you select two cards **with replacement**, what is the probability both are Queens?
14. If you select three cards **with replacement**, what is the probability at least one is a Heart?

What are the odds for selecting:
15. Jack?
16. Red jack?

What are the odds against selecting a:
17. Club?
18. 7 of Clubs?

Drinking based on Age Groups
The following table illustrates the drinking habits based on age groups. If you select a person at random, what's the probability of selecting a person: **Approximate your answer to the nearest thousandths**

	Age 21 to 31	Age 32 to 42	Age 43 to 53	Age 54 to 64	**Total**
Drink	58	69	53	41	**221**
Not Drink	32	38	29	18	**117**
Total	**90**	**107**	**82**	**59**	**338**

19. Drinks?
20. Is aged 21 to 31?
21. Does **not** drink?
22. Is **not** aged 43 to 53?

23. Drinks **and** is aged 21 to 31?
24. Does not drink **and** is aged 43 to 53?
25. Drinks **or** is aged 21 to 31?
26. Drinks **given that** the person is aged 21 to 31?
27. Drinks **given that** the person is aged 43 to 53?
28. If you select two **different** people at random, what is the probability they both drink?
29. If you select three **different** people at random, what is the probability at least one drinks?

The following table illustrates the infection rates for a nasty rash known as "itches a lot" caused by the XYZ-4 virus.

	Test +	Test -	Total
Infected	112	16	128
Not Infected	12	245	257
Total	124	261	385

If you select a person at random, what's the probability of a:
Approximate your answer to the nearest thousandths

30. False Positive?
$P(not\ infected|test\ +)$

31. False Negative?
$P(infected|test\ -)$

32. True Positive?
$P(test\ +\ |infected\ )$

33. True Negative?
$P(test\ -\ |not\ infected\ )$

34. If you select two **different** people at random, what's the probability they are both infected?

35. If you select three **different** people at random, what's the probability at least one is infected?

Five Children

Let x represent the number of boys a couple has when having five children. The following table illustrates the probability distribution associated with having boys.

x	p(x)
0	0.03125
1	0.15625
2	0.3125
3	0.3125
4	0.15625
5	0.03125

If you select a person at random, what's the probability the person has:
Approximate your answer to the nearest thousandths

36. One boy?
37. At least one boy?
38. More than one boy?
39. No more than one boy?
40. Less than four boys?
41. Between one and four boys?
42. What is the expected value?
43. What is the variance?
44. What is the standard deviation?

Your actual exam will not be this long, it will be shorter. But, this should serve as a good guide for your exam.

Please be aware that you will be marking your answers on an answer sheet. You will be submitting your work with the answer sheet in a pdf file online in canvas on your actual exam. This is not your actual test. The answer sheet should look something like the following.

Answer Sheet

1		23	
2		24	
3		25	
4		26	
5		27	
6		28	
7		29	
8		30	
9		31	
10		32	
11		33	
12		34	
13		35	
14		36	
15		37	
16		38	
17		39	
18		40	
19		41	
20		42	
21		43	
22		44	