East Los Angeles College
Department of Mathematics
Math 227
Test 2

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. Spade?
2. Queen?
3. **Non**-Queen?
4. Red Queen?
5. Queen of Spades?
6. Queen **or** Spade?
7. Queen **given that** the card is a Spade?
8. Queen **given that** the card is red?

9. If you select two cards **with replacement**, what is the probability both are Spades?
10. If you select three cards **with replacement**, what is the probability at least one is a Queen?

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

11. Drinks?
12. Is aged 32 to 42?
13. Drinks **and** is aged 32 to 42?
14. Drinks **or** is aged 32 to 42?
15. Drinks **given that** the person is aged 32 to 42?
16. Does not drink **given that** the person is aged 54 to 64?

17. If you select two **different** people at random, what is the probability they both drink?
18. 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	118	24	142
Not Infected	16	282	298
Total	134	306	440

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

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

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

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

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

Four Children

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

x	P(x)
0	0.0625
1	0.25
2	0.375
3	0.25
4	0.0625

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

23. No girls?
24. At least one girl?
25. More than two girls?
26. No more than two girls?
27. Less than three girls?
28. Between one and three girls?
29. What is the mean for this distribution?
30. What is the variance for this distribution?
31. What is the standard deviation for this distribution?
32. What is your name?

Please create an answer sheet like the one below and turn this in with your work. You will use scanning software to create a pdf file and upload your completed test to the **Announcemen**t portion in **Canvas** titled **Math 227 Test 2 Upload**.

Answer Sheet

1		17	
2		18	
3		19	
4		20	
5		21	
6		22	
7		23	
8		24	
9		25	
10		26	
11		27	
12		28	
13		29	
14		30	
15		31	
16		32	