East Los Angeles College
Department of Mathematics
Math 227
Test 2 Version 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. Diamond?
2. Ten?
3. **Non**-Ten?
4. Red Ten?
5. Ten of Diamonds?
6. Ten **or** Diamond?
7. Ten **given that** the card is a Diamond?
8. Diamond **given that** the card is Black?

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

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 54 to 64?
13. Drinks **and** is aged 54 to 64?
14. Drinks **or** is aged 54 to 64?
15. Drinks **given that** the person is aged 54 to 64?
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	162	38	200
Not Infected	22	314	336
Total	184	352	536

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 three girls?
26. No more than one girls?
27. Less than four girls?
28. Between one and four 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 **Announcement** 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	