Directions: For the multiple choice part make sure you clearly label your answer. If you need extra space please use the extra blank sheet with appropriate labeling.

1. According to a recent national survey of college students, 55% admitted to having cheated some time during the last year. What is the probability that for two randomly selected college students, at least one would have cheated during the last year?

    (A) 0.5500   (B) 0.7975   (C) 0.3025   (D) 0.2475   (E) 0.2025

2. Which of the following is an example of qualitative date?

    (A) Percent of ozone loss
    (B) Dog Breed
    (C) Class Size
    (D) Amount of money spent on advertising during the Super Bowl
    (E) Gross Domestic Product (GDP) percentage

3. Choose the five-number summary for the data set of wingspans in inches of 20 butterflies.

    $$\{3.2, 3.1, 2.9, 4.2, 3.7, 3.5, 4.0, 3.1, 2.9, 3.2, 3.6, 4.1, 3.7, 3.9, 4.1, 3.0, 3.2, 3.8, 3.9, 3.3\}$$

    (A) Min:2.9; Q1:3.15; Med: 3.55; Q3: 3.85; Max: 4.2

    (B) Min:2.9; Q1:3.1; Med: 3.65; Q3: 3.9; Max: 4.2

    (C) Min:2.9; Q1:3.15; Med: 3.65; Q3: 3.9; Max: 4.2

    (D) Min:2.9; Q1:3.15; Med: 3.55; Q3: 3.9; Max: 4.2

    (E) Min:2.9; Q1:3.1; Med: 3.55; Q3: 3.85; Max: 4.2

4. Juanita's test grade was 84. The class average was 72 and the standard deviation was 4.5. Which of the following describes the z-score and percentile of her test grade.

    (A) $z = -2.67$ and 1st percentile

    (B) $z = -1.67$ and 95th percentile

    (C) $z = 2.67$ and 95th percentile

    (D) $z = 2.67$ and 99th percentile

    (E) $z = 1.67$ and 95th percentile

5. What measure of center is most resistant to extreme values?

   (A) Mode   (B) Interquartile Range   (C) Mean   (D) Median   (E) Range

6. The histogram represents the heights of males in the United States between the ages 20-29. The mean is 69.6 inches and the standard deviation is 2.6 inches. Since the heights are approximately normal, find the height that represents the 20th percentile and how should this be interpreted.
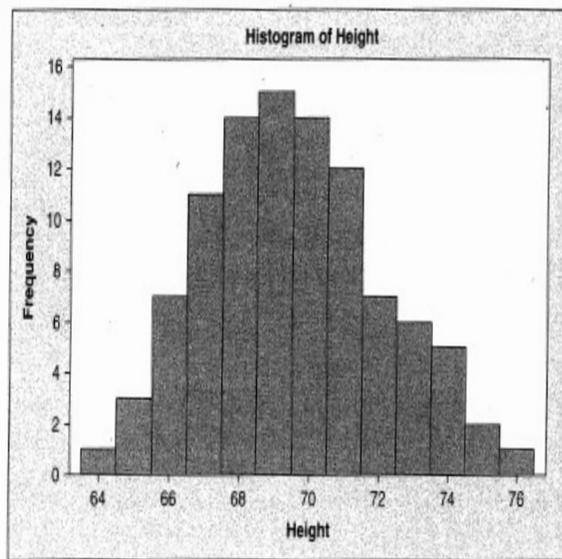
   (A) 60 inches. 20% of the population are shorter than approximately 60 inches.

   (B) 68.6 inches. 20% of the population are taller than approximately 68 inches.

   (C) 67.4 inches. 20% of the population are shorter than approximately 67 inches.

   (D) 67.4 inches. 20% of the population are taller than approximately 67 inches.

   (E) 60 inches. 20% of the population are taller than approximately 60 inches.

7. In a litter of five puppies, what is the probability of getting two males and three females or three males and two females, assuming an equal chance of each gender.

   (A) 0.063   (B) $\frac{1}{16}$)   (C) $\frac{5}{16}$ (D) $\frac{5}{8}$ (E) $\frac{1}{2}$

8. What is the probability of drawing a Jack first and a 3 second from a standard deck of cards, when two cards are drawn without replacement.

   (A) $\frac{1}{169}$ (B) $\frac{2}{13}$)   (C) $\frac{1}{156}$ (D) $\frac{2}{663}$ (E) $\frac{4}{663}$

The following questions should be answered in the excel sheet mailed to you as well as below. Use the worksheet titled "Blood Type" for question 9, and the worksheet titled "Expenditures" for question 10. When completed save the file and then send to me with the subject Line: "Exam 1: Excel". My email is warren.mcgovern@fau.edu. The file is due by the end of the exam.

9. A Palm Beach County blood bank ran a blood drive outside the Jupiter Public Library and compiled the following frequence tabulation from the donors.

Rh-factor	Values			
	O	**A**	**B**	**AB**
Positive	110	98	26	9
Negative	20	18	6	3

a) Fill in the excel program with probabilities: in the green area. Use the sum capabilities and do not simply add and divide (or other arithmetic skills).

a') Write the code you use to add up the values in the cells: A5, A6, A7,..., A50.

b) Calculate the probabilities: in the green area.

c) Using this sample, how many donors of type O-negative, the universal blood type, would they expect in a Palm Beach County blood drive that 467 donors?

10. In the excel sheet open up the 2nd worksheet titled "Expenditures".

a. Create a Clustered Column chart of the data and its labels. Put your name in Chart Title. [Hint: Chart: Clustered Column]

b. Right Click: Format Legend; choose bottom.

c. Create a Pie Chart for the first year in your list. Title the chart by the first year of your data. Include the data and labels. [Hint Chart: Pie Chart.]

Extra Credit Do this page last as extra credit is not worth as much of the rest of the exam.

11. Five cards are drawn at random (and without replacement) out of a standard deck of cards.
   a. What is the total number of hands possible (i.e. the size of the sample space)?

   b. What is the total number of hands that have exactly two pairs? (Do not include full houses: a pair and a three of a kind.)

   c. What is the probability of drawing exactly two pairs out of a typical five-card draw.

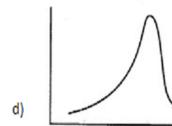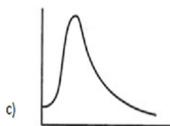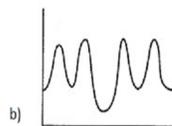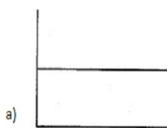12. Describe each of the following distributions.

Table entry
for z is the
probability
lying below z.

Probability

Table A Standard normal probabilities

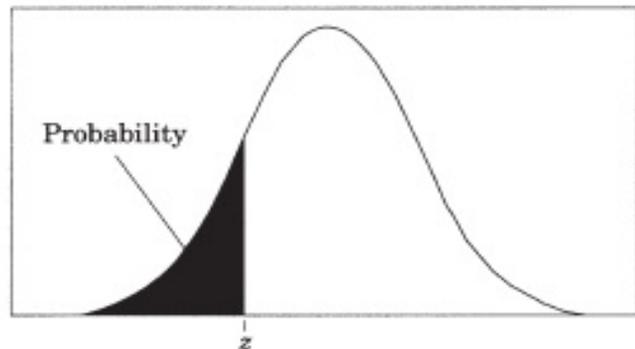| z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
−0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

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Table entry for z is the probability lying below z.

Probability

Table A *(Continued)*   Standard normal probabilities

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998