AP Stats Unit 7: Probability Distributions Chapters 16 & 17

7	8 16.1 Intro to Probability Distributions **HW: Notes Chapter 16**	9	10 16.2 Probability Models & Random Variables **HW: p 383 (1-3, 6, 9-11, 14)**	11 16.3 More Random Variables **HW: p 384 (23-26)**
14 16.4 Continuous Random Variables **HW: p385 (37,39,38,40)**	15 17.1 Geometric Models **HW: p402 (9,11,10,12,13-14)**	16	17 17.2 Binomial Models **HW: p 403 (25,27,26,30)**	18 17.3 Practice **HW: p402(17,19,21,18, 20,21)**
21 NO SCHOOL Presidents' Day	22 17.4 Review **ALL HW DUE tomorrow**	23	24 **Unit 7 Test**	25

Video - binomial distribution

http://bit.ly/2hsg3qI

Video— geometric distribution

http://bit.ly/2hCqQiw

Video - random variables

http://bit.ly/2gTgpWC

$$E(X) = \mu_x = \sum x_i p_i$$

$$Var(X) = \sigma_x^2 = \sum (x_i - \mu_x)^2 p_i$$

If X has a binomial distribution with parameters n and p,

then:

$$P(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$$

$$\mu_x = np$$

$$\sigma_x = \sqrt{np(1-p)}$$

$$\mu_{\hat{p}} = p$$

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}}$$

Choosing your distribution

Geometric	Binomial	Normal
"wait time"	"out of a total"	"BIG binomial ($np \geq 10$ and $nq \geq 10$)"
If a coin is repeatedly tossed, what is the probability that the first time heads appears occurs on the 8th toss?	If a coin is tossed 20 times, what is t probability heads comes up exactly [pdf] (or at least) [cdf] 14 times?	If a coin is tossed 200 times, what is the probability heads comes up no more than 75times?

Table entry for *z* is the probability lying below z.

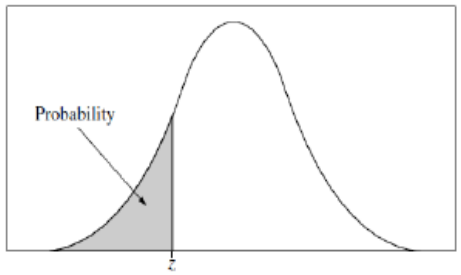

Table A Standard Normal Probabilities

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	.0004	.0006	.0006	.0006	.0006	.0006	.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	.0548	.0505	.0526	.0548	.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	.1343	.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

Table entry for *z* is the probability lying below z.

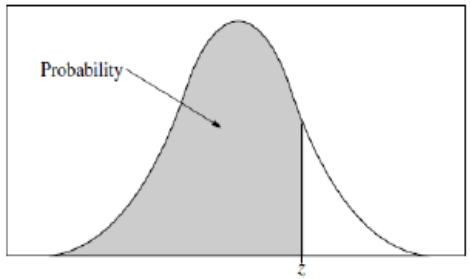

Table A Standard Normal Probabilities

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	.99o4	.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