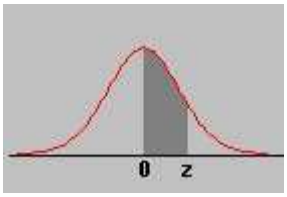
Standard Normal (Z) Table
Area between 0 and z



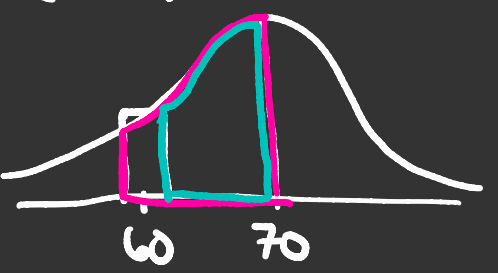
	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990

Example: New Drug. Prob of curing = 0.7.
Have 100 patients.

a) What is probability 60 are cured? Use normal curve.

$\mu = np = 100(0.7) = 70$

$\sigma = \sqrt{npq} = \sqrt{100(0.7)(0.3)} = 4.583$



$P_B(X=60) = P_N(59.5 \le X \le 60.5) = P_N(-2.29 \le z \le -2.07)$

$X = 59.5 \rightsquigarrow z = \frac{59.5-70}{4.583} = -2.29$

$X = 60.5 \rightsquigarrow z = -2.07$

$= 0.4890 - 0.4808$

$= 0.0082$

b) What is the probability that 60 to 75 are cured?

$$P_B(60 \le X \le 75) \approx P_N(59.5 \le X \le 75.5)$$

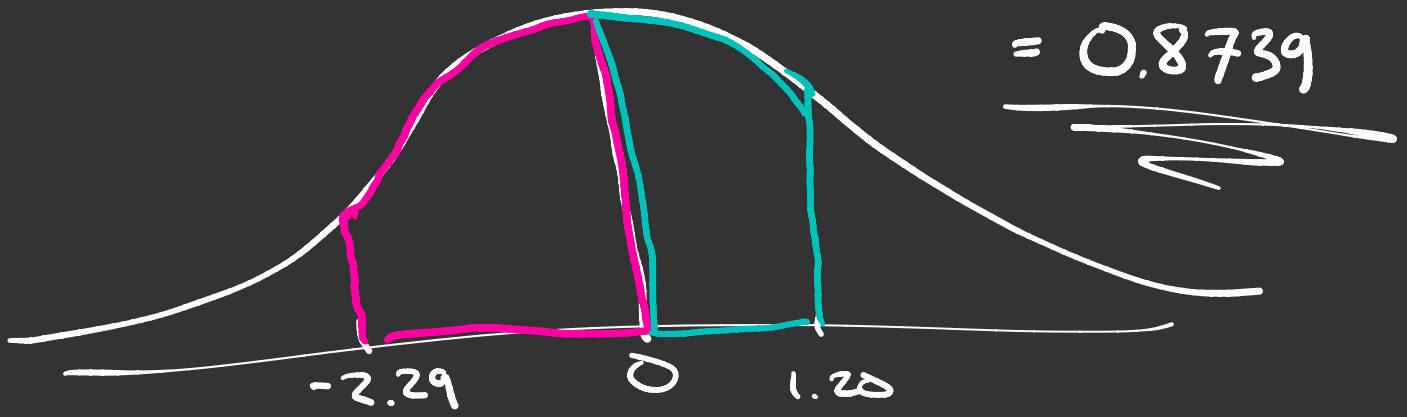
$X = 59.5 \rightsquigarrow z = -2.29$

$X = 75.5 \rightsquigarrow z = 1.20$

$$= P_N(-2.29 \le z \le 1.20)$$

$$= 0.4890 + 0.3849$$

$$= 0.8739$$



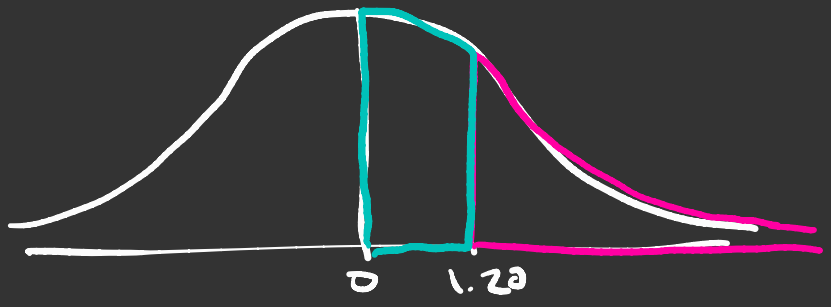
c) Probability that more than 75 are cured?

$$P_B(X > 75) = P_N(X > 75.5)$$

~~$P_N(75.5 \leq X \leq 100.5)$~~

$$= P_N(z > 1.20)$$

$$= 0.5000 - 0.3849 = 0.1151$$



Linear Programming: Procedure to solve optimization problems involving linear conditions

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Example: My cat Boots likes 2 types of toys

Fake mice - $0.5/each

Little balls w/ bells - $0.75/each

I have $20 to spend on toys. Write an equation modeling how many toys I can buy.

x = # fake mice

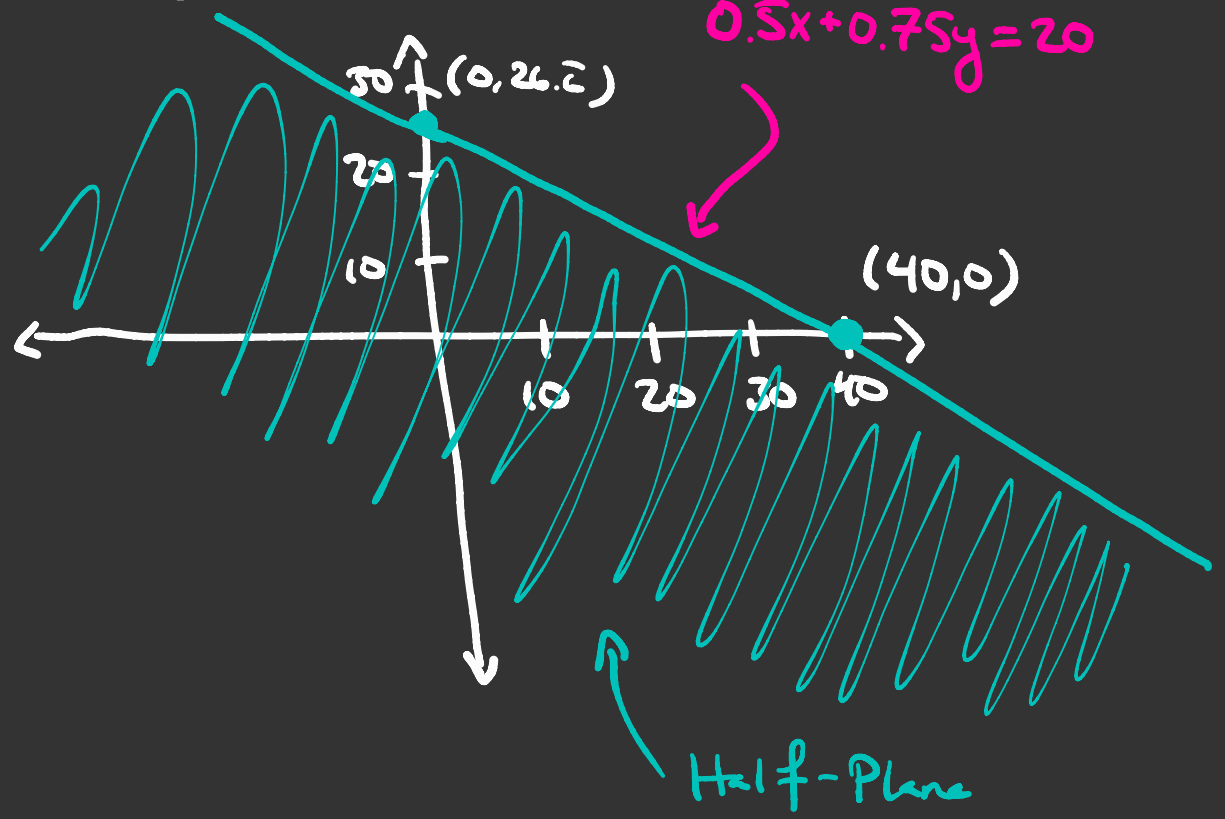
y = # balls w/ bells

$$0.5x + 0.75y \leq 20$$

↑ Linear Inequality

$$0.5x + 0.75y \leq 20$$

Graph:



Example: $2x + 3y > 12$

Step 1: Graph $2x+3y=12$

If $<$ or $>$: Dotted line

If $\leq$ or $\geq$: Solid line

Step 2: Figure out which half to shade

(plug in point not on line)

Is $(0,0)$ in half-plane?

$2(0)+3(0) \stackrel{?}{>} 12$

$0 \stackrel{?}{>} 12$ ✗