

Math 123: Indianapolis Area Knewton Formula Sheet

Use any conversions or probabilities embedded into a problem before using conversions from this sheet.

Only use conversions on this sheet if no conversion is given in the problem.

U. S. Customary Units		
Length	Volume	Weight
1 foot (ft) = 12 inches (in) 1 yard (yd) = 3 feet (ft) 1 mile (mi) = 5,280 feet (ft)	1 cup (c) = 8 fluid ounces (fl. oz.) 1 pint (pt) = 2 cups (c) 1 quart (qt) = 2 pints (pt) 1 gallon (gal) = 4 quarts (qt)	1 pound (lb) = 16 ounces (oz) 1 U.S. ton (T) = 2,000 pounds (lbs)

Metric Relationships							
Length = Meter (m)		Volume = Liter (L)			Weight = Gram (g)		
Prefixes	kilo-	hecto-	deka-	UNIT	deci-	centi-	milli-
Abbreviation	k	h	da	m, L, g	d	c	m
Common Conversions	1 k = 1000 base units	1 h = 100 base units	1 da = 10 base units	Base	10 deci = 1 base unit	100centi = 1 base unit	1000 milli = 1 base unit

Conversion between U.S. Customary and the Metric system		
Length	Volume	Weight
1 inch = 2.54 centimeters 1 yard ≈ 0.9144 meter 1 mile ≈ 1.6093 kilometer	1 quart ≈ 0.9464 liter 1 fl ounce ≈ 29.5735 milliliters 1 gallon ≈ 3.7854 liters	1 kilogram ≈ 2.2 pounds 1 ounce ≈ 28.3495 grams

Temperature	
$F^{\circ} = \frac{9}{5}C^{\circ} + 32$	$C^{\circ} = \frac{5}{9}(F^{\circ} - 32)$

Other Useful Information	
Area of Rectangle = Length X Width Area of a Circle = πr^2	Volume of Cylinder = $\pi r^2 h$ Volume of Rectangular box = Length X Width X Height

Formula Sheet – Indianapolis/Lawrence/Plainfield Fall 22

Absolute Change = New(Final) – Old(Initial)

Relative Change (decimal form) = Absolute Change/Old(Initial)

Growth/Decay Factor: New(final)/Old(Initial)

$$y = mx + b \quad m = \frac{\text{new } y - \text{old } y}{\text{new } x - \text{old } x}$$

Amount = Initial Amount(1 + Percent Increase)^{Time}

Amount = Initial Amount(1 - Percent Decrease)^{Time}

I = PRT

Balance = Principle × (1 + Rate)^{Time}

Balance = Principle [1 + (rate / # of times compounded each year)]^(# of times comp each year · years)

$$Z = \frac{x - \mu}{\sigma} \quad X \sim N(\mu, \sigma), \text{ has two parameter: the mean } \mu, \text{ and the standard deviation } \sigma$$

Addition Rule for Probabilities ("or" probabilities)

If A and B are events defined on a sample space, then $P(A \text{ OR } B) = P(A) + P(B) - P(A \text{ AND } B)$

Addition Rule for Probabilities ("and" probabilities)

If A and B are events defined on a sample space, then $P(A \text{ AND } B) = P(A) + P(B) - P(A \text{ OR } B)$

Excel Formulas (for project use)

Gradebook Project

=AVERAGE(cell reference:cell reference)

=cell reference category weight * cell reference category average

=SUM(cell reference:cell reference)

Finance Project

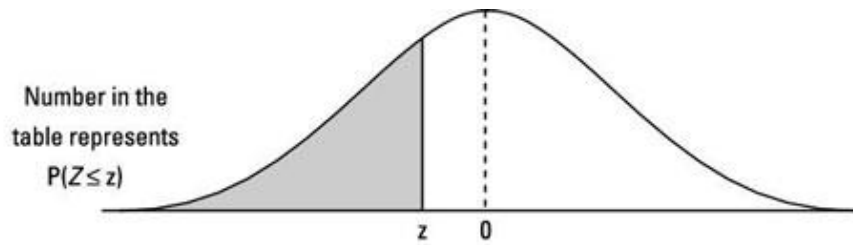
Payment = PMT(monthly interest rate, number of deposits, -amount of loan)

Present Value = PV(monthly interest rate, number of deposits, -payment amount)

Future Value = FV(monthly interest rate, number of deposits, -deposit amount)

z-Score Probabilities

(Needed only for Outcomes Quiz or in class discussions – Knewton questions have the chart embedded)



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.6	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
-3.5	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
-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

A normal distribution curve is shown with a horizontal axis. A vertical dashed line marks the mean at 0. A solid vertical line marks a point at z . The area under the curve to the left of z is shaded gray.

[illegible]