

For the Financial Mathematics Exam:

Financial Formulas

compound investment formula for interest paid n times per year: $A = P(1 + \frac{APR}{N})^{(N*Y)}$

lump sum investment for continuous compounding: $A = P * e^{(APR*Y)}$

savings plan formula (regular payments): $A = PMT \frac{((1 + \frac{APR}{N})^{(N*Y)} - 1)}{\frac{APR}{N}}$

annual return = $(\frac{A}{P})^{\frac{1}{Y}} - 1$

loan payment formula (installment loans): $PM T = \frac{P * (\frac{APR}{n})}{[1 - (1 + \frac{APR}{n})^{(-n*Y)}]}$

2006 Marginal Tax Rates, Standard Deductions, and Exemptions

TAX RATE	SINGLE	MARRIED FILING JOINTLY	MARRIED FILING SEPARATELY	HEAD OF HOUSEHOLD
10%	up to \$7,550	up to \$15,100	up to \$7,550	up to \$10,750
15%	up to \$30,650	up to \$61,300	up to \$30,650	up to \$41,050
25%	up to \$74,200	up to \$123,700	up to \$61,850	up to \$106,000
28%	up to \$154,800	up to \$188,450	up to \$94,225	up to \$171,650
33%	up to \$336,550	up to \$336,550	up to \$168,275	up to \$336,550
35%	above \$336,550	above \$336,551	above \$168,276	above \$336,551
standard deduction	\$5,150	\$10,300	\$5,150	\$7,550
exemptions (per person)	\$3,300	\$3,300	\$3,300	\$3,300

For the Statistical Literacy Exam:

Statistical Formulas

$$\text{standard deviation} = \sqrt{\frac{\text{sum of (deviations from the mean)}^2}{\text{total number of values} - 1}}$$

$$z = \text{standard score} = \frac{\text{data value} - \text{mean}}{\text{standard deviation}}$$

Standard Z-Scores and Percentiles							
<i>z-score</i>	<i>Percentile</i>	<i>z-score</i>	<i>Percentile</i>	<i>z-score</i>	<i>Percentile</i>	<i>z-score</i>	<i>Percentile</i>
-3.5	0.02	-1.00	15.87	0.00	50.00	1.1	86.43
-3.0	0.13	-0.95	17.11	0.05	51.99	1.2	88.49
-2.9	0.19	-0.90	18.41	0.10	53.98	1.3	90.32
-2.8	0.26	-0.85	19.77	0.15	55.96	1.4	91.92
-2.7	0.35	-0.80	21.19	0.20	57.93	1.5	93.32
-2.6	0.47	-0.75	22.66	0.25	59.87	1.6	94.52
-2.5	0.62	-0.70	24.20	0.30	61.79	1.7	95.54
-2.4	0.82	-0.65	25.78	0.35	63.68	1.8	96.41
-2.3	1.07	-0.60	27.43	0.40	65.54	1.9	97.13
-2.2	1.39	-0.55	29.12	0.45	67.36	2.0	97.72
-2.1	1.79	-0.50	30.85	0.50	69.15	2.1	98.21
-2.0	2.28	-0.45	32.64	0.55	70.88	2.2	98.61
-1.9	2.87	-0.40	34.46	0.60	72.57	2.3	98.93
-1.8	3.59	-0.35	36.32	0.65	74.22	2.4	99.18
-1.7	4.46	-0.30	38.21	0.70	75.80	2.5	99.38
-1.6	5.48	-0.25	40.13	0.75	77.34	2.6	99.53
-1.5	6.68	-0.20	42.07	0.80	78.81	2.7	99.65
-1.4	8.08	-0.15	44.04	0.85	80.23	2.8	99.74
-1.3	9.68	-0.10	46.02	0.90	81.59	2.9	99.81
-1.2	11.51	-0.05	48.01	0.95	82.89	3.0	99.87
-1.1	13.57	0.00	50.00	1.00	84.13	3.5	99.98

For the Basic Probability Exam:

Probability Formulas

Probability of an event A not occurring: $P(\text{not } A) = 1 - P(A)$

AND Probability: Independent Events $P(A \text{ and } B \text{ and } C) = P(A) \times P(B) \times P(C)$

AND Probability: Dependent Events $P(A \text{ and } B \text{ and } C) = P(A) \times P(B \text{ given } A) \times P(C \text{ given } A \text{ and } B)$

EITHER/OR Probability: Non-Overlapping Events $P(A \text{ or } B \text{ or } C) = P(A) + P(B) + P(C)$

EITHER/OR Probability: Overlapping Events $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

$P(\text{at least one event } A \text{ in } n \text{ trials}) = 1 - [P(\text{not event } A \text{ in one trial})]^n$

Expected Value = (event 1 value) \times (event 1 probability) + (event 2 value) \times (event 2 probability) + . . .

Arrangements with Repetition: r selections from a group of n choices = $n \times n \times \dots \times n = n^r$

Factorial: $n! = n \times (n - 1) \times \dots \times 2 \times 1$

Permutations: ${}_n P_r = \frac{n!}{(n-r)!}$ Combinations: ${}_n C_r = \frac{n!}{r!(n-r)!}$