KANSAS FARM MANAGEMENT & MARKETING HANDBOOK

KSU Farm Management Guide MF-489

Interpretation & Use of the Amortization Table

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When money is borrowed to make long term capital investments, it is generally paid back in a series of annual or semiannual payments. If these payments are to be the same amount each time, the loan is amortized. The even payment plan method of amortizing a loan allows for the payment of interest on the unpaid balance, plus some principal. The amount of the interest paid each period will decrease while the amount of the annual payment applied toward the principal will increase. The example in Table 1 illustrates how the amount of interest and principal change over the loan period.

An amortization table can be used to determine the annual payment when the amount of money borrowed, the interest rate and the length of the loan are known. Select the factor from the amortization table for the years and interest rate and multiply times the amount of the loan to obtain the annual payment for principal and interest. For example, a 5-year loan of $10,000 made at an annual interest rate of 11 percent would require $2,705.70 payment each year. By referring to Table 2 under the 11 percent column and across from 5 years, we find the factor .27057. This number shows that it will require .27057 cents per year for each dollar borrowed to retire the loan in 5 years. Table 2 can be used to determine the annual payments for loans with interest rates from 3 to 15 percent financed for the period shown in the column listing the number of years. Select the factor from the amortization table for the years and interest rate and multiply times the amount of the loan to obtain the annual payment for principal and interest.

Table 1. Example of Loan Amortization—Even Payment Plan
Principal $10,000, Interest Rate 11%, 5 Annual Payments.

Year	Annual Payment	Principal Payment	Interest	Unpaid Balance
				$10,000.00
1	$ 2,705.70	$ 1,605.70	$ 1,100.00	8,394.30
2	$ 2,705.70	$ 1,782.33	923.37	6,611.97
3	$ 2,705.70	$ 1,978.38	727.32	4,633.59
4	$ 2,705.70	$ 2,196.01	509.69	2,437.58
5	$ 2,705.70	$ 2,437.58	268.12	-0-
TOTAL FOR 5 YEARS		$10,000.00	$ 3,528.50	

Amortization formula: $\text{Annual Payment} = \dfrac{\text{Principal} \times \text{Interest Rate}}{1 - \dfrac{1}{(1+R)^{NY}}}$

Where,

R = Annual Interest Rate
Y = Total Years
N = No. Payments/year

$\text{Interest Rate} = \dfrac{\text{Annual Interest Rate}}{\text{No. Payments/year}}$

Table 2. Amortization Table Annual Principal and Interest Paid Per $1 Borrowed By Length of Loan and Interest Rates

	Annual Interest Rate													
Yrs.	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	Yrs.
3	.35353	.36035	.36721	.37411	.38105	.38803	.39505	.40211	.40921	.41635	.42352	.43073	.43798	3
4	.26903	.27549	.28201	.28859	.29523	.30192	.30867	.31547	.32233	.32923	.33619	.34320	.35027	4
5	.21835	.22463	.23097	.23740	.24389	.25046	.25709	.26380	.27057	.27741	.28431	.29128	.29832	5
6	.18460	.19076	.19702	.20336	.20980	.21632	.22292	.22961	.23638	.24323	.25015	.25716	.26424	6
7	.16051	.16661	.17282	.17914	.18555	.19207	.19869	.20541	.21222	.21912	.22611	.23319	.24036	7
8	.14246	.14853	.15472	.16104	.16747	.17401	.18067	.18744	.19432	.20130	.20839	.21557	.22285	8
9	.12843	.13449	.14069	.14702	.15349	.16008	.16680	.17364	.18060	.18768	.19487	.20217	.20957	9
10	.11723	.12329	.12950	.13587	.14238	.14903	.15582	.16275	.16980	.17698	.18429	.19171	.19925	10
11	.10808	.11415	.12039	.12679	.13336	.14008	.14695	.15396	.16112	.16842	.17584	.18339	.19107	11
12	.10046	.10655	.11283	.11928	.12590	.13270	.13965	.14676	.15403	.16144	.16899	.17667	.18448	12
13	.09403	.10014	.10646	.11296	.11965	.12652	.13357	.14078	.14815	.15568	.16335	.17116	.17911	13
14	.08853	.09467	.10102	.10758	.11434	.12130	.12843	.13575	.14323	.15087	.15867	.16661	.17469	14
15	.08377	.08994	.09634	.10296	.10979	.11683	.12406	.13147	.13907	.14682	.15474	.16281	.17102	15
20	.06722	.07358	.08024	.08718	.09439	.10185	.10955	.11746	.12558	.13388	.14235	.15099	.15976	20
25	.05743	.06401	.07095	.07823	.08581	.09368	.10181	.11017	.11874	.12750	.13643	.14550	.15470	25
30	.05102	.05783	.06505	.07265	.08059	.08883	.09734	.10608	.11502	.12414	.13341	.14280	.15230	30
35	.04564	.05358	.06107	.06897	.07723	.08580	.09464	.10369	.11293	.12232	.13183	.14144	.15113	35
40	.04326	.05052	.05828	.06646	.07501	.08386	.09296	.10226	.11172	.12130	.13099	.14075	.15056	40

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