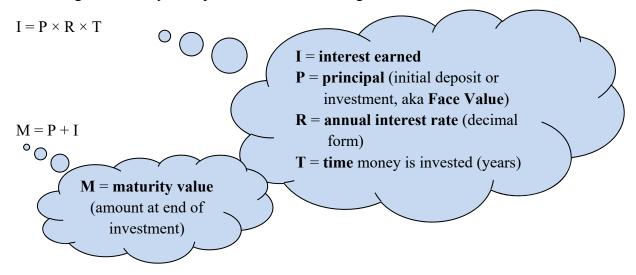
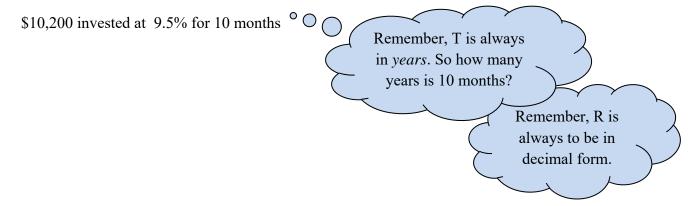


With **simple interest**, we deposit money in a bank or invest it by loaning it to someone. After a certain time, we get the money back plus some interest. Our general formulas are below.



This second formula just makes it clear that the amount of money you have at the end is the amount you started with plus any interest that was earned. You may remember learning about **compound interest**; we will study that in the next chapter.

expl 1: Find the simple interest and maturity value to the nearest cent for the following investment.



How Time (T) is Measured in Days:

If time is given in months, like the previous example, we divide the number of months by 12 to get the number of years. Do that to convert the following to years.

But some loan periods are given in days. Say Bob takes out a loan for 40 days. Or Joel loans Harriet \$400 but insists on repayment in 180 days. What is the value of T?

There are actually two different methods. Both sort of divide by the number of days in a year, but...

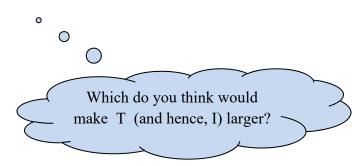
Method 1: Exact Interest:

$$T = \frac{\text{Number of days in loan}}{365} \circ O \frac{\text{Use 366 for a}}{\text{leap year.}}$$

Method 2: Ordinary (or Banker's) Interest:

$$T = \frac{\text{Number of days in loan}}{360} \circ \bigcirc \bigcirc$$

This is used by default. If a problem does *not* indicate which to use, use banker's interest.



expl 2a: Find the exact interest and the cloan. Be sure to label them.	ordinary interes	st to the nearest	cent for the follow	ing
\$185,000 at 7.5% for 180 days			Both start with $I = P \times R \times T$. But what is T?)-
expl 2b: Find the amount by which the o				
expl 2c: What is the maturity value for t	the loan using o	ordinary interes	t? Label it as M.	

The Number of Each Day of the Year:

You may be told that a loan was taken out July 2 and is due September 15. But how many days is that? You can count as we did in previous sections but in this section, we have the table on the last page of the notes. Let's see how useful it is on the next examples.

expl 3: Find the exact number of days from May 22 to August 30. (None of the years are leap years.)

Look each date up on the table. Then what?

expl 4: Find the due date, the amount of interest, and the maturity value of this loan. Use

banker's interest.

Date Loan was Made: July 14

Face Value: \$20,400 Term of Loan: 90 days

Rate: 8%

Look up July 14. When is the loan due?

The Number of Each of the Days of the Year

nber Day of month	5 1	5 9		4	S 6	9 0	1 7	2 8	3 9	.4 10	5 11	6 12	.7 13		8 14																
December	335	336	337	338	339	340	341	342	343	344	345	346	347		348	348	348	348 349 350 351	348 349 350 351 352	348 349 350 351 352 353	348 349 350 351 352 353 354	348 349 350 351 352 353 355	348 349 350 351 352 353 353 356 356	348 349 350 351 353 354 354 355 357	348 349 350 351 352 353 354 355 356 356 358	348 349 350 351 352 354 354 355 356 358 358	348 349 350 351 352 354 354 356 356 358 358 358 358	348 349 350 351 353 354 354 355 356 350 360 360	348 349 350 351 353 354 354 355 356 360 360 361	348 349 349 351 351 354 354 354 356 356 360 361 363	348 349 350 351 352 354 354 355 356 360 361 363 364
November	305	306	307	308	309	310	311	312	313	314	315	316	317	318	отс	319	319	320 321 321	319 320 321 321	310 320 321 322 323	319 320 321 322 323 323 324	319 320 321 322 323 323 324 325	319 320 321 321 322 323 324 324 326	319 320 321 322 323 324 324 325 326 326	319 320 321 321 323 323 324 324 325 325 326 326	319 320 321 322 323 324 324 325 326 326 328 328	319 320 321 322 323 324 324 326 326 326 327 328 330	319 320 321 321 323 324 324 325 326 327 328 329 330	319 320 321 322 323 324 324 326 327 328 329 330 331	319 320 321 321 323 324 324 325 326 326 327 328 329 330 331 333	319 320 321 322 323 324 325 326 326 327 328 328 329 330 331 333 334
October	274	275	276	277	278	279	280	281	282	283	284	285	586	700	/87	288	288	288 288 289 290	287 288 289 290 291	287 288 289 290 291 292	287 288 289 290 291 292 293	287 288 289 290 291 292 293 294	287 288 289 290 291 292 293 294 295	287 288 289 290 291 292 293 294 295	287 288 289 290 291 292 293 294 295 295	287 289 289 290 291 292 293 294 295 295 296	287 289 289 290 291 293 294 295 295 296 297 298	287 289 290 291 292 293 294 295 295 296 297 298 298	287 289 290 291 292 293 294 295 296 297 298 298 298 300	287 288 289 290 291 293 294 295 295 296 296 298 298 298 300	287 288 289 290 291 293 294 295 295 296 296 297 298 298 300 301
September	244	245	246	247	248	249	250	251	252	253	254	255	256	257		258	258	258 259 260	258 259 260 261	258 259 260 261 262	258 259 260 261 262 263	258 259 260 261 262 263 263	258 259 260 261 262 262 263 264 265	258 259 260 261 262 263 263 264 265	258 259 260 261 262 263 264 264 265 265	258 259 260 261 262 263 264 265 265 266 266	258 259 260 261 262 263 263 264 265 265 265 267 268	258 259 260 261 262 263 264 264 265 265 266 267 268 269	258 259 260 261 262 263 264 264 265 265 266 267 268 269 270	258 259 260 261 262 263 264 265 265 266 267 268 269 270 271	258 259 260 261 262 263 264 265 265 266 267 268 269 270 271
August	213	214	215	216	217	218	219	220	221	222	223	224	225	226		227	227	227 228 229	227 228 229 230	227 228 229 230 231	227 228 229 230 231 232	227 228 229 230 231 232 233	227 228 229 230 231 232 233 234	227 228 229 230 231 232 232 233 234	227 228 229 230 231 232 232 233 234 234 235	227 228 229 230 231 232 232 234 234 235 235 237	227 228 229 230 231 231 232 233 234 234 235 236 236 237	227 228 229 230 231 232 233 234 234 235 236 237 238 238	227 228 229 230 231 232 233 234 235 236 237 238 238 238 238 239 239	227 228 229 230 231 232 233 234 235 236 237 238 239 240 241	227 228 229 230 231 232 233 234 235 236 237 238 239 240 241
July	182	183	184	185	186	187	188	189	190	191	192	193	194	195		196	196	196 197 198	196 197 198	196 197 198 199 200	196 197 198 200 201	196 197 198 200 201 202	196 197 198 200 201 202 203	196 197 198 199 200 201 202 203 203	196 197 198 200 201 202 203 203 203 204	196 197 198 199 200 202 203 203 204 205 206	196 197 198 199 200 202 203 204 204 205 205 205	196 197 198 199 200 202 202 203 204 204 205 206 206 206	196 197 198 199 200 201 202 203 204 205 205 206 206 206 206 206 206 207	196 197 198 199 200 201 203 203 204 205 206 207 208 208 208 209 209 209 200 200 200 201 200 200 200 200 200 200	196 197 198 199 200 202 203 204 204 206 207 208 208 208 209 207 208 208 209 210
June	152	153	154	155	156	157	158	159	160	161	162	163	164	165	100	100	167	167 168	167 168 169	167 168 169 170	167 168 169 170 171	167 168 169 170 171 172	167 168 169 170 171 172 173	160 167 168 169 170 171 172 173 173	160 168 169 170 171 172 173 173 174	160 168 169 170 171 172 173 173 174 174	167 168 169 170 171 172 173 174 174 175	167 168 169 170 171 172 173 174 175 176 176	160 168 169 170 171 172 173 174 175 176 176 177	160 168 169 170 171 172 173 174 175 176 176 177 178	160 168 169 170 171 172 173 174 176 176 177 178 178 178 180
May	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135) T	136	136	136 137 138	136 137 138 139	136 137 138 139 140	136 137 138 139 140 141	136 137 138 139 140 141 141	136 137 138 139 140 141 141	136 137 138 139 140 141 142 143	136 137 138 139 140 141 142 143 144	136 137 138 139 140 141 142 143 144 144	136 137 138 139 140 141 142 143 144 145 145	136 137 138 139 140 141 142 143 144 145 146	136 137 138 139 140 141 142 143 144 146 146 146 146	136 137 138 139 140 141 142 144 144 145 146 146 147 148
April	91	92	93	94	92	96	26	86	66	100	101	102	103	104	105		106	106	106	106 107 108 109	106 107 108 109 110	106 107 108 109 110	106 107 108 109 110 111	106 107 108 109 110 111 113	106 107 108 109 110 111 112 113	106 107 108 109 110 111 112 113 114	106 107 108 109 110 111 112 113 114 115	106 107 108 109 110 111 112 113 114 115 115	106 107 108 109 110 111 112 113 114 115 116 117	106 108 109 110 111 112 113 114 115 116 116	106 107 108 109 110 111 113 114 115 116 116 117 118
March	09	61	62	63	64	92	99	29	89	69	20	71	72	73	74		75	75	75 76 77	75 76 77 78	75 76 77 78 79	75 77 78 78 79 80	75 76 77 78 79 80 81	75 76 77 78 79 80 81 82	75 77 78 78 79 80 81 81 83	75 77 78 79 80 81 82 83	75 76 77 78 79 80 81 81 82 83 83 85	75 76 77 78 79 80 81 82 83 83 84 84 86	75 76 77 78 79 80 80 81 82 83 84 84 85 85	75 76 77 78 79 80 80 81 82 83 84 85 85 86 88	75 77 77 78 79 80 81 81 83 83 84 85 85 86 87 88
February	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46		47	47	47 48 49	48 49 50	47 48 49 50 51	48 49 50 51 52	48 49 50 51 53	47 48 49 50 51 52 53 54	47 48 49 50 51 52 53 53 54	47 48 49 50 51 52 53 53 54 54	47 48 49 50 51 52 53 54 54 55 55	47 48 49 50 51 52 53 54 54 55 56 56	47 48 49 50 51 52 53 54 55 55 56 57 58	48 49 50 50 51 53 53 54 55 56 57 58 58	47 48 49 50 51 51 53 53 54 55 56 57 58 58
January	1	2	3	4	5	9	7	8	6	10	11	12	13	14	15		16	16	16 17 18	16 17 18 19	16 17 18 19 20	16 17 18 19 20 21	16 17 18 19 20 20 21	16 17 18 19 20 21 22 23	16 17 18 19 20 21 22 22 23	16 17 18 19 20 21 22 22 23 23 24	16 17 18 19 20 21 22 23 23 23 24 26	16 17 18 19 20 21 22 23 23 24 24 25 25 25 25	16 17 18 19 20 21 22 22 23 24 24 25 25 26 27 28	16 17 18 18 20 20 21 22 23 24 24 25 25 26 26 27 29	16 17 18 18 20 20 21 22 23 24 25 26 26 27 28 30
Day of month	1	2	3	4	5	9	7	8	6	10	11	12	13	14	15		16	16	16 17 18	16 17 18 19	16 17 18 19 20	16 17 18 19 20	16 17 18 19 20 21	16 17 18 19 20 21 21 22	16 17 18 19 20 21 21 22 23	16 17 18 19 20 21 22 23 23 24	16 17 18 19 20 21 22 23 23 24 24	16 17 18 19 20 21 22 23 24 24 25 25 25	16 17 18 19 20 21 22 23 23 24 24 24 25 25 25 27 27	16 17 18 19 20 21 21 23 24 25 26 27 28	16 17 18 19 20 21 22 23 23 24 25 26 26 27 28 30

Add 1 to each day after February 29 for leap years.