

Gene Fleming

INSTRUCTION MANUAL

For the OPERATION
of the COMPTOMETER

2

● *This course prepared for
exclusive use in
COMPTOMETER SCHOOLS
controlled and operated by
COMPTOMETER DIVISION
FELT & TARRANT MFG. COMPANY*

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Reference Tables of Weight and Measure

Bushel, Barrel and Keg Weights

Copy for Future Use

Apples	48	lb.	Weight	per bushel
Barley	48	"	"	"
Beans	60	"	"	"
Buckwheat	48	"	"	"
Clover Seed	60	"	"	"
Corn (In ear)	70	"	"	"
Corn (Shelled)	56	"	"	"
Flax	56	"	"	"
Malt	34	"	"	"
Oats	32	"	"	"
Onions	57	"	"	"
Peas	60	"	"	"
Potatoes	60	"	"	"
Rye	56	"	"	"
Timothy	45	"	"	"
Wheat	60	"	"	"
Beef and Pork	200	"	"	Barrel
Butter	56	"	"	Firkin
Flour	196	"	"	Barrel
Nails	100	"	"	Keg
Salt	280	"	"	Barrel

Abbreviations Used in Business

@	at or to	ea.	each
acct., a/c	account	etc.	and others
amt.	amount	exp.	express
ans.	answer	ford.	forward
art.	article	F.O.B.	free on board
avdp.	avoirdupois	frt.	freight
bal.	balance	gr.	gross
bbl.	barrel	int.	interest
B. & O.	Baltimore & Ohio	inv.	invoice
bdl.	bundle	L/C	letter of credit
bg.	bag	mdse.	merchandise
bkt.	basket	M.O.	money order
B/L	bill of lading	No.	number
bu.	bushel	O.K.	it is so, all right
bx.	box	o/c	overcharge
C. B. & Q.	Chicago, Burlington & Quincy	p.p.	postpaid; parcel post
c/o	care of	via	by the way
C.O.D.	cash on delivery	W/B	waybill
Cr.	credit	%	per cent
C.W.O.	Cash with order	#	number, if written before a figure
cwt.	hundredweight	#	pounds, if written after a figure
disc.	discount	'	Feet; minutes
doz.	dozen	"	inches; seconds
Dr.	debit		

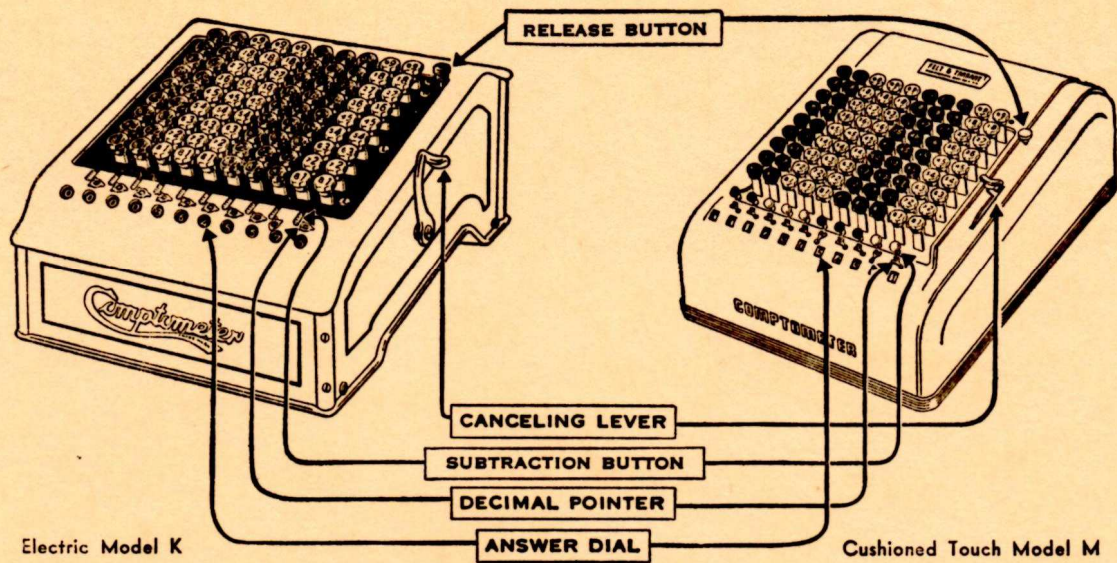
The Comptometer Course

The Comptometer Course is a special course in business arithmetic, with clearly defined educational and vocational objectives. It specifically trains an individual in the application of the Comptometer to office figuring routines.

The aim of the Comptometer Course is to give each student planning to enter business a marketable skill in the performance of a fundamental office task. Comptometer operating is a profession which is unequalled in opportunities for advancement. Because a Comptometer operator is so close to the pulse of business, management is more likely to turn to a Comptometer operator to advance to a supervisory position than select an employee doing other kinds of office work.

Description of Comptometer

The Comptometer is a key driven adding and calculating machine which is manufactured in three standard sizes. The keyboard is arranged in eight or more columns of nine keys each. These are grouped in alternating sections, colored green and ivory.



Method of operation is the same for Models J, K and M.

Each key-top has a large and a small figure; the large figures are used for addition and multiplication; the small figures for subtraction and division. The register dials show the result of the calculation. The lever at the right clears the register dials. The pointers at the base of the columns are used for pointing off decimals. The subtraction buttons at the left of each column are used when subtracting. The red button at the upper right hand corner is a "Release Button", which is one of the most important parts of the entire keyboard. It connects with the mechanism that compels correct mechanical operation for your protection, which will be explained in detail throughout the course.

Comptometer Operating Safeguards

The Comptometer is a business machine. On it can be performed any arithmetic problem. It adds, multiplies, subtracts, and divides faster and easier every known figuring calculation than can be done any other way.

The Comptometer, like all other machines, can only be as accurate as its operator. As far as mechanical errors are concerned, provisions have been made automatic to remove the possibilities of these errors.

It is a recognized fact that safety devices are necessary on all mechanically operated equipment. Safety devices are not only effective on elevators and trains, but they are equally effective on machines operated in offices. All machine operators in offices or factories need the protection of safety devices. Safety features have been built into the Comptometer which will not allow the machine operation to continue if the operator has performed a machine operation incorrectly.

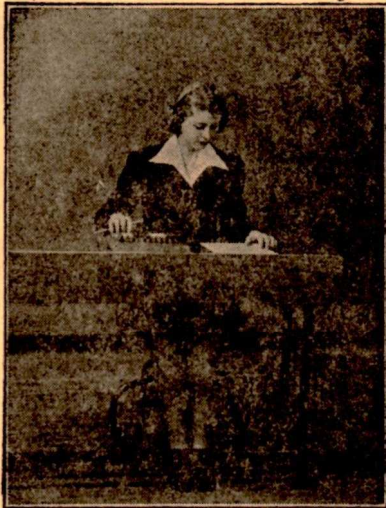
The various operator safeguards found exclusively on the Comptometer are:

1. The **clear signal mechanism**, often referred to by operators as the "stop and go" signals on the Comptometer, increases operating speed and accuracy. The three human senses called into play by the Comptometer **clear signal mechanism** are:
 - A. **Touch**—After a machine cancellation, the first key depression has more tension than depressions thereafter.
 - B. **Sight**—The numerals on the register dials move into the center of the dial openings upon first key depression.
 - C. **Hearing**—A bell rings upon first depression after a cancellation.
2. **Two-colored key tops** (green and ivory) to make easier the accurate handling of dollar and cents amounts.
3. **Plain and cupped-faced keys** to help the operator depress the keys accurately in touch operation.
4. **Large visible dials** and active ciphers to help the operator read the answers quickly and accurately.
5. **Subtraction buttons** which help the operator to accurately speed up all subtraction operations.
6. The **positive cancelling mechanism** assures the operator of complete cancellation.

These safeguards, plus the most positive operating safeguard, the Controlled-Key mechanism, increase the speed and accuracy of every operator.

Addition

Addition is the most important Comptometer operation that a student-operator will learn. The reason adding is so important is that one never multiplies, subtracts or divides without adding entering into the problem. A sales slip may have all the prices indicated, but before the clerk can make change, the item prices must be added to get a total. Before a paymaster can go to the bank to get the money to cover the payroll, he must add all the extended time tickets to arrive at a total. When goods are shipped to a buyer, an invoice is sent. Before the invoice is sent, a Comptometer operator multiplies the quantity of goods times the price and then adds the individual extensions.



Correct Operating Position.

Because addition is so important in business, one-half of the Comptometer Course is devoted to adding practice.

TOUCH METHOD of addition provides the greatest degree of speed and accuracy and is simple and easy to learn.

The Comptometer should be placed at right angle, slightly to the right of the operator, with the left edge directed toward the center of the body. The operator should always sit in an erect position with feet on the floor and fingers resting comfortably on the keys.

In adding, it is necessary to acquire a smooth rhythmic stroke. Hold a pencil between the thumb and palm of the right hand. This helps to balance the hand and the pencil is always in readiness for writing answers.

Upon examining the key tops, it will be noticed that the odd-numbered keys: 1, 3, 5, 7, and 9 are concave. The even-numbered keys: 2, 4, 6, and 8 are flat-topped. This is to make touch operation easier.

Only the lower half of the keyboard is used in touch addition; all the keys are in easy reach of the fingers.

Only the one to five keys are used in addition.

There are no large cipher keys so skip columns in which ciphers appear.

Use the index finger for adding in all columns of figures except the last figure of the number being added. Always use the middle finger to add in the last or extreme right-hand figure of any number.

Find the key to be added by sense of touch.

Operate one key at a time, beginning with the left-hand figure of a number.

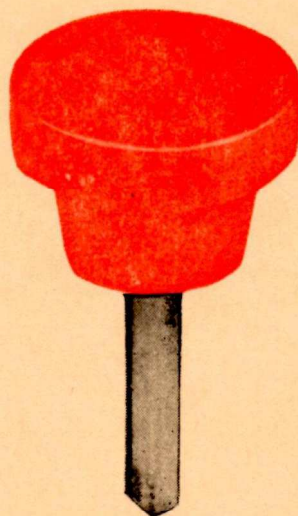
Always clear the dials before starting a new problem.

Touch Addition

Begin at the top of each column and add down. Compare the total obtained in the register dials with the total at the foot of the column. For practice, add each column at least five times. Do not attempt to go too fast at first; practice rhythmic operation. Speed will come with a little practice.

1.	2.	3.	4.	5.	6.	7.
11	12	11	22	23	11	21
12	23	12	23	33	21	32
22	34	22	33	34	22	43
23	45	12	23	44	32	54
33	55	22	44	45	33	55
34	44	23	34	55	43	44
44	33	33	55	44	44	33
45	22	23	45	33	54	22
55	11	44	50	22	55	11
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
279	279	202	329	333	315	315

8.	9.	10.	11.	12.	13.	14.
11	22	32	12	55	22	22
21	32	33	13	45	23	32
22	33	43	23	54	24	42
21	32	44	24	44	23	32
22	44	54	34	34	43	34
32	43	55	35	43	54	35
33	55	44	34	23	35	54
32	54	33	33	43	45	53
44	50	22	43	32	54	45
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
238	365	360	251	373	323	349



Controlled-Key

Success, as measured by a Comptometer operator, requires an unfailing degree of accuracy and maximum operating speed. To insure operating accuracy, the Comptometer is equipped with an operating safety device known as the **Controlled-Key mechanism**. The **Controlled-Key mechanism** prevents operating errors caused by fumbled or incomplete key strokes.

How to Correct an Incomplete Key Stroke



There is no guesswork required in using **Controlled-Key**, neither is there a complicated formula to follow.

In adding, when a locked keyboard signals an operating error, the use of **Controlled-Key** is as simple as going back to the last key operated. If this key is left open for correction, complete the stroke, touch the red release button and continue adding, starting on the key that locked and signaled the error as shown in the example.

EXAMPLE:

In adding this short column, intentionally press the 5 cent key part way down. On attempting to strike the 2-key, you find it locked. Go back and strike again the last key depressed (5), touch the red release button and the correction is made. Continue adding on the key that locked and signaled the error, 2.

.45
.23
.34
.12

1.14

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
23	12	30	43	22	34	30	20	33	22	12	21	15	21
12	33	42	12	43	23	15	12	21	41	14	30	50	13
22	23	34	18	21	43	12	15	31	14	15	40	15	31
44	45	21	50	13	41	43	21	40	21	20	13	43	22
33	24	12	34	22	43	33	44	20	11	10	44	10	12
22	34	15	55	54	34	55	52	51	15	43	15	12	11
13	42	34	12	55	33	41	50	11	13	42	13	55	55
15	15	14	10	14	11	11	10	15	55	33	14	22	22
20	30	25	15	33	10	22	43	13	11	55	31	14	10
<hr/> 204	<hr/> 258	<hr/> 227	<hr/> 249	<hr/> 277	<hr/> 272	<hr/> 262	<hr/> 267	<hr/> 235	<hr/> 203	<hr/> 244	<hr/> 221	<hr/> 236	<hr/> 197
15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
12	34	33	12	45	12	34	23	11	54	23	33	13	24
23	44	32	23	54	23	54	32	12	55	21	45	35	42
34	45	23	34	34	33	44	21	21	45	12	55	55	35
45	55	34	45	45	32	34	11	22	43	32	54	53	53
55	54	44	54	23	21	32	12	23	23	34	45	31	13
54	44	43	43	32	11	12	23	21	32	45	43	11	31
45	43	33	32	22	12	11	22	11	23	44	23	12	33
44	33	32	21	23	21	23	22	22	21	43	22	22	35
43	34	23	12	45	14	32	34	23	23	34	21	33	45
<hr/> 355	<hr/> 386	<hr/> 297	<hr/> 276	<hr/> 323	<hr/> 179	<hr/> 276	<hr/> 200	<hr/> 166	<hr/> 319	<hr/> 288	<hr/> 341	<hr/> 265	<hr/> 311

Controlled-Key—Continued

29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.
50	12	14	11	30	50	55	45	34	44	11	22	10	12
44	11	22	43	33	11	14	41	55	35	22	10	15	14
23	33	13	23	13	11	51	53	35	51	10	55	35	44
30	14	25	14	35	50	10	15	55	35	41	14	21	22
11	50	14	34	25	22	34	33	53	10	11	12	40	30
14	22	15	44	33	15	13	21	51	15	30	42	35	21
12	11	30	54	22	20	50	43	15	40	55	24	15	41
20	23	22	30	44	30	11	32	10	14	51	24	10	11
11	14	13	22	15	55	24	14	21	51	30	55	11	21
<u>215</u>	<u>190</u>	<u>168</u>	<u>275</u>	<u>250</u>	<u>264</u>	<u>262</u>	<u>297</u>	<u>329</u>	<u>295</u>	<u>261</u>	<u>258</u>	<u>192</u>	<u>216</u>

In adding when a locked keyboard signals an operating error and the last key operated is found locked, touch the red release button, add in the previous key, and continue adding with the key that locked and signaled the error as shown in the example.

EXAMPLE:

In adding this column, intentionally press the 30-key part way down. Then give the 40-key a regular stroke. On attempting to strike the 5-key, you find it locked. To correct, go back to the last key depressed (40), and you will find it locked. Touch the red release button and add in the previous key (30). This completes the correction. Continue adding, beginning on the key that locked and signaled the error, 5.	.22 (3) .75 .16 .80 .20 — 2.13
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Touch Addition

In touch addition never go above the 5-key. Combine numbers for 6, 7, 8, and 9 as follows:

- To add 6 depress 3 and 3
- To add 7 depress 3 and 4
- To add 8 depress 4 and 4
- To add 9 depress 4 and 5

For uniformity of operation **always** depress the 3 **before** the 4 for a 7, and the 4 **before** the 5 for a 9. Give each key a full even stroke. Practice very slowly on the following:

43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.	55.	56.
23	32	43	34	12	48	67	45	12	23	53	27	48	16
36	63	37	73	63	73	43	39	26	64	68	38	47	25
43	34	84	48	24	45	77	73	37	75	95	49	63	37
48	84	38	83	37	94	65	26	49	93	74	56	84	29
35	53	49	94	83	26	95	68	94	38	83	75	93	53
49	94	54	45	65	73	48	48	73	47	39	94	32	41
43	34	83	38	49	24	64	95	62	59	57	72	26	17
36	63	36	63	88	39	23	89	21	86	46	13	82	29
42	24	88	24	94	83	72	50	10	35	23	67	14	92
<u>355</u>	<u>481</u>	<u>512</u>	<u>502</u>	<u>515</u>	<u>505</u>	<u>554</u>	<u>533</u>	<u>384</u>	<u>520</u>	<u>538</u>	<u>491</u>	<u>489</u>	<u>339</u>
57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.	70.
65	14	36	25	46	85	39	98	98	23	43	45	46	89
19	13	72	16	52	79	74	31	64	39	82	31	97	32
21	63	14	31	21	27	45	24	23	46	63	22	25	19
49	95	21	62	26	46	54	98	45	21	56	60	30	24
65	29	94	46	95	32	32	53	57	12	36	43	71	46
84	57	95	31	84	54	98	74	32	33	28	47	43	12
14	89	42	89	53	60	34	74	32	34	45	17	24	21
44	35	76	90	96	27	43	25	12	64	28	13	52	14
90	62	14	41	17	42	52	43	22	20	24	81	35	41
<u>451</u>	<u>457</u>	<u>464</u>	<u>431</u>	<u>490</u>	<u>452</u>	<u>471</u>	<u>520</u>	<u>385</u>	<u>292</u>	<u>405</u>	<u>359</u>	<u>423</u>	<u>298</u>
71.	72.	73.	74.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.
84	35	43	25	79	13	13	14	89	36	35	29	34	20
25	79	13	82	94	14	41	12	23	43	12	25	14	18
43	94	15	92	96	83	83	83	21	51	31	48	59	72
33	86	84	49	70	46	12	62	43	94	47	14	25	20
21	38	75	76	53	60	21	63	13	28	59	53	42	34
75	64	78	21	21	42	50	14	32	30	24	25	49	95
78	84	68	31	53	29	43	44	32	30	23	90	23	42
60	95	30	89	30	41	57	49	54	63	54	43	34	49
35	80	79	24	48	27	26	79	36	59	13	66	50	62
<u>454</u>	<u>655</u>	<u>485</u>	<u>489</u>	<u>544</u>	<u>355</u>	<u>346</u>	<u>420</u>	<u>343</u>	<u>434</u>	<u>298</u>	<u>393</u>	<u>330</u>	<u>412</u>

Multiplication

Right of Keyboard



In multiplication the large figures on the key tops are used.

Careful attention should be given to the development of skill in moving from one column to another by sliding without breaking the rhythm. The fingers should be held in a curved position with the arms slightly above the keyboard with the elbows free from contact with the desk.

DRILL:

Hold 35, 44, 53, 46, 25, 15, 64, 80, 75, 66 with the first finger of each hand and multiply across the keyboard by 5 in each column. Then multiply any combination of numbers using the above numbers as keyboard factors until a smooth rhythmic stroke has been acquired.

DECIMAL POINT:

In multiplying from right of keyboard point off from right as many answer dials as there are decimals in the two factors.

EXAMPLE:

$34.76 \times 5.6 = \dots\dots\dots$ Hold 56 with the index finger of each hand at the extreme right of keyboard. Depress 6 times, move to left and depress 7 times; move to left and depress 4 times; move to left and depress 3 times. Answer: 194.656.

CONTROLLED-KEY

Multiplication, Subtraction, Division

The **Controlled-Key mechanism** always automatically signals an operator whenever a mechanical misoperation takes place. Without protection of the **Controlled-Key mechanism**, an operator would work through a misoperation, obviously obtaining the wrong answer. The **Controlled-Key mechanism** eliminates this possibility.

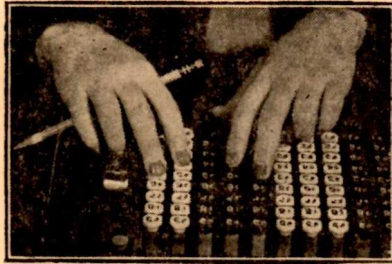
When a locked keyboard signals a misoperation in calculating, it is faster to cancel and rework the problem.

Multiplication—Continued

Show complete answers for the following problems.

- | | |
|--------------------------------|------------------------|
| 1. $4852 \times .57 = 2765.64$ | 26. $2343 \times .24$ |
| 2. $3.84 \times .28 = 1.0752$ | 27. 53.21×62 |
| 3. $437 \times .64 = 279.68$ | 28. $4.287 \times .53$ |
| 4. $4382 \times 47 = 205954$ | 29. $6243 \times .32$ |
| 5. $784 \times .42 = 329.28$ | 30. 32.0×62 |
| 6. $92.0 \times .67$ | 31. $.428 \times 77$ |
| 7. $8.25 \times .77$ | 32. 6.23×1.5 |
| 8. $4.21 \times .18$ | 33. $782 \times .54$ |
| 9. $32.8 \times .44$ | 34. 68.2×62 |
| 10. $42.9 \times .23$ | 35. $.428 \times 44$ |
| 11. 6.32×72 | 36. 78.20×22 |
| 12. 3.28×22 | 37. 232×4.9 |
| 13. 98.43×62 | 38. $124 \times .72$ |
| 14. 86.23×28 | 39. 6.24×32 |
| 15. 93.21×49 | 40. 78.1×8.1 |
| 16. $62.17 \times .80$ | 41. $.828 \times 55$ |
| 17. $428.3 \times .89$ | 42. $716 \times .14$ |
| 18. $.651 \times .27$ | 43. 4.14×52 |
| 19. $4.02 \times .83$ | 44. $.616 \times .24$ |
| 20. $68.41 \times .44$ | 45. $.4523 \times .82$ |
| 21. $.248 \times 7.8$ | 46. $.6421 \times 74$ |
| 22. $.682 \times 2.1$ | 47. 822.5×78 |
| 23. 486.1×4.1 | 48. 9.876×54 |
| 24. 34.56×2.3 | 49. $5432 \times .85$ |
| 25. 4.265×3.7 | 50. 6.253×8.8 |

Multiplication



Natural Fingering

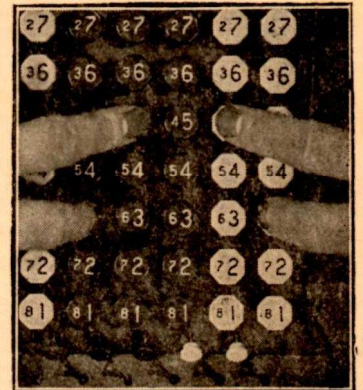
A combination number such as 540.45 can be held in a natural right hand and left hand position. A simple rule to follow is: Always use the longest finger on the highest number.

Reverse Fingering

Notice that in holding 350.53 it is necessary to raise the elbows slightly and turn the hands in. The longest fingers hold the highest numbers.

DRILL:

Hold as keyboard factors 357, 713, 3213, 2345, 912, 219, 3456, 2442, 1331, 5443 and multiply across the keyboard by 5. Drill carefully on these combinations until a graceful, easy operation has been acquired.



For practical purposes it is unnecessary to show more than 5 decimal places in the answer.

EXAMPLE: $7.435 \times 4.325 = 32.156375$ (in machine). Answer: 32.15638.

- | | | | |
|-------------------|-------------------|-------------------|---------------------|
| 1. 17.63 x 3.26 | 26. 804.55 x 9.56 | 51. 326 x 3.42 | 76. 19.12 x .3442 |
| 2. 45.42 x 4.67 | 27. 143.24 x 4.23 | 52. 6.498 x 895 | 77. 22.22 x 89.76 |
| 3. 56.32 x 724 | 28. 25.675 x 789 | 53. 6763 x 674 | 78. 800 x 457.5 |
| 4. 1549 x 7.46 | 29. 734.52 x 6.45 | 54. 5.954 x 2.76 | 79. 123.55 x 23.98 |
| 5. 638 x 4.79 | 30. 15.635 x 3.22 | 55. 8.756 x 4.65 | 80. 155.02 x 34.54 |
| 6. 104.32 x 856 | 31. 40786 x 9.67 | 56. 30354 x 2.43 | 81. 15.135 x .1365 |
| 7. 89.56 x 32.6 | 32. 209875 x .345 | 57. 17.56 x .897 | 82. 212.21 x 7.843 |
| 8. 785 x 4.98 | 33. .70564 x 8.04 | 58. 76761 x .132 | 83. 15.211 x .4532 |
| 9. 9346 x 76.3 | 34. 35983 x 6.34 | 59. 498.2 x 6.83 | 84. 129.34 x 56.65 |
| 10. 2739 x 9.45 | 35. 274.32 x 578 | 60. 805.43 x 4.54 | 85. 83.46 x 79.64 |
| 11. 778 x 7.56 | 36. 91.651 x 49.9 | 61. .5434 x 561 | 86. 1454.2 x .1276 |
| 12. 454.2 x 3.57 | 37. 53.46 x .478 | 62. 1.1325 x 475 | 87. 17.689 x 68.42 |
| 13. 156.78 x 167 | 38. 1422.4 x 6.56 | 63. 246.56 x .796 | 88. 2.222 x 3.475 |
| 14. 429.76 x 7.56 | 39. 67.82 x 566 | 64. 36457 x .131 | 89. 23.851 x 2.486 |
| 15. 7547 x 7.06 | 40. 10536 x 399 | 65. 72.38 x 7.84 | 90. .9876 x 78.54 |
| 16. .349 x 567 | 41. 184.95 x 6.23 | 66. 17.549 x 59.7 | 91. 36.7 x 47.85 |
| 17. 9126 x .324 | 42. 43786 x .467 | 67. 34985 x 4.65 | 92. 30.802 x 14.96 |
| 18. 83.49 x 234 | 43. .90394 x 8.34 | 68. .7684 x 239 | 93. .496 x 58.74 |
| 19. 409.89 x 46.7 | 44. 265.74 x 8.56 | 69. 1785 x 6.32 | 94. 19.191 x 2.442 |
| 20. .39654 x 845 | 45. 41364 x .756 | 70. 2.872 x 598 | 95. 23.85 x 67.31 |
| 21. 1273 x .924 | 46. 9.598 x 234 | 71. 34981 x .782 | 96. .9684 x 69.95 |
| 22. 9467 x 3.45 | 47. 6.756 x 2.78 | 72. 12569 x .359 | 97. 4.9362 x 1.265 |
| 23. 10892 x .762 | 48. 143.95 x .407 | 73. 41.678 x 566 | 98. 4.041 x 47.74 |
| 24. .15497 x 489 | 49. 22436 x .856 | 74. .25877 x 561 | 99. 9.63 x 5.664 |
| 25. 7585 x .758 | 50. .15342 x 345 | 75. 95.66 x 4.57 | 100. 4.2691 x 12.85 |

Subtraction

Subtraction is the process of finding the difference between two numbers. In using the Comptometer the procedure is as follows:

Place larger amount in the Comptometer. Hold back the subtraction button at the left of an amount in the register equal to or larger than the amount to be subtracted. * Holding back the subtraction button, depress the amount to be subtracted in small figures, less one.

If necessary to borrow, hold back the subtraction button at the left of the column or columns from which you borrow. Depress the small cipher key in such column or columns.

When using the latest Model M Comptometer, do not hold the subtraction button after setting it for a subtraction. It returns to normal when the subtraction is completed.

EXAMPLE: 98 — 75 = 23.

Put 98 in the right of keyboard. Hold back the subtraction button at the left of the figure 9; depress a small 7 in the second column and a small 4 (5 less 1) in the first column — ANSWER 23. To prove, add 75 to 23 in machine. Answer 98, agrees with amount started with.

Cipher keys are used in the amount to be subtracted if they come between figures of value, but are ignored if at the end of a number. The nines are ignored unless they come at the end of a number when one less than nine (8) is depressed.

EXAMPLE: 8450 — 7020 = 1430.

Put 8450 in the right of keyboard. Hold back the subtraction button at the left of the figure 8; depress a small 7 in the fourth column, a small cipher in the third column, and a small 1 (2 less 1) in the second column. Ignore the cipher at the end of number being subtracted. ANSWER 1430. To prove, add 7020 to 1430 in the machine. Answer 8450 agrees with amount started with.

EXAMPLE: \$28.64 — \$9.69 = \$18.95.

Put 28.64 in right of keyboard. Hold back the subtraction button at the left of figure 2. Borrow from the fourth column by depressing cipher key; as there are no small 9 figures, ignore the 9 in the third column, depress small 6 in the second column, and a small 8 (9 less 1) in the first column — ANSWER \$18.95. To prove, add \$9.69 to \$18.95 in the machine. Answer \$28.64 agrees with amount started with.

Subtract and Verify

The apostrophe indicates where the subtraction button is to be held back.

- | | | |
|---|---|---|
| <p>1. '48 Large figures
22 Small figures 21</p> <hr/> <p>26</p> | <p>4. 8'75 Large figures
69 Small figures 68</p> <hr/> <p>806</p> | <p>7. '100.07 Large figures
9.10 Small figures 00909</p> <hr/> <p>90.97</p> |
| <p>2. '856 Large figures
704 Small figures 703</p> <hr/> <p>152</p> | <p>5. '2143 Large figures
652 Small figures 0651</p> <hr/> <p>1491</p> | <p>8. '6523 Large figures
3800 Small figures 3799</p> <hr/> <p>2723</p> |
| <p>3. '835 Large figures
397 Small figures 396</p> <hr/> <p>438</p> | <p>6. 1'7036 Large figures
85 Small figures 0084</p> <hr/> <p>16951</p> | <p>9. '1560 Large figures
1441 Small figures 1440</p> <hr/> <p>119</p> |

Subtraction—Continued

In the following columns of figures subtract the red items.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
15	41	15	12	31	24	58	58	76	46
44	12	43	42	42	37	40	33	93	17
12	25	22	53	53	88	65	62	84	83
22	31	41	25	24	95	84	91	72	94
33	42	53	13	15	46	27	84	65	62
32	11	14	52	32	15	15	72	54	99
21	55	33	24	41	78	56	37	38	75
35	35	40	44	54	52	35	48	21	38
12	14	52	52	23	61	71	29	15	76
54	43	35	41	14	23	43	14	46	52

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
78	66	81	98	81	63	84	39	69	73
43	83	33	64	33	59	71	43	45	49
41	47	27	77	27	72	15	75	77	21
54	35	15	28	15	48	63	86	62	76
65	94	97	35	97	10	98	93	37	51
48	18	74	42	74	61	12	54	43	63
76	57	56	60	56	25	36	49	79	72
92	26	49	13	49	98	53	72	96	98
31	74	85	54	85	38	65	36	34	36
47	52	62	88	62	61	42	76	75	45

Whenever a column is made up of many alternating red and black figures it is advisable to get the separate totals of the red and black figures, then find the difference.

Make the extension and subtract the red amount indicated without clearing the register dials.

21. 314 x .49— 12.05	31. 524 x 9.42— 101.69	41. 572 x 1.31— 590.50
22. 392 x .32— 9.20	32. 9545 x .45— 39.67	42. 865 x .49— 9.13
23. 75 x 1.84— 16.09	33. 76 x 2.63— 83.09	43. 2142 x .54— 514.19
24. 138 x .38— 20.09	34. 283 x 4.95— 554.00	44. 371 x .93— 166.75
25. 5837 x 2.66— 90.94	35. 435 x 12.62— 1590.50	45. 624 x .22— 110.10
26. 950 x 6.50— 517.50	36. 531 x 7.50— 1575.99	46. 457 x 11.48— 561.90
27. 512 x .58— 109.91	37. 272 x .62— 98.16	47. 4032 x .20— 711.34
28. 4850 x 1.05— 396.21	38. 968 x 1.57— 900.90	48. 284 x .92— 44.40
29. 488 x 2.36— 94.81	39. 1679 x .34— 94.30	49. 342 x 1.45— 93.69
30. 46 x 8.53— 32.15	40. 318 x .23— 100.00	50. 7121 x 6.93— 1401.00

Writing Numbers

The ability to read and write figures quickly and accurately must be developed along with learning machine operation in order for an operator to be efficient.

There are more written figures than typed figures in the average office. It is important that written figures be plain and of a uniform size. The ability to write legible figures and to recopy them quickly and accurately is a factor to be considered in all figure work. Large numbers should be read by dividing the number into groups of two or three digits if possible. Grouping digits will help you to remember large numbers. Daily practice in reading and writing figures will increase the efficiency of every operator.

The size and legibility of the following figures are most acceptable in business offices :

1 2 3 4 5 6 7 8 9 0

DRILL: Read by glancing once at each of the following numbers, then write the number. Practice writing legible figures starting with Column A.

	A.	B.	C.	D.
1.	1978	56942	678452	4102569
2.	5469	79325	203751	3758762
3.	8762	36542	986532	7895420
4.	5487	10921	788539	5572441
5.	9647	63054	603105	6400250
6.	2034	32469	459047	7421634
7.	5409	82648	274890	8864901
8.	2746	29649	653278	1718190
9.	3987	87886	994786	2654781
10.	1546	21911	247540	4467432
11.	1212	21746	123456	9847650
12.	5684	11140	274896	2134865
13.	1819	14198	164786	2468751
14.	2749	23789	115031	4957184
15.	8876	11475	261881	2178654
16.	1915	24978	141980	4378600
17.	3748	22412	247685	1403022
18.	2680	19487	389546	4432111
19.	2487	12466	194876	2148731
20.	1948	18417	218171	1213141

80173

Answer papers throughout the course will not be accepted or credit given if the writing isn't legible or the paper neat in appearance.

Multiplication

Left of Keyboard

When multiplying large numbers containing decimals, it is advisable to work from the left of machine toward the right. If necessary run off the keyboard to the right, dropping first one finger and then another, until all figures in the multiplicand have been used.

DECIMAL POINT:

In multiplying from the left of the keyboard, point off from the left as many decimal pointers as there are whole numbers in both factors.

EXAMPLE:

$88.56 \times 324.62 = 28748.3472$: Hold 8856 at the extreme left of keyboard and multiply toward the right by 3, 2, 4, 6 and 2, dropping first one figure and then another, until all the figures in the multiplying factor have been used. In pointing off, count as many decimal pointers from the extreme left of the machine as the sum of the whole numbers in both factors.

Finger Drill Exercises

Hold the following numbers as keyboard factors and multiply by different number combinations:

4343	5364	5577	9119	21243	43353	5044066	331133
4663	3115	5115	8228	31355	32153	320234	750177

Multiply from left to right, dropping off keyboard. Show answers to 3 decimal places if possible.

Hold as multiplier keys, the factor requiring the least number of keystrokes.

- | | | |
|----------------------|----------------------|---------------------|
| 1. 87.55 x 3.675 | 21. 29.7 x 8.118 | 41. 1.505 x 766.56 |
| 2. 504.42 x .134 | 22. 22.67 x 7.767 | 42. 45.50 x 34.57 |
| 3. 80.255 x 3113.3 | 23. 120.44 x 31.313 | 43. 13.507 x 6045 |
| 4. .4796 x 87.005 | 24. 180.81 x 3.4606 | 44. 612.6 x 3.808 |
| 5. 7.32 x 4.85 | 25. 76305 x 1.99 | 45. 63.455 x 33.23 |
| 6. 654.3 x 100.25 | 26. 13.77 x 303.03 | 46. 8.625 x 9.099 |
| 7. 642.05 x 388 | 27. 2.458 x 50.345 | 47. 123.45 x 4.0666 |
| 8. .58 x 6003.57 | 28. 4.789 x 12.456 | 48. 94 x 202.93 |
| 9. 880.7 x 135.05 | 29. 6.67 x 88.89 | 49. 421.23 x 5.454 |
| 10. 12455 x 8.88 | 30. 122.033 x 7.227 | 50. 71.27 x 434.55 |
| 11. 8.642 x 20.222 | 31. 45.2 x 4.009 | 51. 65.43 x 100.28 |
| 12. .2505 x 3.777 | 32. 211.022 x 70.555 | 52. 21.65 x 21.65 |
| 13. 66.78 x 9.026 | 33. 23.45 x 25104 | 53. 31.545 x 5.55 |
| 14. 3.058 x 787 | 34. 8.75 x 40.05 | 54. 642 x 642 |
| 15. 333.3 x 12.345 | 35. 1661 x 83.38 | 55. 9.86 x 85.43 |
| 16. 64.323 x 5.0055 | 36. 17.6 x 44.889 | 56. .9009 x 31.31 |
| 17. 270.77 x 76.07 | 37. 5.15 x 8080.89 | 57. 603.24 x .2345 |
| 18. 12.005 x 212.404 | 38. 222.044 x 17.71 | 58. 150.10 x 6.808 |
| 19. 751.303 x 4.444 | 39. 56.566 x 32.14 | 59. 4.98 x 4.98 |
| 20. .3207 x 45656 | 40. 20.9 x 4.066 | 60. 3.485 x 655.66 |

Payroll Deductions

Multiply hours worked by hourly rate to find each employee's total earnings. Write answer on answer sheet.

Multiply each employee's total earnings by .20 to find the amount of income tax deduction. Write this amount on answer sheet opposite total earnings.

Add the deductions including income tax for each employee and subtract this total from the employee's total earnings to find the amount paid each employee.

Clock No.	Name	Weekly Hours Worked	Hourly Rate	Total Earnings		DEDUCTIONS					Amount Paid
						Pension Fund	Payroll Advances	Supplies	OAB Tax	Income Tax .20	
501	Ed. Franklin	40	.57½			.18		2.75	.23		
502	J. Winters	38	.52	19	76	.15	5.00		.20	3.95	10 46
503	Geo. Conway	26	.50			.20			.13		
504	F. Gray	40	.51½			.17		2 15	.21		
505	H. Baker	40	.45			.25		1.35	.18		
506	M. Lange	20	.48½			.15	2.00		.10		
507	R. Fields	32	.60			.16		.15	.19		
508	A. Harper	40	.55			.25		.63	.22		
509	B. Busse	26	.48			.15		.72	.12		
510	E. Smith	40	.62½			.20			.25		
511	V. Becker	36	.47½			.22	1.50		.17		
512	L. Andre	34	.57½			.16		5.46	.20		
513	E. Hunter	27	.50			.18	2.75		.14		
514	M. Green	37	.59½			.20		2.00	.22		
515	T. Lane	44	.56			.15			.25		
516	D. Woods	39	.54½			.17		1.00	.21		
517	R. Hester	43	.61½			.18			.26		
518	S. Saunders	40	.53			.20			.21		
519	D. Harris	37	.59			.16	4.75		.22		
520	N. Hutton	39	.56½			.17		2.00	.22		
TOTAL											

Division

Division is the process of finding the number of times one number is contained in another.

Although division is not used as frequently in the average office as addition and multiplication, it is, however, very important and used extensively in statistics of all kinds.

The machine method of division is more simple on the Comptometer than the mental or written process for it consists merely of a series of subtractions and the quotient, or answer figure, is a record of the number of subtractions made.

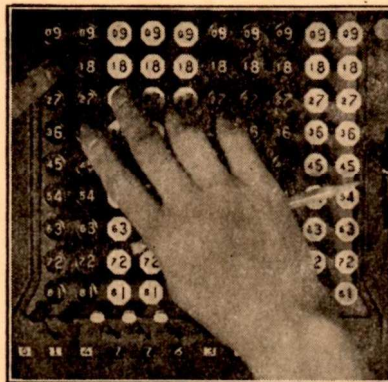
Division on the Comptometer is as simple as any other operation. The underlying principle of division is explained in the following example:

EXAMPLE: $1477.63 \div 133$

Place 147763 (the dividend) into the left side of the Comptometer using large figures.

Pull down the decimal pointer on the machine in the same position as it appears in the written dividend. (1477|63). The divisor (133) contains three whole numbers; that is, it has three figures to the left of its decimal point. Move your finger to the left of the dividend decimal position three places. Pull down the pointer in this position. You have now established the decimal point for your answer. (1|47763).

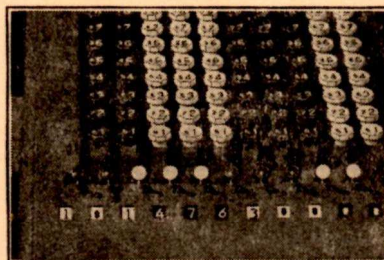
ANSWER DECIMAL



Hold 133 (the divisor) using small figures less one (132) directly over 147. Depress these divisor keys until the amount in the register dials at the base of the columns in which you are holding the divisor is less than 133.

In this example, the remainder is 014, which is less than your divisor, 133.

Move your divisor position, held on the keyboard, one place to the right. You are now holding your divisor over 147 in the register dials.



Remainder is 014.

Depress 132 (divisor figures). Remainder is 014 which is less than your divisor 133.

Move your divisor position, held on keyboard, one place to the right. You are now holding your divisor over 146 in the register dials.

Depress 132 (divisor figures). The remainder is 013 which is less than your divisor, 133.

Move your divisor position, held on keyboard, one place to the right. You are now holding your divisor over 133 in the register dials.

Division—Continued

Depress 132 (divisor figures). The remainder is 000.

Copy your answer — 11.11.

EXAMPLE: $8153.40 \div 254$

Place 815340 (the dividend) into the left side of the Comptometer using large-numbered keys.

Locate your dividend decimal position: 8153|40.
DIVIDEND DECIMAL

Establish your answer decimal point position: 8|15340.
ANSWER DECIMAL

Hold your divisor 254 (using small-figured keys 253) over 815 in the register dials.

Depress 253 (divisor figures) until the remainder in the register dials is less than the divisor, 254. Remainder is 053.

Move your divisor position, held on keyboard, one place to the right over 533 in the register dials.

Repeat depressing and moving until the entire problem is completed.

Answer: 32.10.

Practice Division Problems

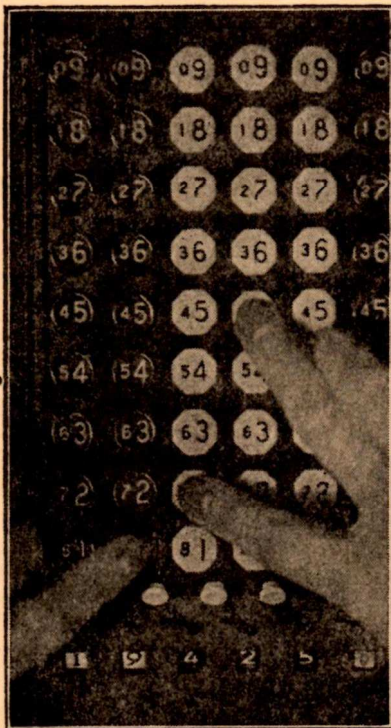
$$4775.38 \div 226 = 21.13$$

$$2326.59 \div 189 = 12.31$$

$$6265.45 \div 145 = 43.21$$

$$95061.75 \div 175 = 543.21$$

$$978879.74 \div 487 = 2010.02$$



Hold the Divisor over 1942 in the Register Dials.

When we have a problem in division such as:

$$194.25 \div 875$$

Put 19425 (the dividend) into the Comptometer.

Establish dividend decimal point.

Point off three places to the left of the dividend decimal position to establish the answer decimal position.

Hold 875 (divisor figures), using small figures 874, over 194. 194 is less than divisor 875.

Move your divisor position, held on keyboard, one place to the right. You are now holding your divisor over 1942 in the register dials.

Division—Continued

This is the only difference in the operation of division you have learned so far.

Depress 874 (divisor figures) as many times as shown by the figure in the register dial at the left of the columns in which you are holding the divisor.

The figure 1 appears to the left of these columns.

Depress 874 (divisor figures) one time. The figure 1 changed to 2.

Depress 874 one more time to equal the figure 2. 192 (remainder figure) is less than 875.

Move your divisor position, held on keyboard, one place to the right.

The number in the register dial at the left of the columns in which you are holding the divisor is 1.

Depress 874 (divisor figures) one time. The figure 1 changed to 2.

Depress 874 (divisor figures) one more time to equal the figure 2. 175 (remainder figure) is less than 875.

Move your divisor position, held on keyboard, one place to the right.

The number in the register dial at the left of the columns in which you are holding the divisor is 1.

Depress 874 (divisor figures) one time.

The number 1 in the register dial at the left of the columns in which you are holding the divisor did not change.

The remainder is 875. Depress 874 (divisor figures) one time.

Answer is .222.

For all practical purposes it is unnecessary to carry division beyond the fourth figure to the right of the decimal point.

Division—Continued

Practice Division Problems

41.778 ÷ 45 = .9284

16.7772 ÷ 44 = .3813

297.364 ÷ 34 = 8.746

1307.68 ÷ 22 = 59.44

2377.2 ÷ 56 = 42.45

- | | |
|-------------------------|-------------------|
| 1. 142.71 ÷ 67 - 213 | 26. 586.38 ÷ 5.8 |
| 2. 189.06 ÷ 23 - 822 | 27. 906.39 ÷ 8.1 |
| 3. 248.85 ÷ 45 - 553 | 28. 3243.00 ÷ 9.2 |
| 4. 1355.47 ÷ 89 - 15.23 | 29. 636.75 ÷ 2.5 |
| 5. 3462.08 ÷ 56 - 61.82 | 30. 3575.68 ÷ 6.4 |
| 6. 177.14 ÷ 34 - 5210 | 31. 2098.27 ÷ 3.7 |
| 7. 7608.12 ÷ 78 | 32. 4624.76 ÷ 8.3 |
| 8. 362.52 ÷ 12 | 33. 981.50 ÷ 6.5 |
| 9. 1838.32 ÷ 22 - 8356 | 34. 817.56 ÷ 3.6 |
| 10. 770.88 ÷ 88 | 35. 313.20 ÷ 8.7 |
| 11. 3072.96 ÷ 66 | 36. 1416.88 ÷ 890 |
| 12. 2537.37 ÷ 99 | 37. 1432.75 ÷ 250 |
| 13. 5646.41 ÷ 77 | 38. 1251.25 ÷ 770 |
| 14. 2437.05 ÷ 55 | 39. 1022.08 ÷ 640 |
| 15. 933.24 ÷ 44 | 40. 4246.25 ÷ 430 |
| 16. 199.21 ÷ 11 | 41. 918.85 ÷ 4.7 |
| 17. 340.23 ÷ 33 | 42. 3010.86 ÷ 86 |
| 18. 444.43 ÷ 98 | 43. 1671.80 ÷ 650 |
| 19. 454.86 ÷ 21 | 44. 3793.11 ÷ 5.9 |
| 20. 1924.25 ÷ 43 | 45. 504.10 ÷ 71 |
| 21. 829.16 ÷ 76 | 46. 4673.76 ÷ 8.4 |
| 22. 1653.87 ÷ 87 | 47. 9783.60 ÷ 9.3 |
| 23. 605.34 ÷ 54 | 48. 184.73 ÷ 70 |
| 24. 1668.55 ÷ 65 | 49. 481.92 ÷ 32 |
| 25. 1104.64 ÷ 32 | 50. 2887.04 ÷ 6.4 |

Multiplication

Left of Keyboard

A little practice will develop the fingers so that different combinations can be easily held with either hand. If necessary to run off the keyboard drop first one finger and then another until all the figures in the multiplicand have been used.

EXAMPLE:

$$32.354 \times 2.2464 = 72.68.$$

METHOD:

Hold the first 2 figures with the left hand in natural position and the remaining 3 figures with the first, second, and third fingers of the right hand.

Hold keyboard factor at left of keyboard and allow columns for preceding ciphers and multiply. Point off for whole numbers.

Show answers to 3 decimal places.

- | | | |
|---------------------|---------------------|----------------------|
| 1. 133.43 x 217.99 | 21. 133 x 88.88 | 41. .764 x 4.35 |
| 2. 41.454 x 303.55 | 22. 305.4 x 1.919 | 42. 1.979 x 9.8 |
| 3. 2213.3 x 10.555 | 23. 5.76 x 4.25 | 43. 3.32 x 3.3131 |
| 4. 123.54 x .0046 | 24. 14.3 x 5.55 | 44. 901.32 x .84 |
| 5. 2341.3 x 10.500 | 25. 4521.2 x 15.45 | 45. .648 x 499 |
| 6. 5.14 x 64.53 | 26. 80.144 x 30.355 | 46. 123.55 x 8.08 |
| 7. 88 x 44.123 | 27. 41.4 x .0414 | 47. 45.43 x 45.43 |
| 8. 16.87 x .0376 | 28. 534.55 x 5.305 | 48. 401.44 x 2.9 |
| 9. 198.9 x 20.4 | 29. 103.65 x 5.043 | 49. 33.344 x .0133 |
| 10. 91.21 x 912.1 | 30. 43.132 x 8.8 | 50. 123.65 x .966 |
| 11. 607.99 x 5.0565 | 31. 214.14 x 33.35 | 51. 64.11 x 9.98 |
| 12. 2.1314 x .00243 | 32. 212.12 x .0878 | 52. 545.4 x 8.088 |
| 13. 10.32 x 10.32 | 33. 321.44 x 6.05 | 53. 145.5 x 1.455 |
| 14. 5.75 x 2.53 | 34. 98.76 x .054 | 54. .320354 x 8.1 |
| 15. 203.55 x 903.06 | 35. 8.97 x 8.97 | 55. 36.6 x 36.6 |
| 16. 536.48 x 76.34 | 36. 430.45 x .666 | 56. 408.09 x 7.17 |
| 17. 657.89 x .03158 | 37. 13.434 x 8.64 | 57. .606 x 34.22 |
| 18. 5.462 x 2.242 | 38. 105.66 x 9.11 | 58. 865.7 x 43.20 |
| 19. 44.232 x 80.18 | 39. 111.33 x 33.122 | 59. 75.90 x 344 |
| 20. 55.42 x 110.22 | 40. 405.5 x 616.1 | 60. 2134.5 x .000355 |

61. What is the cost of a shipment of 1765 tons of coal at \$7.64½ a ton?
62. A broker purchased 1234 shares of stock at \$99½ a share. Find the total cost.
63. On a recent automobile trip, we averaged 307½ miles a day for 13 days. How far did we travel?
64. A speculator bought a house for \$6660. The improvements cost \$2848. He sold it for \$8000. Did he lose or gain and how much?
65. A company owns 10,355 shares of stock worth \$135 a share. What is the total value?

Subtraction

Place item heading each column in machine and subtract the ten items following.

1. 1346.25	2. 635.78	3. 492.65
40.92	7.88	48.15
7.50	63.42	51.10
63.69	17.95	13.71
105.77	95.76	10.95
99.99	8.37	3.49
246.78	1.99	65.50
9.95	57.68	1.00
84.72	4.75	87.90
350.00	5.00	6.45
19.75	30.40	35.89
<u>237537</u> <i>31818</i>	<u>92898</u>	<u>81679</u>

4. 1000.00	5. 841.67	6. 1208.36
25.00	72.95	9.95
10.00	29.07	89.00
5.00	30.00	7.50
105.50	363.49	10.11
30.60	90.00	185.00
250.00	2.50	6.45
50.00	3.75	18.90
265.25	22.60	5.55
82.75	87.50	7.89
75.90	3.86	17.60
<u>190000</u>	<u>154739</u>	<u>155631</u>

7. 2375.05	8. 5356.00	9. 983.42
85.05	1.56	5.92
7.90	243.50	62.50
6.09	96.61	49.85
92.99	555.19	30.47
745.06	2364.93	387.69
3.23	10.10	9.05
64.00	3.15	77.00
908.77	50.00	8.50
50.15	82.75	7.90
90.09	690.95	35.45
<u>442838</u>	<u>1151819</u>	<u>165775</u>

Subtraction—Continued

10. 2960.50	11. 802.55	12. 642.05	13. 1220.33
24.09	87.75	25.05	29.70
835.00	9.00	66.78	22.67
910.10	4.85	30.58	120.44
37.52	100.25	.33	180.81
40.50	3.88	64.32	76.35
4.00	135.05	70.99	13.77
60.00	8.88	120.05	24.98
84.20	9.26	51.30	47.89
7.52	78.90	32.07	6.67
5.60	23.45	4.39	45.92
<u>496903</u> 951.97	<u>126382</u>	<u>110791</u>	<u>178953</u>
14. 445.66	15. 4705.55	16. 623.45	
1.18	448.89	48.65	
7.67	251.04	38.64	
13.13	40.05	86.43	
46.06	83.38	40.65	
1.99	49.90	65.42	
3.03	89.09	6.48	
50.45	317.71	98.65	
24.56	32.14	4.92	
88.89	40.66	43.86	
72.27	20.09	21.09	
<u>75489</u>	<u>607850</u>	<u>107824</u>	
17. 603.24	18. 344.86	19. 486.50	20. 3240.00
48.65	99.79	6.45	310.00
86.43	40.54	43.59	40.50
65.42	6.48	2.90	69.79
68.73	1.86	98.60	246.25
21.86	2.18	13.50	4.34
48.21	19.87	12.25	79.21
9.86	9.43	16.55	94.65
92.47	10.90	2.25	502.09
88.65	8.65	53.10	89.50
1.99	54.32	5.22	405.05

Division Problems

If the divisor keys are depressed once too often, do not clear the register and start over. Hold back the subtraction button at the left of the divisor position and add in the divisor using large figures (not less one), then continue the division.

Show answers to three decimal places. This requires that you carry problem to four decimal places.

- | | | |
|---------------------|--------------------|---------------------|
| 1. \$ 104.53 ÷ 2966 | 26. 34.89 ÷ 89 | 51. \$ 469.83 ÷ 169 |
| 2. 431.77 ÷ 193 | 27. 768.34 ÷ 8972 | 52. 340.02 ÷ 689 |
| 3. 781.42 ÷ 888 | 28. 835.43 ÷ 9783 | 53. 984.36 ÷ 143 |
| 4. 1633.38 ÷ 934 | 29. 5683.48 ÷ 3599 | 54. 640.00 ÷ 999 |
| 5. 5420.01 ÷ 986 | 30. 3981.54 ÷ 319 | 55. 639.00 ÷ 103 |
| 6. 2116.66 ÷ 736 | 31. 785.27 ÷ 123 | 56. 869.00 ÷ 934 |
| 7. 985111.78 ÷ 949 | 32. 5439.76 ÷ 23 | 57. 739.54 ÷ 469 |
| 8. 342.00 ÷ 999 | 33. 48.25 ÷ 345 | 58. 639.45 ÷ 4634 |
| 9. 5520.31 ÷ 103 | 34. 21.98 ÷ 449 | 59. 369.12 ÷ 45 |
| 10. 112.34 ÷ 670 | 35. 378.96 ÷ 297 | 60. 863.00 ÷ 109 |
| 11. 4602.86 ÷ 64 | 36. 614.83 ÷ 788 | 61. 694.00 ÷ 909 |
| 12. 2370.97 ÷ 3469 | 37. 54.34 ÷ 976 | 62. 36.69 ÷ 103 |
| 13. 31.03 ÷ 7198 | 38. 3981.54 ÷ 34 | 63. 9478.20 ÷ 4635 |
| 14. 5375.23 ÷ 5960 | 39. 789.00 ÷ 234 | 64. 972.30 ÷ 849 |
| 15. 857.83 ÷ 9908 | 40. 78.97 ÷ 193 | 65. 469.00 ÷ 869 |
| 16. 956.75 ÷ 9690 | 41. 8756.32 ÷ 123 | 66. 7346.00 ÷ 739 |
| 17. 784.86 ÷ 9307 | 42. 783.48 ÷ 124 | 67. 6394.83 ÷ 669 |
| 18. 527.57 ÷ 4099 | 43. 3004.58 ÷ 424 | 68. 386.94 ÷ 489 |
| 19. 4651.59 ÷ 9000 | 44. 400.78 ÷ 213 | 69. 988.80 ÷ 999 |
| 20. 9264.77 ÷ 9999 | 45. 220.89 ÷ 11 | 70. 63.49 ÷ 63 |
| 21. 9.13 ÷ 99 | 46. 4893.76 ÷ 488 | 71. 6300.49 ÷ 301 |
| 22. 594.56 ÷ 84 | 47. 739.76 ÷ 881 | 72. 647.98 ÷ 606 |
| 23. 927.97 ÷ 997 | 48. 9978.63 ÷ 596 | 73. 4968.00 ÷ 4963 |
| 24. 9.68 ÷ 999 | 49. 9139.83 ÷ 2445 | 74. 7390.00 ÷ 6394 |
| 25. 8.68 ÷ 9099 | 50. 347.89 ÷ 5876 | 75. 6397.46 ÷ 8887 |

DECIMAL POINT:

If divisor is a decimal and contains preceding ciphers (.075) move dividend decimal point one place to the right for each preceding cipher. Then hold actual figures of divisor in regular position and divide.

- | | |
|---------------------|---------------------|
| 76. \$547.25 ÷ .082 | 81. \$947.66 ÷ .005 |
| 77. 565.32 ÷ .053 | 82. 245.75 ÷ .0063 |
| 78. 64.31 ÷ .075 | 83. 4.50 ÷ .0045 |
| 79. 56.89 ÷ .037 | 84. 375.50 ÷ .0075 |
| 80. 782.63 ÷ .056 | 85. 864.21 ÷ .0033 |

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Division

Division Simplification

As a result of many years of experience, it has been found, for practical purposes, that answers in division problems carried out to three decimal places will in most cases serve equally well as if the answers were carried out to an indefinite degree.

The operation of division on the Comptometer may be made even more simple and faster by the use of color separations when placing the dividend into the keyboard.

The following example will serve to illustrate this point:

$$8752.96 \div 124.25$$

By inspection we know that the dividend decimal point must be moved three places to the left because of the three digits to the left of the decimal point in the divisor. By placing the dividend into the Comptometer so that the figure 8 comes to the left of the fifth or eighth decimal position and the remaining figures in the dividend to the right of this same decimal point, we automatically establish the decimal point of the answer.

$$8.75296$$

Using the color separation scheme in placing the dividend into the Comptometer with the answer decimal point already established, automatically establishes the position of the decimal point in the answer and the stopping point.

In working or in solving the following problems use the color separation scheme in placing the dividend into the keyboard of decimal point number 5 or 8.

Do not work the problems beyond the **fourth decimal figure** of the answer.

In short cutting work of this sort, it is **always** necessary to establish one more figure of the decimal than answer places required.

Show answers to the following problems to **only** three decimal places. EXAMPLE: 2.537.

Division—Continued

1. \$ 6865.00 ÷ 85	26. \$ 87.96 ÷ 86.4	51. \$ 3863.42 ÷ 6.6
2. 23.43 ÷ 89	27. 342.81 ÷ 45.69	52. 264.84 ÷ 7.5
3. 95.56 ÷ 9.7	28. 134.56 ÷ 8644	53. 986.43 ÷ 96.5
4. 3646.00 ÷ 7.5	29. 8643.95 ÷ 784	54. 6432.81 ÷ 83.2
5. 15.48 ÷ 6.6	30. 643.28 ÷ 964	55. 3896.48 ÷ 640
6. \$ 36.49 ÷ 39	31. \$ 8643.98 ÷ 38	56. \$ 7264.73 ÷ 998
7. 46.05 ÷ 90	32. 986.43 ÷ 87.76	57. 84.94 ÷ 643
8. 32.56 ÷ 59	33. 654.38 ÷ 3648	58. 6432.81 ÷ 7643
9. 265.74 ÷ 92	34. 25869.00 ÷ 34.05	59. 643.25 ÷ 8888
10. 89.89 ÷ 99	35. 54.36 ÷ 6743	60. 86.43 ÷ 645
11. \$ 49.39 ÷ 50	36. \$ 34.98 ÷ 2989	61. \$ 6543.21 ÷ 7977
12. 4679.00 ÷ 70	37. 4564.32 ÷ 226.5	62. 8643.00 ÷ 164.2
13. 86490.00 ÷ 91	38. 3.54 ÷ 432	63. 6432.81 ÷ 760
14. 365.41 ÷ 49	39. 65.42 ÷ 9876	64. 9864.32 ÷ 385
15. 7809.00 ÷ 90	40. 289.6 ÷ 88.73	65. 65438.67 ÷ 86.4
16. \$ 165.52 ÷ .39	41. \$ 864.35 ÷ 54.32	66. \$ 4543.98 ÷ 9432
17. 224.18 ÷ 47	42. 86.43 ÷ 9.86	67. 6543.81 ÷ 86
18. 15.40 ÷ 40	43. 281.65 ÷ 45.44	68. 96435.00 ÷ 95
19. 17.53 ÷ 8.5	44. 642.18 ÷ 76.43	69. 8.64 ÷ 90
20. 264.74 ÷ 2.7	45. 5432.98 ÷ 981	70. 3364.00 ÷ 7642
21. \$ 36.59 ÷ 3.9	46. \$ 4321.00 ÷ 8645	71. \$ 9.43 ÷ 6665
22. 123.45 ÷ 1.9	47. 7.64 ÷ 9432	72. 134.56 ÷ 45.68
23. 47.89 ÷ 50	48. 12.35 ÷ 6625	73. 65.78 ÷ 928
24. 26.78 ÷ 31	49. 3452.86 ÷ 642	74. 6432.98 ÷ 876
25. 5434.00 ÷ 60	50. 76.48 ÷ 94	75. 6454.98 ÷ 9831

The Course in
COMPTOMETRY

SECTION I

Business Calculations 1 to 14

Review Test I

Time Allowed for Test, 40 Minutes

Should finish on 13th day
Should add 66 Columns (3 Figs.)

● *This course prepared for
exclusive use in
COMPTOMETER SCHOOLS
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COMPTOMETER DIVISION
FELT & TARRANT MFG. COMPANY*

Review Test I

This Test Follows Business Calculation 14

See Instructor for test sheets. A few minutes will be allowed to look over the questions and to fill in blanks, showing name, date, days in school and time started. Write plainly.

You are to write the answers to the problems in the blank spaces provided. Instructor will state maximum time allowed on each test. All Review Test papers will be retained by the Instructor. The grades will be averaged and figured as a part of the Final Rating.