

[2018-04-30]

Addition of Whole Numbers

	a	b	c	d	e	f	g	h	i
I.	7	5	4	1	2	6	2	5	3
	4	8	4	6	4	3	8	4	5
	8	3	5	9	9	7	9	5	8
	6	6	7	4	5	5	2	8	7
	5	7	1	3	8	8	7	3	9
	<u>2</u>	<u>9</u>	<u>8</u>	<u>8</u>	<u>3</u>	<u>9</u>	<u>6</u>	<u>9</u>	<u>4</u>

	a	b	c	d	e	f	g
II.	76	47	53	69	76	84	46
	53	57	68	24	42	13	57
	29	26	95	86	14	68	69
	47	83	79	75	75	33	81
	58	95	17	94	72	99	57
	<u>82</u>	<u>69</u>	<u>37</u>	<u>67</u>	<u>23</u>	<u>47</u>	<u>71</u>

	a	b	c	d	e	f	g
III.	692	825	928	589	165	826	929
	124	707	339	718	928	473	382
	677	664	566	519	850	817	257
	468	441	663	378	693	525	982
	889	598	205	342	677	488	123
	<u>516</u>	<u>816</u>	<u>394</u>	<u>536</u>	<u>921</u>	<u>651</u>	<u>610</u>

	a	b	c	d	e	f
IV.	716	92	29	574	980	269
	36	996	37	968	4594	158
	558	647	604	27	658	32
	963	550	197	446	72	95
	96	37	669	75	3739	9431
	<u>118</u>	<u>834</u>	<u>34</u>	<u>519</u>	<u>1454</u>	<u>3896</u>

Answers to Addition of Whole Numbers

I. a. 32, b. 38, c. 29, d. 31, e. 31, f. 38, g. 34, h. 34, i. 36.

II. a. 345, b. 377, c. 349, d. 415, e. 302, f. 344, g. 381.

III. a. 3366, b. 4051, c. 3095, d. 3032, e. 4234, f. 3780, g. 3283.

IV. a. 2487, b. 3156, c. 1570, d. 2609, e. 11,497, f. 13,881.

Subtraction of Whole Numbers

	a	b	c	d	e	f
I. 1.	$\begin{array}{r} 932 \\ 418 \\ \hline \end{array}$	$\begin{array}{r} 673 \\ 135 \\ \hline \end{array}$	$\begin{array}{r} 871 \\ 456 \\ \hline \end{array}$	$\begin{array}{r} 940 \\ 238 \\ \hline \end{array}$	$\begin{array}{r} 794 \\ 159 \\ \hline \end{array}$	$\begin{array}{r} 785 \\ 578 \\ \hline \end{array}$
2.	$\begin{array}{r} 724 \\ 252 \\ \hline \end{array}$	$\begin{array}{r} 607 \\ 134 \\ \hline \end{array}$	$\begin{array}{r} 727 \\ 466 \\ \hline \end{array}$	$\begin{array}{r} 648 \\ 561 \\ \hline \end{array}$	$\begin{array}{r} 934 \\ 773 \\ \hline \end{array}$	$\begin{array}{r} 819 \\ 293 \\ \hline \end{array}$
II. 1.	$\begin{array}{r} 633 \\ 246 \\ \hline \end{array}$	$\begin{array}{r} 966 \\ 278 \\ \hline \end{array}$	$\begin{array}{r} 442 \\ 299 \\ \hline \end{array}$	$\begin{array}{r} 960 \\ 694 \\ \hline \end{array}$	$\begin{array}{r} 688 \\ 389 \\ \hline \end{array}$	$\begin{array}{r} 4526 \\ 1879 \\ \hline \end{array}$
2.	$\begin{array}{r} 855 \\ 376 \\ \hline \end{array}$	$\begin{array}{r} 512 \\ 163 \\ \hline \end{array}$	$\begin{array}{r} 546 \\ 487 \\ \hline \end{array}$	$\begin{array}{r} 324 \\ 235 \\ \hline \end{array}$	$\begin{array}{r} 223 \\ 154 \\ \hline \end{array}$	$\begin{array}{r} 9311 \\ 8752 \\ \hline \end{array}$
III. 1.	$\begin{array}{r} 706 \\ 397 \\ \hline \end{array}$	$\begin{array}{r} 805 \\ 418 \\ \hline \end{array}$	$\begin{array}{r} 607 \\ 169 \\ \hline \end{array}$	$\begin{array}{r} 208 \\ 189 \\ \hline \end{array}$	$\begin{array}{r} 905 \\ 306 \\ \hline \end{array}$	$\begin{array}{r} 8003 \\ 2719 \\ \hline \end{array}$
2.	$\begin{array}{r} 715 \\ 207 \\ \hline \end{array}$	$\begin{array}{r} 300 \\ 226 \\ \hline \end{array}$	$\begin{array}{r} 922 \\ 508 \\ \hline \end{array}$	$\begin{array}{r} 905 \\ 646 \\ \hline \end{array}$	$\begin{array}{r} 805 \\ 579 \\ \hline \end{array}$	$\begin{array}{r} 5006 \\ 4038 \\ \hline \end{array}$
IV. 1.	$\begin{array}{r} 7238 \\ 457 \\ \hline \end{array}$	$\begin{array}{r} 4213 \\ 388 \\ \hline \end{array}$	$\begin{array}{r} 2622 \\ 23 \\ \hline \end{array}$	$\begin{array}{r} 9152 \\ 504 \\ \hline \end{array}$	$\begin{array}{r} 75,022 \\ 3,886 \\ \hline \end{array}$	
2.	$\begin{array}{r} 2920 \\ 467 \\ \hline \end{array}$	$\begin{array}{r} 2093 \\ 97 \\ \hline \end{array}$	$\begin{array}{r} 6090 \\ 389 \\ \hline \end{array}$	$\begin{array}{r} 4035 \\ 157 \\ \hline \end{array}$	$\begin{array}{r} 27,755 \\ 858 \\ \hline \end{array}$	

Answers to Subtraction of Whole Numbers

- I. 1. a. 514, b. 538, c. 415, d. 702, e. 635, f. 207. 2. a. 472, b. 473, c. 261, d. 87, e. 161, f. 526.
- II. 1. a. 387, b. 688, c. 143, d. 266, e. 299, f. 2647. 2. a. 479, b. 349, c. 59, d. 89, e. 69, f. 559.
- III. 1. a. 309, b. 387, c. 438, d. 19, e. 599, f. 5284. 2. a. 508, b. 74, c. 414, d. 259, e. 226, f. 968.
- IV. 1. a. 6781, b. 3825, c. 2599, d. 8648, e. 71,136. 2. a. 2453, b. 1996, c. 5701, d. 3878, e. 26,897.

Multiplication of Whole Numbers

	a	b	c	d	e	f
I. 1.	548 <u>6</u>	729 <u>3</u>	654 <u>7</u>	397 <u>8</u>	850 <u>9</u>	7491 <u>9</u>
2.	738 <u>5</u>	961 <u>4</u>	379 <u>6</u>	258 <u>4</u>	608 <u>8</u>	6312 <u>9</u>

II. 1.	38 <u>27</u>	54 <u>39</u>	897 <u>16</u>	361 <u>91</u>	405 <u>82</u>	4250 <u>35</u>
2.	61 <u>46</u>	705 <u>74</u>	358 <u>28</u>	943 <u>64</u>	269 <u>57</u>	5162 <u>68</u>

III. 1.	327 <u>408</u>	539 <u>108</u>	627 <u>602</u>	830 <u>407</u>	6301 <u>105</u>
2.	289 <u>403</u>	965 <u>206</u>	476 <u>507</u>	640 <u>207</u>	6871 <u>409</u>

IV. 1.	396 <u>270</u>	851 <u>190</u>	406 <u>280</u>	340 <u>260</u>	7300 <u>490</u>
2.	814 <u>760</u>	820 <u>280</u>	709 <u>650</u>	940 <u>830</u>	2700 <u>600</u>

Answers to Multiplication of Whole Numbers

I. 1. a. 3288, b. 2187, c. 4578, d. 3176, e. 7650, f. 67,419. 2. a. 3690, b. 3844, c. 2274, d. 1032, e. 4864, f. 56,808.

II. 1. a. 1026, b. 2106, c. 14,352, d. 32,851, e. 33,210, f. 148,750. 2. a. 2806, b. 52,170, c. 10,024, d. 60,352, e. 15,333, f. 351,016.

III. 1. a. 133,416, b. 58,212, c. 377,454, d. 337,810, e. 661,605. 2. a. 116,467, b. 198,790, c. 241,332, d. 132,480, e. 2,810,239.

IV. 1. a. 106,920, b. 161,690, c. 113,680, d. 88,400, e. 3,577,000. 2. a. 618,640, b. 229,600, c. 460,850, d. 780,200, e. 1,620,000.

Division by One-Place Divisors and by Easy Two-Place Divisors

	a	b	c	d	e
I. 1.	$4\overline{)7352}$	$5\overline{)9275}$	$8\overline{)3657}$	$9\overline{)4978}$	$7\overline{)1885}$

2.	$6\overline{)8895}$	$3\overline{)8394}$	$2\overline{)9379}$	$7\overline{)5974}$	$9\overline{)8759}$
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	a	b	c	d	e
II. 1.	$3\overline{)2851}$	$5\overline{)1704}$	$4\overline{)1440}$	$6\overline{)7819}$	$8\overline{)9635}$

2.	$7\overline{)3850}$	$9\overline{)1445}$	$6\overline{)5100}$	$8\overline{)2725}$	$2\overline{)7411}$
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	a	b	c	d	e
III. 1.	$9\overline{)2312}$	$6\overline{)2212}$	$7\overline{)5501}$	$4\overline{)1103}$	$8\overline{)3013}$

2.	$6\overline{)1120}$	$9\overline{)3131}$	$8\overline{)6118}$	$9\overline{)2417}$	$7\overline{)12,163}$
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	a	b	c	d
IV. 1.	$20\overline{)7660}$	$40\overline{)3320}$	$50\overline{)29,735}$	$30\overline{)14,287}$

2.	$60\overline{)97,325}$	$80\overline{)36,809}$	$90\overline{)42,371}$	$70\overline{)58,320}$
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**Answers to Division by One-Place Divisors and by Easy
Two-Place Divisors**

- I. 1. a. 1838, b. 1855, c. 457r1, d. 553r1, e. 269r2. 2. a. 1482r3,
b. 2798, c. 4689r1, d. 853r3, e. 973r2.
II. 1. a. 950r1, b. 340r4, c. 360, d. 1303r1, e. 1204r3. 2. a. 550,
b. 160r5, c. 850, d. 340r5, e. 3705r1.
III. 1. a. 256r8, b. 368r4, c. 785r6, d. 275r3, e. 376r5. 2. a. 186r4,
b. 347r8, c. 764r6, d. 268r5, e. 1737r4.
IV. 1. a. 383, b. 83, c. 594r35, d. 476r7. 2. a. 1622r5, b. 460r9,
c. 470r71, d. 833r10.

Division with Two- or More-Place Divisors

	a	b	c	d
I. 1.	$21 \overline{)672}$	$32 \overline{)745}$	$53 \overline{)9699}$	$75 \overline{)1764}$
2.	$36 \overline{)1476}$	$94 \overline{)8765}$	$86 \overline{)6225}$	$64 \overline{)3339}$
3.	$23 \overline{)2145}$	$55 \overline{)2834}$	$77 \overline{)7128}$	$96 \overline{)3130}$
4.	$31 \overline{)1427}$	$42 \overline{)1819}$	$54 \overline{)5088}$	$85 \overline{)7145}$
II. 1.	$43 \overline{)1316}$	$25 \overline{)5025}$	$32 \overline{)9710}$	$54 \overline{)2160}$
2.	$51 \overline{)4612}$	$33 \overline{)2342}$	$58 \overline{)5232}$	$67 \overline{)63,650}$
3.	$93 \overline{)3745}$	$45 \overline{)13,950}$	$76 \overline{)15,435}$	$22 \overline{)45,331}$
4.	$83 \overline{)17,295}$	$24 \overline{)9851}$	$35 \overline{)17,647}$	$96 \overline{)88,337}$
III. 1.	$24 \overline{)8237}$	$37 \overline{)1276}$	$48 \overline{)1372}$	$56 \overline{)2742}$
2.	$77 \overline{)4429}$	$25 \overline{)11,236}$	$36 \overline{)1729}$	$68 \overline{)19,258}$
3.	$97 \overline{)28,704}$	$46 \overline{)30,125}$	$14 \overline{)4327}$	$38 \overline{)3275}$
4.	$65 \overline{)36,402}$	$27 \overline{)22,128}$	$58 \overline{)3346}$	$96 \overline{)64,321}$
IV. 1.	$27 \overline{)1296}$	$38 \overline{)2825}$	$48 \overline{)3275}$	$36 \overline{)2438}$
2.	$26 \overline{)1695}$	$47 \overline{)36,025}$	$29 \overline{)9437}$	$16 \overline{)3793}$

	a	b	c	d
	3. $18\overline{)9236}$	16 $\overline{)9123}$	49 $\overline{)2815}$	28 $\overline{)12,641}$
	4. $13\overline{)8271}$	15 $\overline{)8896}$	26 $\overline{)1483}$	36 $\overline{)27,125}$
V.	1. $216\overline{)7436}$	324 $\overline{)8751}$	934 $\overline{)38,526}$	425 $\overline{)18,337}$
	2. $534\overline{)9276}$	116 $\overline{)47,096}$	736 $\overline{)25,935}$	560 $\overline{)34,412}$
	3. $633\overline{)9576}$	235 $\overline{)24,440}$	231 $\overline{)78,547}$	436 $\overline{)23,545}$
	4. $742\overline{)9661}$	842 $\overline{)58,965}$	305 $\overline{)19,561}$	108 $\overline{)65,232}$
VI.	1. $365\overline{)9275}$	481 $\overline{)22,563}$	576 $\overline{)31,149}$	673 $\overline{)42,180}$
	2. $165\overline{)7234}$	180 $\overline{)9436}$	375 $\overline{)26,532}$	372 $\overline{)76,634}$
	3. $278\overline{)8436}$	165 $\overline{)10,250}$	763 $\overline{)36,480}$	581 $\overline{)43,476}$
	4. $246\overline{)9357}$	490 $\overline{)33,468}$	357 $\overline{)20,450}$	850 $\overline{)66,300}$

Answers to Division with Two- or More-Place Divisors

- I. 1. a. 32, b. 23r9, c. 183, d. 23r39. 2. a. 41, b. 93r23, c. 72r33, d. 52r11. 3. a. 93r6, b. 51r29, c. 92r44, d. 32r58. 4. a. 46r1, b. 43r13, c. 94r12, d. 84r5.
- II. 1. a. 30r26, b. 201, c. 303r14, d. 40. 2. a. 90r22, b. 70r32, c. 90r12, d. 950. 3. a. 40r25, b. 310, c. 203r7, d. 2060r11. 4. a. 208r31, b. 410r11, c. 504r7, d. 920r17.
- III. 1. a. 343r5, b. 34r18, c. 28r28, d. 48r54. 2. a. 57r40, b. 449r11, c. 48r1, d. 283r14. 3. a. 295r89, b. 654r41, c. 309r1, d. 86r7. 4. a. 560r2, b. 819r15, c. 57r40, d. 670r1.
- IV. 1. a. 48, b. 74r13, c. 68r11, d. 67r26. 2. a. 65r5, b. 766r23, c. 325r12, d. 237r1. 3. a. 513r2, b. 570r3, c. 57r22, d. 451r13. 4. a. 636r3, b. 593r1, c. 57r1, d. 753r17.
- V. 1. a. 34r92, b. 27r3, c. 41r232, d. 43r62. 2. a. 17r198, b. 406, c. 35r175, d. 61r252. 3. a. 15r81, b. 104, c. 340r7, d. 54r1. 4. a. 13r15, b. 70r25, c. 64r41, d. 604.
- VI. 1. a. 25r150, b. 46r437, c. 54r45, d. 62r454. 2. a. 43r139, b. 52r76, c. 70r282, d. 206r2. 3. a. 30r96, b. 62r20, c. 47r619, d. 74r482. 4. a. 38r9, b. 68r148, c. 57r101, d. 78.

Addition of Fractions

	a	b	c	d	e	f	
I.	1.	$\frac{3}{7}$ <u> 2</u> $\frac{5}{7}$	$\frac{4}{9}$ <u> 7</u> $\frac{11}{9}$	$\frac{3}{4}$ <u> 4</u> $\frac{7}{4}$	$2\frac{1}{3}$ <u> 4</u> $4\frac{1}{3}$	$6\frac{3}{5}$ <u> 9</u> $9\frac{4}{5}$	$\frac{5}{6}$ <u> 4</u> $4\frac{2}{6}$
	2.	$\frac{7}{10}$ <u> 4</u> $\frac{11}{10}$	$\frac{6}{8}$ <u> 7</u> $\frac{13}{8}$	$\frac{5}{9}$ <u> 8</u> $\frac{13}{9}$	$2\frac{3}{4}$ <u> 6</u> $6\frac{2}{4}$	$4\frac{6}{7}$ <u> 3</u> $3\frac{5}{7}$	$6\frac{7}{8}$ <u> 4</u> $\frac{11}{8}$
II.	1.	$\frac{3}{8}$ <u> 1</u> $\frac{4}{8}$	$\frac{7}{12}$ <u> 11</u> $\frac{18}{12}$	$\frac{9}{16}$ <u> 13</u> $\frac{22}{16}$	$2\frac{3}{4}$ <u> 6</u> $6\frac{1}{4}$	$\frac{5}{8}$ <u> 9</u> $9\frac{7}{8}$	$12\frac{7}{10}$ <u> 7</u> $7\frac{3}{10}$
	2.	$\frac{5}{6}$ <u> 5</u> $\frac{10}{6}$	$\frac{7}{16}$ <u> 15</u> $\frac{22}{16}$	$\frac{7}{12}$ <u> 1</u> $\frac{8}{12}$	$8\frac{3}{8}$ <u> 5</u> $5\frac{7}{8}$	$2\frac{11}{16}$ <u> 7</u> $7\frac{9}{16}$	$\frac{7}{9}$ <u> 4</u> $\frac{11}{9}$
III.	1.	$\frac{1}{2}$ <u> 3</u> $\frac{4}{2}$	$\frac{5}{6}$ <u> 1</u> $\frac{6}{6}$	$\frac{11}{12}$ <u> 1</u> $\frac{12}{12}$	$9\frac{5}{8}$ <u> 6</u> $6\frac{3}{4}$	$7\frac{2}{3}$ <u> 8</u> $8\frac{1}{6}$	$7\frac{3}{4}$ <u> 1</u> $\frac{8}{4}$
	2.	$\frac{5}{9}$ <u> 2</u> $\frac{7}{9}$	$\frac{9}{10}$ <u> 1</u> $\frac{10}{10}$	$\frac{9}{16}$ <u> 3</u> $\frac{12}{16}$	$8\frac{1}{3}$ <u> 5</u> $5\frac{1}{12}$	$6\frac{3}{4}$ <u> 7</u> $7\frac{3}{8}$	$\frac{15}{16}$ <u> 5</u> $\frac{20}{16}$
IV.	1.	$\frac{1}{2}$ <u> 5</u> $\frac{6}{2}$	$\frac{7}{12}$ <u> 2</u> $\frac{9}{12}$	$\frac{5}{6}$ <u> 2</u> $\frac{7}{6}$	$7\frac{7}{10}$ <u> 6</u> $6\frac{1}{2}$	$9\frac{3}{4}$ <u> 7</u> $7\frac{1}{12}$	$6\frac{5}{6}$ <u> 9</u> $\frac{15}{6}$
	2.	$\frac{3}{4}$ <u> 11</u> $\frac{14}{4}$	$\frac{5}{6}$ <u> 11</u> $\frac{16}{6}$	$\frac{3}{5}$ <u> 9</u> $\frac{12}{5}$	$6\frac{2}{3}$ <u> 8</u> $8\frac{1}{12}$	$5\frac{1}{4}$ <u> 9</u> $\frac{13}{4}$	$11\frac{2}{3}$ <u> 7</u> $\frac{15}{3}$
V.	1.	$\frac{1}{2}$ <u> 2</u> $\frac{3}{2}$	$\frac{3}{4}$ <u> 2</u> $\frac{5}{4}$	$\frac{1}{8}$ <u> 2</u> $\frac{3}{8}$	$5\frac{7}{8}$ <u> 6</u> $6\frac{1}{3}$	$9\frac{1}{4}$ <u> 4</u> $4\frac{2}{3}$	$7\frac{3}{4}$ <u> 5</u> $\frac{12}{4}$
	2.	$\frac{3}{8}$ <u> 1</u> $\frac{4}{8}$	$\frac{5}{6}$ <u> 4</u> $\frac{11}{6}$	$\frac{7}{10}$ <u> 3</u> $\frac{10}{10}$	$8\frac{1}{6}$ <u> 5</u> $5\frac{3}{4}$	$1\frac{3}{4}$ <u> 2</u> $\frac{5}{4}$	$16\frac{1}{2}$ <u> 9</u> $\frac{31}{2}$
VI.	1.	$\frac{3}{4}$ <u> 1</u> $\frac{4}{4}$	$\frac{5}{6}$ <u> 7</u> $\frac{12}{6}$	$\frac{9}{16}$ <u> 3</u> $\frac{12}{16}$	$6\frac{2}{3}$ <u> 4</u> $4\frac{1}{2}$	$8\frac{5}{6}$ <u> 3</u> $3\frac{1}{2}$	$7\frac{5}{8}$ <u> 9</u> $\frac{16}{8}$
	2.	$\frac{1}{2}$ <u> 2</u> $\frac{3}{2}$	$\frac{11}{12}$ <u> 3</u> $\frac{14}{12}$	$\frac{7}{9}$ <u> 2</u> $\frac{9}{9}$	$7\frac{5}{8}$ <u> 9</u> $9\frac{3}{4}$	$6\frac{3}{8}$ <u> 7</u> $7\frac{3}{4}$	$9\frac{7}{16}$ <u> 4</u> $\frac{13}{4}$
		$\frac{3}{4}$ <u> 5</u> $\frac{7}{4}$	$\frac{5}{6}$ <u> 8</u> $\frac{13}{6}$	$\frac{1}{6}$ <u> 1</u> $\frac{2}{6}$	$4\frac{1}{2}$ <u> 2</u> $6\frac{1}{2}$	$\frac{2}{3}$ <u> 7</u> $7\frac{1}{3}$	$7\frac{1}{2}$ <u> 1</u> $8\frac{1}{2}$

Answers to Addition of Fractions

- I. 1. a. $\frac{5}{7}$, b. $1\frac{2}{3}$, c. $1\frac{1}{4}$, d. $6\frac{2}{3}$, e. $16\frac{2}{3}$, f. $5\frac{1}{8}$. 2. a. $1\frac{1}{10}$, b. $1\frac{5}{8}$, c. $1\frac{1}{9}$, d. $9\frac{1}{4}$, e. $8\frac{4}{7}$, f. $7\frac{3}{8}$.
- II. 1. a. $\frac{1}{2}$, b. $1\frac{1}{2}$, c. $1\frac{3}{8}$, d. 9, e. $10\frac{1}{2}$, f. 20. 2. a. $1\frac{2}{3}$, b. $1\frac{3}{8}$, c. $\frac{2}{3}$, d. $14\frac{1}{4}$, e. $10\frac{1}{4}$, f. $5\frac{1}{3}$.
- III. 1. a. $\frac{7}{8}$, b. $1\frac{1}{8}$, c. $1\frac{1}{12}$, d. $16\frac{3}{8}$, e. $15\frac{5}{8}$, f. $7\frac{7}{8}$. 2. a. $1\frac{2}{9}$, b. $1\frac{1}{10}$, c. $1\frac{1}{12}$, d. $13\frac{5}{12}$, e. $14\frac{1}{3}$, f. $6\frac{11}{18}$.
- IV. 1. a. $1\frac{1}{3}$, b. $1\frac{1}{4}$, c. $1\frac{1}{2}$, d. $14\frac{2}{3}$, e. $10\frac{1}{3}$, f. $16\frac{1}{4}$. 2. a. $1\frac{2}{3}$, b. $1\frac{1}{4}$, c. $1\frac{1}{2}$, d. $14\frac{3}{4}$, e. $5\frac{7}{10}$, f. $19\frac{1}{2}$.
- V. 1. a. $\frac{9}{10}$, b. $1\frac{5}{12}$, c. $\frac{19}{24}$, d. $12\frac{5}{24}$, e. $13\frac{11}{12}$, f. $8\frac{7}{12}$. 2. a. $\frac{13}{24}$, b. $1\frac{5}{18}$, c. $1\frac{9}{20}$, d. $13\frac{11}{12}$, e. $2\frac{5}{12}$, f. $26\frac{3}{10}$.
- VI. 1. a. $2\frac{1}{8}$, b. $2\frac{2}{8}$, c. $1\frac{7}{16}$, d. $21\frac{1}{12}$, e. $22\frac{1}{12}$, f. $16\frac{15}{16}$. 2. a. $11\frac{1}{12}$, b. $2\frac{1}{8}$, c. $11\frac{1}{18}$, d. $21\frac{7}{8}$, e. $14\frac{19}{24}$, f. $21\frac{5}{16}$.

Subtraction of Fractions

	a	b	c	d	e	f
I. 1.	$\frac{4}{5}$ <u>$\frac{3}{5}$</u>	$\frac{5}{6}$ <u>$\frac{1}{6}$</u>	$\frac{7}{8}$ <u>$\frac{5}{8}$</u>	$12\frac{2}{3}$ <u>$4\frac{1}{3}$</u>	$9\frac{5}{8}$ <u>$8\frac{5}{8}$</u>	$9\frac{7}{12}$ <u>$6\frac{1}{12}$</u>
2.	$\frac{7}{9}$ <u>$\frac{5}{9}$</u>	$\frac{15}{16}$ <u>$\frac{11}{16}$</u>	$\frac{9}{10}$ <u>$\frac{7}{10}$</u>	$6\frac{3}{4}$ <u>$\frac{3}{4}$</u>	$4\frac{5}{8}$ <u>$\frac{3}{8}$</u>	$16\frac{4}{5}$ <u>$7\frac{3}{5}$</u>
II. 1.	$\frac{3}{4}$ <u>$\frac{7}{12}$</u>	$\frac{1}{2}$ <u>$\frac{3}{10}$</u>	$\frac{9}{16}$ <u>$\frac{1}{4}$</u>	$12\frac{7}{8}$ <u>$6\frac{1}{2}$</u>	$8\frac{2}{3}$ <u>$4\frac{1}{6}$</u>	$6\frac{3}{4}$ <u>$\frac{7}{12}$</u>
2.	$\frac{3}{5}$ <u>$\frac{3}{10}$</u>	$\frac{15}{16}$ <u>$\frac{7}{8}$</u>	$\frac{11}{12}$ <u>$\frac{2}{3}$</u>	$9\frac{3}{4}$ <u>$2\frac{5}{8}$</u>	$5\frac{3}{4}$ <u>$\frac{5}{16}$</u>	$8\frac{2}{3}$ <u>$8\frac{5}{9}$</u>
III. 1.	$\frac{2}{3}$ <u>$\frac{1}{5}$</u>	$\frac{1}{2}$ <u>$\frac{1}{3}$</u>	$\frac{2}{3}$ <u>$\frac{1}{4}$</u>	$6\frac{5}{8}$ <u>$2\frac{1}{3}$</u>	$9\frac{3}{4}$ <u>$7\frac{2}{3}$</u>	$1\frac{7}{8}$ <u>$\frac{2}{3}$</u>
2.	$\frac{5}{6}$ <u>$\frac{3}{4}$</u>	$\frac{5}{6}$ <u>$\frac{3}{8}$</u>	$\frac{2}{3}$ <u>$\frac{2}{5}$</u>	$8\frac{3}{4}$ <u>$1\frac{1}{6}$</u>	$4\frac{5}{6}$ <u>$\frac{3}{8}$</u>	$6\frac{1}{2}$ <u>$\frac{2}{5}$</u>

Subtraction of Fractions—Continued

	a	b	c	d	e	f
IV. 1.	5 <u>2 $\frac{3}{4}$</u>	9 <u>1 $\frac{1}{6}$</u>	8 <u>7 $\frac{1}{4}$</u>	1 <u>$\frac{7}{9}$</u>	11 <u>8 $\frac{2}{3}$</u>	16 <u>7 $\frac{4}{5}$</u>
2.	1 <u>$\frac{4}{9}$</u>	3 <u>2 $\frac{2}{4}$</u>	13 <u>6 $\frac{5}{8}$</u>	8 <u>7 $\frac{5}{6}$</u>	14 <u>5 $\frac{3}{8}$</u>	17 <u>9 $\frac{3}{4}$</u>
V. 1.	7 $\frac{1}{4}$ <u>3 $\frac{3}{4}$</u>	5 $\frac{1}{8}$ <u>4 $\frac{7}{8}$</u>	6 $\frac{4}{9}$ <u>5 $\frac{7}{9}$</u>	1 $\frac{1}{8}$ <u>$\frac{3}{8}$</u>	9 $\frac{1}{3}$ <u>$\frac{2}{3}$</u>	6 $\frac{2}{5}$ <u>$\frac{3}{5}$</u>
2.	1 $\frac{1}{12}$ <u>$\frac{7}{12}$</u>	9 $\frac{1}{4}$ <u>8 $\frac{3}{4}$</u>	7 $\frac{1}{6}$ <u>4 $\frac{5}{6}$</u>	8 $\frac{1}{5}$ <u>$\frac{4}{5}$</u>	10 $\frac{1}{9}$ <u>$\frac{7}{9}$</u>	14 $\frac{2}{7}$ <u>6 $\frac{5}{7}$</u>
VI. 1.	2 $\frac{1}{2}$ <u>1 $\frac{3}{4}$</u>	5 $\frac{1}{4}$ <u>4 $\frac{3}{8}$</u>	9 $\frac{1}{3}$ <u>$\frac{5}{6}$</u>	6 $\frac{1}{2}$ <u>$\frac{7}{12}$</u>	10 $\frac{2}{3}$ <u>1 $\frac{7}{9}$</u>	16 $\frac{3}{4}$ <u>8 $\frac{7}{8}$</u>
2.	8 $\frac{1}{3}$ <u>1 $\frac{4}{6}$</u>	1 $\frac{1}{2}$ <u>$\frac{11}{12}$</u>	7 $\frac{1}{3}$ <u>$\frac{8}{9}$</u>	5 $\frac{1}{4}$ <u>$\frac{11}{12}$</u>	10 $\frac{1}{5}$ <u>3 $\frac{7}{10}$</u>	14 $\frac{1}{2}$ <u>6 $\frac{9}{16}$</u>
VII. 1.	7 $\frac{1}{2}$ <u>1 $\frac{2}{3}$</u>	5 $\frac{1}{4}$ <u>4 $\frac{2}{3}$</u>	9 $\frac{1}{3}$ <u>7 $\frac{3}{4}$</u>	11 $\frac{1}{2}$ <u>6 $\frac{4}{5}$</u>	13 $\frac{1}{3}$ <u>7 $\frac{1}{2}$</u>	10 $\frac{5}{8}$ <u>$\frac{2}{3}$</u>
2.	4 $\frac{1}{5}$ <u>$\frac{1}{2}$</u>	8 $\frac{1}{9}$ <u>$\frac{5}{6}$</u>	3 $\frac{1}{4}$ <u>$\frac{5}{6}$</u>	14 $\frac{3}{4}$ <u>8 $\frac{5}{6}$</u>	1 $\frac{1}{2}$ <u>$\frac{2}{3}$</u>	14 $\frac{1}{6}$ <u>5 $\frac{3}{4}$</u>

Answers to Subtraction of Fractions

- I. 1. a. $\frac{1}{3}$, b. $\frac{2}{3}$, c. $\frac{1}{4}$, d. $8\frac{1}{3}$, e. 1, f. $3\frac{1}{2}$. 2. a. $\frac{2}{9}$, b. $\frac{1}{4}$, c. $\frac{1}{5}$, d. 6, e. $4\frac{1}{4}$, f. $9\frac{1}{2}$.
- II. 1. a. $\frac{1}{6}$, b. $\frac{1}{5}$, c. $\frac{5}{16}$, d. $6\frac{3}{8}$, e. $4\frac{1}{2}$, f. $6\frac{1}{6}$. 2. a. $\frac{3}{10}$, b. $\frac{1}{16}$, c. $\frac{1}{4}$, d. $7\frac{1}{3}$, e. $5\frac{7}{16}$, f. $\frac{1}{9}$.
- III. 1. a. $\frac{7}{15}$, b. $\frac{1}{6}$, c. $\frac{5}{12}$, d. $4\frac{7}{24}$, e. $2\frac{1}{12}$, f. $1\frac{5}{24}$. 2. a. $\frac{1}{12}$, b. $\frac{11}{24}$, c. $\frac{4}{15}$, d. $7\frac{7}{12}$, e. $4\frac{11}{24}$, f. $6\frac{1}{10}$.
- IV. 1. a. $2\frac{1}{4}$, b. $7\frac{5}{8}$, c. $\frac{3}{4}$, d. $\frac{2}{9}$, e. $2\frac{1}{3}$, f. $8\frac{1}{2}$. 2. a. $\frac{5}{9}$, b. $\frac{1}{2}$, c. $6\frac{3}{8}$, d. $\frac{1}{8}$, e. $8\frac{5}{8}$, f. $7\frac{1}{4}$.
- V. 1. a. $3\frac{1}{2}$, b. $\frac{1}{4}$, c. $\frac{2}{3}$, d. $\frac{3}{4}$, e. $8\frac{2}{3}$, f. $5\frac{4}{5}$. 2. a. $\frac{1}{2}$, b. $\frac{1}{2}$, c. $2\frac{1}{3}$, d. $7\frac{2}{5}$, e. $9\frac{1}{3}$, f. $7\frac{1}{4}$.
- VI. 1. a. $\frac{3}{4}$, b. $\frac{1}{8}$, c. $8\frac{1}{2}$, d. $5\frac{1}{12}$, e. $8\frac{2}{3}$, f. $7\frac{7}{8}$. 2. a. $6\frac{2}{3}$, b. $\frac{7}{12}$, c. $6\frac{1}{9}$, d. $4\frac{1}{3}$, e. $6\frac{1}{2}$, f. $7\frac{1}{6}$.
- VII. 1. a. $5\frac{5}{8}$, b. $\frac{7}{12}$, c. $1\frac{7}{12}$, d. $4\frac{7}{10}$, e. $5\frac{5}{6}$, f. $9\frac{3}{24}$. 2. a. $3\frac{7}{10}$, b. $7\frac{5}{16}$, c. $2\frac{5}{12}$, d. $5\frac{11}{12}$, e. $\frac{5}{8}$, f. $8\frac{5}{12}$.

Multiplication of Fractions

	a	b	c	d	e
I. 1.	$5 \times \frac{1}{8}$	$6 \times \frac{3}{4}$	$7 \times \frac{1}{12}$	$9 \times \frac{3}{4}$	$6 \times \frac{1}{2}$
2.	$8 \times \frac{3}{4}$	$12 \times \frac{5}{6}$	$8 \times \frac{2}{3}$	$5 \times \frac{5}{6}$	$7 \times \frac{2}{3}$
3.	$4 \times \frac{5}{9}$	$9 \times \frac{3}{8}$	$12 \times \frac{11}{12}$	$16 \times \frac{5}{8}$	$24 \times \frac{5}{6}$
II. 1.	$\frac{4}{5} \times 10$	$\frac{9}{10} \times 30$	$\frac{7}{8} \times 2$	$\frac{5}{6} \times 9$	$\frac{11}{12} \times 4$
2.	$\frac{2}{3} \times 8$	$\frac{5}{6} \times 12$	$\frac{5}{12} \times 20$	$\frac{3}{4} \times 15$	$\frac{3}{8} \times 24$
3.	$\frac{3}{5} \times 6$	$\frac{1}{2} \times 7$	$\frac{1}{8} \times 6$	$\frac{2}{5} \times 12$	$\frac{3}{7} \times 8$
III. 1.	$\frac{1}{2} \times \frac{1}{4}$	$\frac{3}{4} \times \frac{5}{8}$	$\frac{1}{3} \times \frac{4}{5}$	$\frac{2}{3} \times \frac{4}{9}$	$\frac{5}{6} \times \frac{1}{3}$
2.	$\frac{3}{4} \times \frac{5}{6}$	$\frac{7}{8} \times \frac{2}{9}$	$\frac{2}{3} \times \frac{5}{6}$	$\frac{4}{5} \times \frac{9}{10}$	$\frac{5}{8} \times \frac{7}{10}$
3.	$\frac{2}{3} \times \frac{3}{8}$	$\frac{3}{8} \times \frac{4}{15}$	$\frac{7}{9} \times \frac{3}{14}$	$\frac{2}{5} \times \frac{15}{16}$	$\frac{4}{9} \times \frac{9}{10}$
IV. 1.	$\frac{2}{3} \times 1\frac{1}{2}$	$\frac{1}{2} \times 3\frac{1}{4}$	$\frac{4}{5} \times 2\frac{1}{2}$	$2\frac{1}{4} \times \frac{3}{4}$	$\frac{2}{3} \times 3\frac{1}{3}$
2.	$\frac{5}{6} \times 2\frac{1}{4}$	$2\frac{1}{3} \times \frac{3}{7}$	$\frac{4}{5} \times 1\frac{2}{3}$	$\frac{8}{9} \times 2\frac{1}{2}$	$\frac{4}{7} \times 2\frac{1}{3}$
3.	$4\frac{1}{2} \times 6\frac{2}{3}$	$\frac{3}{4} \times 5\frac{1}{2}$	$\frac{3}{4} \times 2\frac{2}{3}$	$1\frac{1}{4} \times \frac{4}{5}$	$3\frac{1}{3} \times \frac{3}{5}$
V. 1.	$\begin{array}{r} 27 \\ 4\frac{2}{3} \\ \hline \end{array}$	$\begin{array}{r} 36 \\ 9\frac{3}{4} \\ \hline \end{array}$	$\begin{array}{r} 51 \\ 8\frac{1}{3} \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 2\frac{3}{7} \\ \hline \end{array}$	$\begin{array}{r} 35 \\ 7\frac{4}{5} \\ \hline \end{array}$
2.	$\begin{array}{r} 41\frac{1}{2} \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 36\frac{3}{4} \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 65\frac{1}{2} \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 87\frac{1}{2} \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 44\frac{2}{3} \\ 9 \\ \hline \end{array}$
3.	$\begin{array}{r} 38 \\ 4\frac{3}{4} \\ \hline \end{array}$	$\begin{array}{r} 45\frac{3}{4} \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 67\frac{1}{2} \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ 6\frac{5}{8} \\ \hline \end{array}$	$\begin{array}{r} 92 \\ 6\frac{2}{3} \\ \hline \end{array}$
	a	b	c	d	
VI. 1.	$4 \times \frac{2}{3} \times \frac{5}{6}$	$\frac{1}{2} \times \frac{3}{4} \times \frac{8}{9}$	$\frac{4}{5} \times \frac{2}{3} \times \frac{7}{8}$	$\frac{9}{10} \times \frac{2}{3} \times \frac{5}{6}$	
2.	$1\frac{1}{2} \times \frac{3}{4} \times 2\frac{1}{2}$	$\frac{5}{6} \times \frac{3}{4} \times 2\frac{3}{4}$	$8 \times \frac{5}{6} \times 1\frac{1}{4}$	$9 \times \frac{3}{4} \times \frac{6}{7}$	
3.	$2\frac{1}{4} \times 3\frac{1}{2} \times 1\frac{1}{3}$	$1\frac{1}{8} \times 1\frac{3}{4} \times 2\frac{2}{7}$	$\frac{3}{4} \times \frac{8}{9} \times 2\frac{1}{3}$	$3\frac{1}{3} \times 1\frac{1}{2} \times \frac{4}{5}$	

Answers to Multiplication of Fractions

- I. 1. a. $\frac{5}{8}$, b. $4\frac{1}{2}$, c. $\frac{7}{12}$, d. $6\frac{3}{4}$, e. 3. 2. a. 6, b. 10, c. $5\frac{1}{3}$, d. $4\frac{1}{6}$, e. $4\frac{2}{3}$
 3. a. $2\frac{2}{3}$, b. $3\frac{2}{3}$, c. 11, d. 10, e. 20.
- II. 1. a. 8, b. 27, c. $1\frac{3}{4}$, d. $7\frac{1}{2}$, e. $3\frac{2}{3}$. 2. a. $5\frac{1}{3}$, b. 10, c. $8\frac{1}{3}$, d. $11\frac{1}{4}$, e. 9.
 3. a. $3\frac{2}{3}$, b. $3\frac{1}{2}$, c. $\frac{3}{4}$, d. $4\frac{1}{2}$, e. $3\frac{2}{7}$.
- III. 1. a. $\frac{1}{8}$, b. $\frac{1}{32}$, c. $\frac{1}{15}$, d. $\frac{1}{27}$, e. $\frac{5}{18}$. 2. a. $\frac{5}{8}$, b. $\frac{7}{36}$, c. $\frac{5}{9}$, d. $\frac{13}{25}$, e. $\frac{7}{16}$.
 3. a. $\frac{1}{4}$, b. $\frac{1}{16}$, c. $\frac{1}{6}$, d. $\frac{3}{8}$, e. $\frac{2}{5}$.
- IV. 1. a. 1, b. $1\frac{5}{8}$, c. 2, d. $1\frac{11}{16}$, e. $2\frac{2}{3}$. 2. a. $1\frac{7}{8}$, b. 1, c. $1\frac{1}{3}$, d. $2\frac{2}{9}$, e. $1\frac{1}{3}$.
 3. a. 30, b. $4\frac{1}{3}$, c. 2, d. 1, e. 2.
- V. 1. a. 126, b. 351, c. 425, d. 34, e. 273. 2. a. $207\frac{1}{2}$, b. $257\frac{1}{4}$, c. 524,
 d. 525, e. 402. 3. a. $180\frac{1}{2}$, b. $411\frac{3}{4}$, c. 540, d. $549\frac{7}{8}$, e. $613\frac{1}{2}$.
- VI. 1. a. $2\frac{2}{9}$, b. $\frac{1}{3}$, c. $\frac{7}{15}$, d. $\frac{3}{8}$. 2. a. $2\frac{13}{16}$, b. $1\frac{23}{32}$, c. $8\frac{1}{3}$, d. $5\frac{11}{14}$. 3. a. $10\frac{1}{2}$,
 b. $4\frac{1}{2}$, c. $1\frac{5}{8}$, d. 4.

Division of Fractions

	a	b	c	d	e
I. 1.	$12 \div \frac{3}{4}$	$24 \div \frac{3}{8}$	$55 \div \frac{5}{6}$	$64 \div \frac{8}{9}$	$30 \div \frac{3}{4}$
2.	$18 \div \frac{4}{5}$	$35 \div \frac{2}{3}$	$15 \div \frac{6}{7}$	$12 \div \frac{5}{8}$	$14 \div \frac{5}{9}$
3.	$16 \div \frac{1}{3}$	$27 \div \frac{3}{5}$	$11 \div \frac{3}{4}$	$40 \div \frac{5}{8}$	$72 \div \frac{6}{9}$
II. 1.	$\frac{2}{3} \div \frac{2}{5}$	$\frac{3}{4} \div \frac{8}{9}$	$\frac{5}{6} \div \frac{1}{2}$	$\frac{7}{8} \div \frac{3}{4}$	$\frac{5}{6} \div \frac{5}{8}$
2.	$\frac{1}{2} \div \frac{3}{4}$	$\frac{5}{8} \div \frac{9}{10}$	$\frac{9}{10} \div \frac{5}{8}$	$\frac{3}{4} \div \frac{11}{12}$	$\frac{11}{12} \div \frac{3}{4}$
3.	$\frac{5}{6} \div \frac{4}{9}$	$\frac{1}{2} \div \frac{2}{3}$	$\frac{3}{4} \div \frac{1}{2}$	$\frac{7}{8} \div \frac{2}{3}$	$\frac{9}{16} \div \frac{3}{4}$
III. 1.	$\frac{5}{8} \div 2$	$\frac{3}{4} \div 3$	$\frac{7}{8} \div 4$	$\frac{11}{12} \div 3$	$\frac{5}{8} \div 5$
2.	$\frac{6}{7} \div 3$	$\frac{15}{16} \div 5$	$\frac{4}{7} \div 8$	$\frac{9}{10} \div 6$	$\frac{9}{16} \div 6$
3.	$\frac{2}{3} \div 8$	$\frac{7}{8} \div 7$	$\frac{1}{4} \div 3$	$\frac{1}{2} \div 8$	$\frac{5}{12} \div 5$
IV. 1.	$1\frac{1}{2} \div 3$	$2\frac{1}{4} \div 5$	$1\frac{1}{2} \div 4$	$2\frac{1}{2} \div 5$	$7\frac{1}{2} \div 3$
2.	$6 \div 1\frac{1}{2}$	$7 \div 2\frac{1}{3}$	$8 \div 1\frac{1}{3}$	$12 \div 5\frac{1}{3}$	$4 \div 1\frac{1}{2}$
3.	$1 \div 2\frac{1}{2}$	$2\frac{1}{2} \div 2$	$5\frac{1}{3} \div 8$	$4 \div 1\frac{1}{3}$	$1\frac{1}{3} \div 4$
V. 1.	$2\frac{1}{2} \div 1\frac{1}{4}$	$1\frac{1}{4} \div 2\frac{1}{2}$	$2\frac{1}{2} \div 1\frac{1}{3}$	$5\frac{1}{3} \div 2\frac{2}{3}$	$1\frac{1}{2} \div 4\frac{1}{4}$
2.	$\frac{5}{6} \div 1\frac{1}{4}$	$1\frac{1}{4} \div \frac{5}{6}$	$\frac{2}{3} \div 3\frac{1}{3}$	$3\frac{1}{3} \div \frac{2}{3}$	$\frac{9}{10} \div 2\frac{1}{2}$
3.	$3\frac{1}{3} \div 4\frac{1}{6}$	$4\frac{1}{6} \div 3\frac{1}{3}$	$1\frac{2}{3} \div 6\frac{2}{3}$	$6\frac{2}{3} \div 1\frac{2}{3}$	$1\frac{1}{4} \div 3\frac{1}{4}$
VI. 1.	$4 \div 9$	$5 \div 8$	$11 \div 12$	$6 \div 7$	$7 \div 12$
2.	$6 \div 9$	$12 \div 15$	$14 \div 16$	$24 \div 36$	$17 \div 51$

Answers to Division of Fractions

- I. 1. a. 16, b. 64, c. 66, d. 72, e. 40. 2. a. $22\frac{1}{2}$, b. $52\frac{1}{2}$, c. $17\frac{1}{2}$, d. $19\frac{1}{2}$, e. $25\frac{1}{2}$. 3. a. 48, b. 45, c. $14\frac{2}{3}$, d. 64, e. 81.
- II. 1. a. $1\frac{2}{3}$, b. 2, c. $1\frac{1}{3}$, d. $1\frac{5}{6}$, e. $1\frac{1}{3}$. 2. a. $\frac{2}{3}$, b. $\frac{25}{36}$, c. $1\frac{11}{25}$, d. $\frac{9}{11}$, e. $1\frac{2}{3}$.
3. a. $1\frac{7}{8}$, b. $\frac{7}{8}$, c. $1\frac{1}{2}$, d. $1\frac{5}{16}$, e. $\frac{3}{4}$.
- III. 1. a. $\frac{1}{12}$, b. $\frac{1}{4}$, c. $\frac{7}{32}$, d. $\frac{11}{36}$, e. $\frac{1}{6}$. 2. a. $\frac{2}{7}$, b. $\frac{3}{16}$, c. $\frac{1}{14}$, d. $\frac{3}{20}$, e. $\frac{3}{32}$.
3. a. $\frac{1}{12}$, b. $\frac{1}{8}$, c. $\frac{1}{12}$, d. $\frac{1}{16}$, e. $\frac{1}{12}$.
- IV. 1. a. $\frac{1}{2}$, b. $\frac{9}{20}$, c. $\frac{1}{3}$, d. $\frac{1}{2}$, e. $2\frac{1}{2}$. 2. a. 4, b. 3, c. 6, d. $2\frac{1}{4}$, e. $2\frac{2}{3}$. 3. a. $\frac{2}{5}$, b. $1\frac{1}{4}$, c. $\frac{2}{3}$, d. 3, e. $\frac{1}{3}$.
- V. 1. a. 2, b. $\frac{1}{2}$, c. $1\frac{7}{8}$, d. $2\frac{2}{3}$, e. $\frac{6}{17}$. 2. a. $\frac{2}{3}$, b. $1\frac{1}{2}$, c. $\frac{5}{24}$, d. $4\frac{4}{5}$, e. $\frac{9}{25}$.
3. a. $\frac{4}{5}$, b. $1\frac{1}{4}$, c. $\frac{1}{4}$, d. 4, e. $\frac{5}{13}$.
- VI. 1. a. $\frac{4}{5}$, b. $\frac{5}{8}$, c. $\frac{11}{12}$, d. $\frac{6}{7}$, e. $\frac{7}{12}$. 2. a. $\frac{2}{3}$, b. $\frac{4}{5}$, c. $\frac{7}{8}$, d. $\frac{2}{3}$, e. $\frac{1}{3}$.

Addition of Decimals

I.	a	b	c	d	e	f	g
	.6	.3	.3	.43	3.4	7.6	2.98
	.8	.9	.2	.58	2.8	3.9	1.56
	.3	.7	.8	.26	9.6	8.5	9.73
	<u>.9</u>	<u>.6</u>	<u>.7</u>	<u>.19</u>	<u>5.1</u>	<u>1.7</u>	<u>4.57</u>

II.	a	b	c	d	e
	.735	.850	.375	4.356	9.250
	.456	.935	.288	9.285	8.375
	.928	.678	.563	6.143	6.468
	<u>.167</u>	<u>.144</u>	<u>.749</u>	<u>0.125</u>	<u>3.725</u>

III.	a	b	c	d	e	f
	.05	.01	.025	.406	.750	.640
	.09	.09	.037	.305	.360	.320
	.06	.07	.046	.708	.850	.980
	<u>.04</u>	<u>.03</u>	<u>.082</u>	<u>.609</u>	<u>.970</u>	<u>.760</u>

IV.	1.	a	b	c	d	e	f
	3.2	1.75	.925	3.5	.04	6.7	
	1.45	0.93	.48	1.8	.35	4.3	
	3.85	0.8	.37	2.25	.725	5.8	
	<u>9.6</u>	<u>4.56</u>	<u>.45</u>	<u>4.78</u>	<u>.93</u>	<u>7.75</u>	

Copy and add.

2. a. $4.8 + 3.6 + 2.55 + .9$ b. $.075 + .225 + .38 + .94$
 3. a. $5.6 + 1.25 + 3.84 + 1.6$ b. $.95 + .475 + .328 + .451$

Answers to Addition of Decimals

I. a. 2.6, b. 2.5, c. 2.0, d. 1.46, e. 20.9, f. 21.7, g. 18.84
 II. a. 2.286, b. 2.607, c. 1.975, d. 19.909, e. 27.818
 III. a. 24, b. 20, c. 190, d. 2.028, e. 2.930, f. 2.700
 IV. 1. a. 18.1, b. 8.04, c. 2.225, d. 12.33, e. 2.045, f. 24.55, 2. a. 11.85, b. 1.62, 3. a. 12.29, b. 2.204

Subtraction of Decimals

	a	b	c	d	e	f
I. 1.	$\begin{array}{r} .48 \\ \underline{.35} \end{array}$	$\begin{array}{r} .76 \\ \underline{.58} \end{array}$	$\begin{array}{r} 3.41 \\ \underline{1.08} \end{array}$	$\begin{array}{r} 7.25 \\ \underline{4.57} \end{array}$	$\begin{array}{r} 6.10 \\ \underline{3.54} \end{array}$	$\begin{array}{r} 9.47 \\ \underline{8.65} \end{array}$
2.	$\begin{array}{r} .9 \\ \underline{.4} \end{array}$	$\begin{array}{r} .62 \\ \underline{.34} \end{array}$	$\begin{array}{r} 8.27 \\ \underline{5.46} \end{array}$	$\begin{array}{r} 9.04 \\ \underline{7.42} \end{array}$	$\begin{array}{r} 8.12 \\ \underline{5.38} \end{array}$	$\begin{array}{r} 4.23 \\ \underline{1.57} \end{array}$

	a	b	c	d	e
II. 1.	$\begin{array}{r} .946 \\ \underline{.325} \end{array}$	$\begin{array}{r} .765 \\ \underline{.238} \end{array}$	$\begin{array}{r} .467 \\ \underline{.198} \end{array}$	$\begin{array}{r} 8.740 \\ \underline{5.365} \end{array}$	$\begin{array}{r} 4.075 \\ \underline{2.348} \end{array}$
2.	$\begin{array}{r} .675 \\ \underline{.348} \end{array}$	$\begin{array}{r} .625 \\ \underline{.186} \end{array}$	$\begin{array}{r} .470 \\ \underline{.285} \end{array}$	$\begin{array}{r} 9.162 \\ \underline{3.855} \end{array}$	$\begin{array}{r} 6.420 \\ \underline{1.055} \end{array}$
III. 1.	$\begin{array}{r} .325 \\ \underline{.284} \end{array}$	$\begin{array}{r} .716 \\ \underline{.650} \end{array}$	$\begin{array}{r} .523 \\ \underline{.475} \end{array}$	$\begin{array}{r} .025 \\ \underline{.018} \end{array}$	$\begin{array}{r} .031 \\ \underline{.012} \end{array}$
2.	$\begin{array}{r} .910 \\ \underline{.856} \end{array}$	$\begin{array}{r} .375 \\ \underline{.295} \end{array}$	$\begin{array}{r} .061 \\ \underline{.053} \end{array}$	$\begin{array}{r} .075 \\ \underline{.068} \end{array}$	$\begin{array}{r} .018 \\ \underline{.009} \end{array}$
IV. 1.	$\begin{array}{r} 5.8 \\ \underline{2.36} \end{array}$	$\begin{array}{r} 7 \\ \underline{3.45} \end{array}$	$\begin{array}{r} 1.45 \\ \underline{.98} \end{array}$	$\begin{array}{r} 3.6 \\ \underline{2.44} \end{array}$	$\begin{array}{r} 9.1 \\ \underline{4.32} \end{array}$
2.	$\begin{array}{r} 5 \\ \underline{2.38} \end{array}$	$\begin{array}{r} 11.4 \\ \underline{3.68} \end{array}$	$\begin{array}{r} 9.5 \\ \underline{.37} \end{array}$	$\begin{array}{r} 1.56 \\ \underline{.87} \end{array}$	$\begin{array}{r} 7.4 \\ \underline{5.94} \end{array}$

Answers to Subtraction of Decimals

- I. 1. a. .13, b. .18, c. 2.33, d. 2.68, e. 2.56, f. .82. 2. a. .5, b. .28, c. 2.81, d. 1.62, e. 2.74, f. 2.66.
- II. 1. a. .621, b. .527, c. .269, d. 3.375, e. 1.727. 2. a. .327, b. .439, c. .185, d. 5.807, e. 5.365.
- III. 1. a. .041, b. .066, c. .048, d. .007, e. .019. 2. a. .054, b. .080, c. .008, d. .007, e. .009.
- IV. 1. a. 3.44, b. 3.55, c. .47, d. 1.16, e. 4.78. 2. a. 2.62, b. 7.72, c. 9.13, d. .69, e. 1.46.

Multiplication of Decimals

	a	b	c	d	e	f
I. 1.	$\begin{array}{r} .47 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 3.68 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 7.25 \\ \times 9 \\ \hline \end{array}$	$\begin{array}{r} 57.6 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 97.3 \\ \times 2 \\ \hline \end{array}$	$\begin{array}{r} 48.6 \\ \times 8 \\ \hline \end{array}$
2.	$\begin{array}{r} .79 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} .842 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} .349 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} .671 \\ \times 5 \\ \hline \end{array}$	$\begin{array}{r} 8.45 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 30.7 \\ \times 4 \\ \hline \end{array}$
II. 1.	$\begin{array}{r} 56 \\ \times 7 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 524 \\ \times 3 \\ \hline \end{array}$	$\begin{array}{r} 625 \\ \times 4 \\ \hline \end{array}$	$\begin{array}{r} 295 \\ \times 8 \\ \hline \end{array}$	$\begin{array}{r} 731 \\ \times 9 \\ \hline \end{array}$
2.	$\begin{array}{r} 46 \\ \times 1.8 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ \times 4.5 \\ \hline \end{array}$	$\begin{array}{r} 102 \\ \times 3.7 \\ \hline \end{array}$	$\begin{array}{r} 396 \\ \times 2.6 \\ \hline \end{array}$	$\begin{array}{r} 425 \\ \times .09 \\ \hline \end{array}$	$\begin{array}{r} 675 \\ \times .04 \\ \hline \end{array}$
III. 1.	$\begin{array}{r} 4.5 \\ \times 2.4 \\ \hline \end{array}$	$\begin{array}{r} 5.8 \\ \times .36 \\ \hline \end{array}$	$\begin{array}{r} 9.2 \\ \times 1.8 \\ \hline \end{array}$	$\begin{array}{r} 3.7 \\ \times .25 \\ \hline \end{array}$	$\begin{array}{r} .98 \\ \times .15 \\ \hline \end{array}$	$\begin{array}{r} 6.4 \\ \times 5.3 \\ \hline \end{array}$
2.	$\begin{array}{r} .72 \\ \times .35 \\ \hline \end{array}$	$\begin{array}{r} 10.8 \\ \times 3.4 \\ \hline \end{array}$	$\begin{array}{r} 32.5 \\ \times .46 \\ \hline \end{array}$	$\begin{array}{r} 5.9 \\ \times 1.2 \\ \hline \end{array}$	$\begin{array}{r} 43.6 \\ \times .75 \\ \hline \end{array}$	$\begin{array}{r} 7.26 \\ \times 9.5 \\ \hline \end{array}$
IV. 1.	$\begin{array}{r} .2 \\ \times .4 \\ \hline \end{array}$	$\begin{array}{r} .25 \\ \times .3 \\ \hline \end{array}$	$\begin{array}{r} .16 \\ \times .5 \\ \hline \end{array}$	$\begin{array}{r} .37 \\ \times .06 \\ \hline \end{array}$	$\begin{array}{r} .58 \\ \times .15 \\ \hline \end{array}$	$\begin{array}{r} .395 \\ \times .1 \\ \hline \end{array}$
2.	$\begin{array}{r} .19 \\ \times .5 \\ \hline \end{array}$	$\begin{array}{r} .83 \\ \times .06 \\ \hline \end{array}$	$\begin{array}{r} .75 \\ \times .12 \\ \hline \end{array}$	$\begin{array}{r} .93 \\ \times .07 \\ \hline \end{array}$	$\begin{array}{r} .675 \\ \times .14 \\ \hline \end{array}$	$\begin{array}{r} .348 \\ \times .15 \\ \hline \end{array}$

V. 1. Multiply each of the following by 100:

- a. 7.6 b. 9.3 c. .765 d. 84.5 e. 53.7 f. .125

2. Multiply each of the following by 1000:

- a. .4 b. 1.6 c. .075 d. 3.45 e. 9.56 f. 1.175

Answers to Multiplication of Decimals

- I. 1. a. 1.41, b. 25.76, c. 65.25, d. 230.4, e. 194.6, f. 388.8. 2. a. 3.95, b. 5.052, c. 2.792, d. 3.355, e. 59.15, f. 122.8.
- II. 1. a. 39.2, b. 29.6, c. 157.2, d. 250, e. 236, f. 657.9. 2. a. 82.8, b. 337.5, c. 377.4, d. 1029.6, e. 38.25, f. 27.
- III. 1. a. 10.8, b. 2.088, c. 16.56, d. .925, e. .147, f. 33.92. 2. a. 252, b. 36.72, c. 14.95, d. 7.08, e. 32.7, f. 68.97.
- IV. 1. a. .08, b. .075, c. .08, d. .0222, e. .087, f. .0395. 2. a. .095, b. .0498, c. .09, d. .0651, e. .0945, f. .0522.
- V. 1. a. 760, b. 930, c. 76.5, d. 8450, e. 5370, f. 12.5. 2. a. 400, b. 1600, c. 75, d. 3450, e. 9560, f. 1175.

Division of Decimals

	a	b	c	d	e
I. 1.	$4\overline{)64}$	$5\overline{)7.5}$	$9\overline{)3.6}$	$7\overline{)20.3}$	$8\overline{)1.24}$
2.	$3\overline{).75}$	$2\overline{)9.7}$	$5\overline{)7.3}$	$4\overline{).66}$	$6\overline{)6.3}$
3.	$8\overline{)4.5}$	$5\overline{)3.8}$	$7\overline{)24.5}$	$12\overline{)9.6}$	$16\overline{)4.4}$
II. 1.	$3\overline{).27}$	$5\overline{).12}$	$8\overline{).12}$	$9\overline{).45}$	$6\overline{).3}$
2.	$2\overline{).1}$	$4\overline{).14}$	$6\overline{).48}$	$8\overline{).36}$	$9\overline{).54}$
3.	$12\overline{).9}$	$16\overline{).4}$	$20\overline{).14}$	$25\overline{).1.2}$	$50\overline{).3.8}$
III. 1.	$4\overline{)7}$	$5\overline{)3}$	$8\overline{)14}$	$12\overline{)15}$	$6\overline{)9}$
2.	$2\overline{)11}$	$16\overline{)7}$	$20\overline{)3}$	$25\overline{)31}$	$50\overline{)11}$
3.	$4\overline{)31}$	$6\overline{)39}$	$16\overline{)21}$	$18\overline{)45}$	$24\overline{)78}$

Division of Decimals—Continued

	a	b	c	d	e
IV. 1.	$.2\overline{)7}$	$.5\overline{)11}$	$.7\overline{)56}$	$.8\overline{)14}$	$.4\overline{)33}$
2.	$.5\overline{)37}$	$.9\overline{)486}$	$1.6\overline{)84}$	$.03\overline{)72}$	$2.5\overline{)67}$
3.	$.16\overline{)54}$	$.02\overline{)19}$	$.25\overline{)6}$	$1.5\overline{)12}$	$.24\overline{)168}$
V. 1.	$.3\overline{)81}$	$.5\overline{)9.6}$	$.8\overline{)12}$	$.6\overline{)15}$	$.9\overline{)5.13}$
2.	$.04\overline{)34}$	$1.6\overline{)78}$	$1.2\overline{)18}$	$.75\overline{)6}$	$.25\overline{)3.1}$
3.	$.08\overline{)1.2}$	$.14\overline{)7}$	$.36\overline{)1.44}$	$.15\overline{)2.1}$	$.24\overline{)51.6}$
VI. 1.	$3\overline{)2}$	$9\overline{)7}$	$6\overline{)11}$	$7\overline{)15}$	$3\overline{)17}$
2.	$11\overline{)5}$	$15\overline{)8}$	$13\overline{)29}$	$6\overline{)50}$	$7\overline{)55}$
3.	$14\overline{)3}$	$17\overline{)21}$	$11\overline{)9}$	$21\overline{)90}$	$24\overline{)1}$

Answers to Division of Decimals

I. 1. a. .16, b. 1.5, c. .4, d. 2.9, e. .155. 2. a. .25, b. 4.85, c. 1.46, d. .165, e. 1.05. 3. a. .5625, b. .76, c. 3.5, d. .8, e. .275.

II. 1. a. .09, b. .024, c. .015, d. .05, e. .05. 2. a. .05, b. .035, c. .08, d. .045, e. .06. 3. a. .075, b. .025, c. .007, d. .048, e. .076.

III. 1. a. 1.75, b. .6, c. 1.75, d. 1.25, e. 1.5. 2. a. 5.5, b. 4375, c. 15, d. 1.24, e. .22. 3. a. 7.75, b. 6.5, c. 1.3125, d. 2.5, e. 3.25.

IV. 1. a. 35, b. 22, c. 80, d. 17.5, e. 82.5. 2. a. 74, b. 540, c. 52.5, d. 2400, e. 26.8. 3. a. 337.5, b. 950, c. 24, d. 8, e. 700.

V. 1. a. 2.7, b. 19.2, c. .15, d. .25, e. 5.7. 2. a. 8.5, b. 4875, c. .15, d. .8, e. 12.4. 3. a. 15, b. 5, c. 4, d. 14, e. 215.

VI. 1. a. .67, b. .78, c. 1.83, d. 2.14, e. 5.67. 2. a. .45, b. .53, c. 2.23, d. 8.33, e. 7.86. 3. a. .21, b. 1.24, c. .82, d. 4.29, e. .04.

Per Cents

a b c d e f g

I. Express each of the following as a decimal fraction:

- | | | | | | | |
|---------|------|-------|------|----|------|-----|
| 1. 40% | 35% | 125% | 200% | 5% | 150% | 8% |
| 2. 600% | 1.5% | 2.25% | 1.3% | 6% | 16% | 50% |

II. Express each of the following as a per cent:

- | | | | | | | |
|--------|-----|------|-----|------|------|------|
| 1. .5 | .12 | 3 | 2.8 | .28 | .015 | .4 |
| 2. .07 | 1.3 | 2.25 | .56 | 1.75 | 2.6 | .034 |

III. Express each of the following as a common fraction:

- | | | | | | | |
|-----------------------|-------------------|-----|--------------------|--------------------|--------------------|-----|
| 1. 50% | 25% | 40% | 10% | 75% | 66 $\frac{2}{3}$ % | 5% |
| 2. 62 $\frac{1}{2}$ % | 3 $\frac{1}{3}$ % | 90% | 16 $\frac{2}{3}$ % | 12 $\frac{1}{2}$ % | 87 $\frac{1}{2}$ % | 45% |

IV. Express each of the following as a per cent:

- | | | | | | | |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1. $\frac{1}{4}$ | 3 $\frac{1}{4}$ | 2 $\frac{2}{5}$ | 4 $\frac{4}{5}$ | 5 $\frac{5}{8}$ | 3 $\frac{3}{8}$ | 7 $\frac{7}{8}$ |
| 2. $\frac{1}{8}$ | $\frac{1}{5}$ | $\frac{1}{6}$ | $\frac{5}{6}$ | $\frac{3}{5}$ | $\frac{1}{20}$ | $\frac{7}{20}$ |

- | | a | b | c | d |
|-------|------------------------|-------------|-------------------------|---------------------------|
| V. 1. | 5% of 70 | 16% of 40 | 25% of 72 | 33 $\frac{1}{3}$ % of 144 |
| 2. | 15% of 140 | 3.5% of 96 | 1.5% of 460 | 2.5% of 84 |
| 3. | 120% of 68 | 2.4% of 340 | 200% of 78 | 300% of 460 |
| 4. | $\frac{1}{2}$ % of 740 | 1.2% of 750 | $\frac{1}{4}$ % of 1420 | 250% of 36 |
| 5. | 2% of 76 | 140% of 380 | 300% of 56 | 4.2% of 1450 |

- VI. 1. 4 = ?% of 12 7 = ?% of 20 9 = ?% of 25 11 = ?% of 50
2. 7 = ?% of 5 20 = ?% of 8 16 = ?% of 12 37 = ?% of 25
3. 100 = ?% of 60 60 = ?% of 50 20 = ?% of 25 25 = ?% of 20
4. 1 = ?% of 50 70 = ?% of 50 4 = ?% of 60 5 = ?% of 3
5. 45 = ?% of 40 6 = ?% of 30 8 = ?% of 6 3 = ?% of 60

Per Cents—Continued

	a	b	c
VII. 1.	$3 = 1\%$ of ?	$5 = 2\%$ of ?	$60 = 10\%$ of ?
2.	$8 = 5\%$ of ?	$20 = 200\%$ of ?	$50 = 40\%$ of ?
3.	$7 = 100\%$ of ?	$15 = 200\%$ of ?	$8 = 40\%$ of ?
4.	$100 = 33\frac{1}{3}\%$ of ?	$25 = 5\%$ of ?	$75 = 15\%$ of ?
5.	$75 = 5\%$ of ?	$14 = 200\%$ of ?	$50 = 20\%$ of ?
6.	$90 = 300\%$ of ?	$60 = 150\%$ of ?	$120 = 300\%$ of ?
7.	$64 = 40\%$ of ?	$30 = 25\%$ of ?	$150 = 75\%$ of ?

Answers to Per Cents

I. 1. a. 4, b. .35, c. 1.25, d. 2, e. .05, f. 1.5, g. .08. 2. a. 6, b. .015, c. .0225, d. .013, e. .06, f. .16, g. .5.

II. 1. a. 50%, b. 12%, c. 300%, d. 280%, e. 28%, f. 1.5%, g. 40%.
2. a. 7%, b. 130%, c. 225%, d. 56%, e. 175%, f. 260%, g. 3.4%.

III. 1. a. $\frac{1}{2}$, b. $\frac{1}{4}$, c. $\frac{2}{5}$, d. $\frac{1}{10}$, e. $\frac{3}{4}$, f. $\frac{2}{3}$, g. $\frac{1}{20}$. 2. a. $\frac{5}{8}$, b. $\frac{1}{30}$, c. $\frac{9}{10}$, d. $\frac{1}{6}$, e. $\frac{1}{3}$, f. $\frac{7}{8}$, g. $\frac{9}{20}$.

IV. 1. a. 25%, b. 75%, c. 40%, d. 80%, e. $62\frac{1}{2}\%$, f. $37\frac{1}{2}\%$, g. $87\frac{1}{2}\%$.
2. a. $12\frac{1}{2}\%$, b. 20%, c. $16\frac{2}{3}\%$, d. $83\frac{1}{3}\%$, e. 60%, f. 5%, g. 35%.

V. 1. a. 3.5, b. 6.4, c. 18, d. 48. 2. a. 21, b. 3.36, c. 6.9, d. 2.1.
3. a. 81.6, b. 8.16, c. 156, d. 1380. 4. a. 3.7, b. 9, c. 3.55, d. 90.
5. a. 1.52, b. 532, c. 168, d. 60.9.

VI. 1. a. $33\frac{1}{3}\%$, b. 35%, c. 36%, d. 22%. 2. a. 140%, b. 250%, c. $133\frac{1}{3}\%$, d. 148%. 3. a. $166\frac{2}{3}\%$, b. 120%, c. 80%, d. 125%. 4. a. 2%, b. 140%, c. $6\frac{2}{3}\%$, d. $166\frac{2}{3}\%$. 5. a. 112.5%, b. 20%, c. $133\frac{1}{3}\%$, d. 5%.

VII. 1. a. 300, b. 250, c. 600. 2. a. 160, b. 10, c. 125. 3. a. 7, b. 7.5, c. 20. 4. a. 300, b. 500, c. 500. 5. a. 1500, b. 7, c. 250. 6. a. 30, b. 40, c. 40. 7. a. 160, b. 120, c. 200.