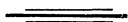


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C. Godfrey and E. A. Price  
Excerpt  
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# PART I

## MAINLY INTEGERS



### CHAPTER I

#### THE FOUR SIMPLE RULES

##### NUMBER AND QUANTITY

§ 1. 4 tons is a **quantity**; so also 4 feet, 10 minutes, 7 pints are quantities. Sometimes we speak of “concrete quantities” instead of saying simply “quantities.”

On the other hand 4, 10, 7, etc., are **numbers**, sometimes called “abstract numbers.”

Notice that to describe a quantity we need a number together with a **unit**. 4 is the number; “a ton” is the unit: “4 tons” is the quantity.

## ADDITION

§ 2. In adding several columns of figures, the subsequent checking is facilitated if we write down the sum of each column in full and subsequently add these sums. Each column should be added *downwards* and the sum put down in the appropriate place, nothing being “carried” to the next column. The sum of each column should be checked by adding *upwards* before the final result is found.

75643
37875
46943
79529
83214
63925
<hr style="width: 100%;"/>
29
20
39
33
35
<hr style="width: 100%;"/>
387129
<hr style="width: 100%;"/>

## EXERCISE I a

Find the sum of each of the following:

- |   |   |   |   |
|---|---|---|---|
| 1. $\begin{array}{r} 123 \\ 456 \\ 789 \\ \hline \end{array}$     | 2. $\begin{array}{r} 987 \\ 654 \\ 321 \\ \hline \end{array}$     | 3. $\begin{array}{r} 246 \\ 802 \\ 468 \\ \hline \end{array}$     | 4. $\begin{array}{r} 135 \\ 791 \\ 357 \\ \hline \end{array}$       |
| 5. $\begin{array}{r} 321 \\ 778 \\ 416 \\ \hline \end{array}$     | 6. $\begin{array}{r} 5789 \\ 879 \\ 7658 \\ \hline \end{array}$   | 7. $\begin{array}{r} 476 \\ 1395 \\ 2764 \\ \hline \end{array}$   | 8. $\begin{array}{r} 357 \\ 3478 \\ 5987 \\ \hline \end{array}$     |
| 9. $\begin{array}{r} 2984 \\ 739 \\ 1564 \\ \hline \end{array}$   | 10. $\begin{array}{r} 6474 \\ 4693 \\ 737 \\ \hline \end{array}$  | 11. $\begin{array}{r} 1493 \\ 5437 \\ 7631 \\ \hline \end{array}$ | 12. $\begin{array}{r} 2175 \\ 5432 \\ 6957 \\ \hline \end{array}$   |
| 13. $\begin{array}{r} 8751 \\ 3179 \\ 4473 \\ \hline \end{array}$ | 14. $\begin{array}{r} 9231 \\ 7489 \\ 5484 \\ \hline \end{array}$ | 15. $\begin{array}{r} 6418 \\ 7464 \\ 7874 \\ \hline \end{array}$ | 16. $\begin{array}{r} 79196 \\ 4956 \\ 78843 \\ \hline \end{array}$ |

§ 2]	SIMPLE ADDITION			3
<b>17.</b> 38495 59555 7792 <hr/>	<b>18.</b> 49845 5479 35285 <hr/>	<b>19.</b> 5883 64357 66974 <hr/>	<b>20.</b> 3713 95256 89384 <hr/>	
<b>21.</b> 1573 2946 9763 4329 <hr/>	<b>22.</b> 4214 5972 6465 9369 <hr/>	<b>23.</b> 9828 2482 2926 3856 <hr/>	<b>24.</b> 7453 6787 7384 2439 <hr/>	
<b>25.</b> 73257 4372 89499 5876 <hr/>	<b>26.</b> 36673 64465 2978 23089 <hr/>	<b>27.</b> 99142 5364 27943 12397 <hr/>	<b>28.</b> 43462 7597 6391 72785 <hr/>	
<b>29.</b> 67964 6439 25793 2979 14698 <hr/>	<b>30.</b> 35864 3972 12586 14375 3947 <hr/>	<b>31.</b> 2227 73757 6946 45387 22569 <hr/>	<b>32.</b> 6957 4397 12954 34638 26279 <hr/>	
<b>33.</b> 62469 79573 3268 4875 47358 <hr/>	<b>34.</b> 34865 6395 44935 2874 76967 <hr/>	<b>35.</b> 99863 3537 98656 89832 74372 <hr/>	<b>36.</b> 2257 86397 57379 8762 84652 <hr/>	
<b>37.</b> 987321 476294 575348 648778 599812 477667 532179 <hr/>	<b>38.</b> 235427 984905 876584 329109 876584 321497 642198 <hr/>	<b>39.</b> 921324 874321 478593 123958 642187 601798 320558 <hr/>		

4	ARITHMETIC	[CH. I
<b>40.</b>	<b>41.</b>	<b>42.</b>
325497	321742	218754
654832	598621	325421
238456	964215	998754
697584	642176	958632
738496	898732	469835
510307	465426	210864
246890	721987	727374
<u>753798</u>	<u>998698</u>	<u>858687</u>
<b>43.</b>	<b>44.</b>	<b>45.</b>
413052	295453	789762
298742	628761	295438
107534	921864	769476
298821	585497	987635
745566	987964	879659
668991	729853	642870
742198	471198	938756
877089	729876	748362
964276	641595	843363
<u>849493</u>	<u>789421</u>	<u>798675</u>
<b>46.</b>	<b>47.</b>	<b>48.</b>
482346	842364	284563
732631	132235	334253
546549	654742	264754
849683	483456	485364
382074	301983	839013
746459	459746	549467
654047	465024	464502
385892	315995	159593
935657	534642	653424
<u>451723</u>	<u>809813</u>	<u>368722</u>

**EXERCISE I b**

Find the sum of the following without writing in columns:

- |     |                     |     |                        |
|-----|---------------------|-----|------------------------|
| 1.  | $1 + 3 + 5 + 7$     | 2.  | $2 + 4 + 6 + 8$        |
| 3.  | $7 + 9 + 6 + 5$     | 4.  | $6 + 5 + 11 + 3$       |
| 5.  | $4 + 3 + 7 + 13$    | 6.  | $9 + 9 + 8 + 11$       |
| 7.  | $12 + 14 + 13$      | 8.  | $15 + 17 + 19$         |
| 9.  | $23 + 41 + 62$      | 10. | $31 + 65 + 79$         |
| 11. | $29 + 95 + 87$      | 12. | $14 + 73 + 69$         |
| 13. | $17 + 23 + 52 + 28$ | 14. | $59 + 47 + 69 + 73$    |
| 15. | $65 + 59 + 36 + 92$ | 16. | $34 + 27 + 73 + 42$    |
| 17. | $295 + 692 + 112$   | 18. | $253 + 475 + 465$      |
| 19. | $357 + 574 + 268$   | 20. | $435 + 543 + 372$      |
| 21. | $731 + 371 + 173$   | 22. | $297 + 378 + 635$      |
| 23. | $345 + 695 + 753$   | 24. | $882 + 772 + 993$      |
| 25. | $2 + 45 + 712 + 63$ | 26. | $17 + 243 + 9 + 25$    |
|     | 27.                 |     | $69 + 13 + 3042 + 7$   |
|     | 28.                 |     | $461 + 305 + 17 + 301$ |
|     | 29.                 |     | $1156 + 24 + 329 + 17$ |
|     | 30.                 |     | $217 + 3010 + 27 + 8$  |

**EXERCISE I c****Problems on Addition**

1. *A*, on a cycling tour, rides 64 miles on the first day, 58 on the second, 89 on the third, none on the fourth and fifth and 67 on each of the sixth and seventh days. *B* rides 35 miles each day. How far does each go?

2. A battalion consists of six companies, of which the numbers are 125, 103, 98, 101, 100, 108. What is the strength of the battalion?

3. In 1911 the population of England and Wales was 36,070,492; of Scotland 4,760,904; and of Ireland 4,390,219. What was the population of the United Kingdom?

4. A boy is 15 years old now: what will he be 30 years hence? 45 years hence? 5 years hence?

5. The figures on the map give the number of miles between the towns. Find the distance:

- (1) From London to Berwick via Cambridge.
- (2) " " " via Leicester.
- (3) From London to Birmingham via Oxford.
- (4) " " " via Warwick.
- (5) " " " via Rugby.
- (6) From London to Carlisle via Leicester.
- (7) " " " via Rugby and Manchester.
- (8) From London to Carlisle via Rugby and Liverpool.
- (9) From Dover to Chester.
- (10) From Brighton to Cambridge.
- (11) From London to Portsmouth via Guildford.
- (12) " " Bristol.

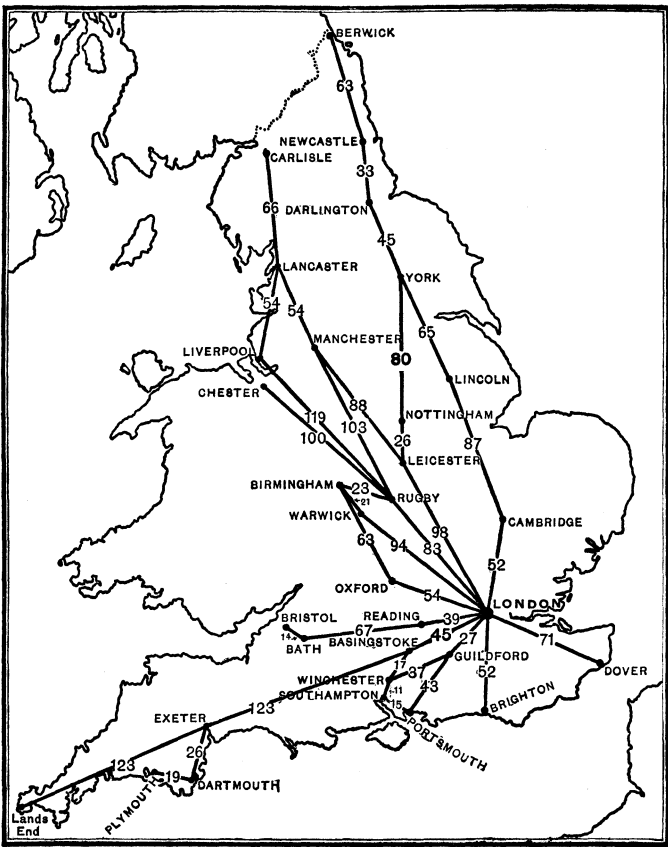
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EX. 1c]

SIMPLE ADDITION

7

- (13) From London to Winchester via Basingstoke.
- (14) " " " via Guildford.
- (15) " " Dartmouth.
- (16) From Land's End to Berwick via London and Cambridge.



## SUBTRACTION

§ 3. The method known as “complementary addition” is recommended\*. The example shown should, if done orally, read:

$$\begin{array}{r}
 \text{“2 and 1, 3; 5 and 9, 14;} \\
 \text{10 and 6, 16; 8 and 7, 15;} \\
 \text{2 and 1, 3.”} \\
 \hline
 35643 \\
 17952 \\
 \hline
 17691
 \end{array}$$

The result should in every case be verified by adding the last two lines.

## EXERCISE I d

Subtract the second from the first number:

- |  |   |   |   |
|--|---|---|---|
| 1. $\begin{array}{r} 173 \\ \underline{141} \end{array}$       | 2. $\begin{array}{r} 296 \\ \underline{254} \end{array}$      | 3. $\begin{array}{r} 769 \\ \underline{635} \end{array}$      | 4. $\begin{array}{r} 697 \\ \underline{243} \end{array}$      |
| 5. $\begin{array}{r} 795 \\ \underline{243} \end{array}$       | 6. $\begin{array}{r} 715 \\ \underline{209} \end{array}$      | 7. $\begin{array}{r} 624 \\ \underline{317} \end{array}$      | 8. $\begin{array}{r} 594 \\ \underline{489} \end{array}$      |
| 9. $\begin{array}{r} 237 \\ \underline{128} \end{array}$       | 10. $\begin{array}{r} 357 \\ \underline{275} \end{array}$     | 11. $\begin{array}{r} 485 \\ \underline{296} \end{array}$     | 12. $\begin{array}{r} 573 \\ \underline{397} \end{array}$     |
| 13. $\begin{array}{r} 3561 \\ \underline{2342} \end{array}$    | 14. $\begin{array}{r} 2973 \\ \underline{1641} \end{array}$   | 15. $\begin{array}{r} 3762 \\ \underline{1759} \end{array}$   | 16. $\begin{array}{r} 4697 \\ \underline{3785} \end{array}$   |
| 17. $\begin{array}{r} 7958 \\ \underline{5449} \end{array}$    | 18. $\begin{array}{r} 6305 \\ \underline{2974} \end{array}$   | 19. $\begin{array}{r} 3807 \\ \underline{2918} \end{array}$   | 20. $\begin{array}{r} 7643 \\ \underline{2079} \end{array}$   |
| 21. $\begin{array}{r} 7006 \\ \underline{5384} \end{array}$    | 22. $\begin{array}{r} 8017 \\ \underline{3759} \end{array}$   | 23. $\begin{array}{r} 6347 \\ \underline{5078} \end{array}$   | 24. $\begin{array}{r} 7073 \\ \underline{3987} \end{array}$   |
| 25. $\begin{array}{r} 129436 \\ \underline{47687} \end{array}$ | 26. $\begin{array}{r} 93862 \\ \underline{79494} \end{array}$ | 27. $\begin{array}{r} 63986 \\ \underline{41889} \end{array}$ | 28. $\begin{array}{r} 70073 \\ \underline{58792} \end{array}$ |

\* See Preface, page vi, line 12.



§ 3]	SIMPLE SUBTRACTION			9
<b>29.</b>	$\begin{array}{r} 99176 \\ 89887 \\ \hline \end{array}$	<b>30.</b>	$\begin{array}{r} 579431 \\ 287549 \\ \hline \end{array}$	<b>31.</b> $\begin{array}{r} 357924 \\ 218076 \\ \hline \end{array}$
<b>32.</b>	$\begin{array}{r} 6986954 \\ 2897076 \\ \hline \end{array}$	<b>33.</b>	$\begin{array}{r} 1384691 \\ 975879 \\ \hline \end{array}$	<b>34.</b> $\begin{array}{r} 6372571 \\ 4652885 \\ \hline \end{array}$
	<b>35.</b>	$\begin{array}{r} 2321097 \\ 886745 \\ \hline \end{array}$	<b>36.</b>	$\begin{array}{r} 6007583 \\ 878694 \\ \hline \end{array}$

### EXERCISE I e

#### Problems on Subtraction

1. An army of 10,000 men loses 2,165 in a certain battle. How many are left?
2. A battleship carrying 804 men is torpedoed; 83 are saved. How many were lost?
3. The sum of two numbers is 117; one of them is 52. What is the other?
4. The sum of two numbers is 140; the greater is 82. What is the lesser number?
5. The sum of two numbers is 1368; the lesser is 257. What is the greater?
6. If it is the morning of the 4th of July, how many complete days are left in July?
7. If it is the evening of the 18th of June, how many complete days are left in June?

**8.** How many hours are there between 3 p.m. and midnight? Between 10 a.m. and midnight? Between 6 a.m. and 4 p.m.?

**9.** A man has £28 and pays away £6, £5, £8, and £3. How much has he left?

**10.** In the House of Commons on a certain evening 452 members were present. At the first division 261 voted for the Government, 191 against. At the next division the votes were 230 for and 222 against. What was the Government majority in each case, and how many must have changed sides?

**11.** Of 12 apples, 8 are rotten, 6 are worm-eaten, and 3 are sound. How many must be both rotten and worm-eaten?

**12.** I am 24 years old now; in how many years shall I be 37? 48? 70?

**13.** Put down a number of three figures; under this write the same digits in the reverse order; subtract the smaller number from the greater. Under the answer write down the number found by reversing its digits, and add the two together. Try this with different numbers, e.g.:

$$\begin{array}{r}
 541 \\
 145 \\
 \hline
 396
 \end{array}
 \qquad
 \begin{array}{r}
 396 \\
 693 \\
 \hline
 1089
 \end{array}$$