

Homework 3

Instructions

Read the given reading assignment and then attempt the problems. Remember, for full credit you must attempt all problems. You must state the problem in your own words and show every step required to arrive at the solution. Your work should be on a separate sheet of paper. Do not turn in this assignment sheet with your homework.

Reading Assignment

Read the following before attempting the problems in this assignment. Your quiz next Wednesday will include questions to test whether you read and studied these texts.

- *The Progressive Higher Arithmetic*. edited by Daniel Fish. 1878. pages 243-267
<https://tinyurl.com/y8alymq9>



Problems

1. Jennifer, Emily, and Kelly go out to eat every Friday night. Being best friends, they allow each other to pay what each can when they split the bill. On this particular evening, their restaraunt bill is \$65.00. If Jennifer pays \$17.00 and Emily pays \$20.00, how much must Kelly pay to cover the bill?
2. The group of friends in the previous problem have just realized that they did not leave a tip. Jennifer says she has a little extra cash, and so she will go back to leave it on the table. If Jennifer wishes to leave a 20% tip, how much money will she leave at the table?
3. Given the total payments from Jennifer, Emily, and Kelly, compute the ratios between each person. That is, what is the ratio of Jennifer : Emily, Emily : Kelly, and Jennifer : Kelly. (Don't forget about Jennifer's tip!)
4. What percentage of the total bill in the previous problems, including tip, did each person pay?
5. If 12 gallons of wine costs \$30.00, what will 63 gallons cost?¹
6. If a speculator in grain gains \$26.32 by investing \$325.00, how much would be gained by investing \$2,275.00?¹
7. What is 25% of 350?
8. What percent is 112 of 200?

¹Adapted from *The Progressive Higher Arithmetic* edited by Daniel Fish. 1878

9. A store purchases a sweater for \$15.00 and applies a 12% markup. What is the retail price of the sweater?
10. Bob has \$815.00 which is 4% more than Chase has. How much money does Chase have?¹
11. A person has \$6000.00 in the bank. They withdrew 25% of it, then 30% of the remainder, and afterward deposited 10% of what they had withdrawn. How much is left in the bank?¹
12. A person owns \$8500.00 worth of property and pays a tax of \$144.50; find the rate on the dollar.²
13. An engineer engages to complete a tunnel $3\frac{3}{4}$ miles long in 2 years and 10 months; for a year and a half, she employs 1200 workers, and finds she has only completed three eighths of her work; how many additional workers must be hired to complete it in the required time?²
14. If 20 workers can excavate 185 cubic yards of earth in 9 hours, how many workers could do half the work in a fifth of the time?²
15. A store is having a 50% off sale, and you have a coupon for 50% off your total purchase. If the original price of your purchase is \$175.25, what is the price after applying your discounts?
16. What is the total effective rate of discount in the previous problem?
17. Five percent of the total population of a town enjoy hockey, while the rest incorrectly prefer to watch soccer. If the population of the town is 65,536 people, how many soccer fans are there?
18. If a person has a salary of \$53,000.00 per year and spends 45% of their monthly income each month, how much will they have saved at the end of the year?
19. If Maryville College's tuition was \$50,000.00 last year and is \$53,000.00 this year, by what rate did the tuition increase?
20. Standard gold contains 11 parts pure gold out of 12. What percent is other metals? ³

²Adapted from *A Treatise on Arithmetic*. by J. Hamblin Smith. 1878

³Adapted from *Arithmetic* by Jadav Chandra Chakravarti. 1925