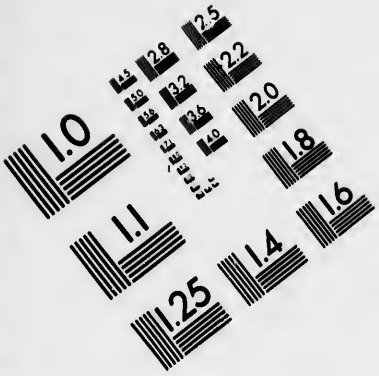

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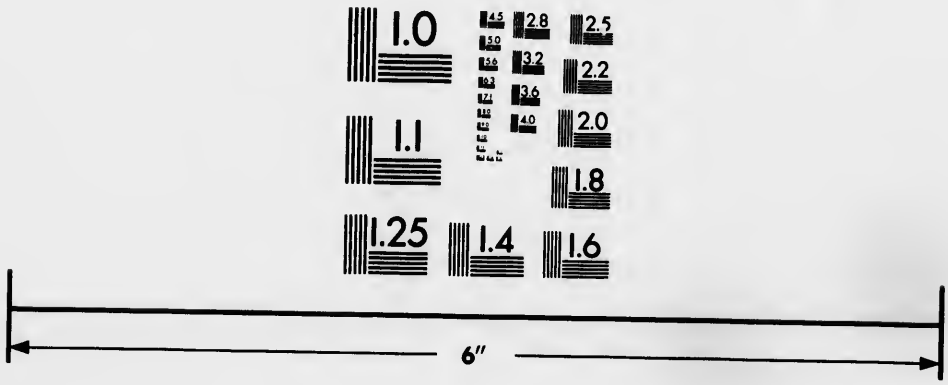

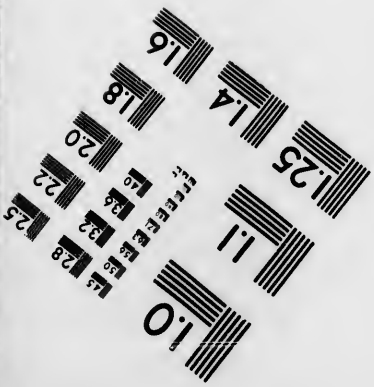

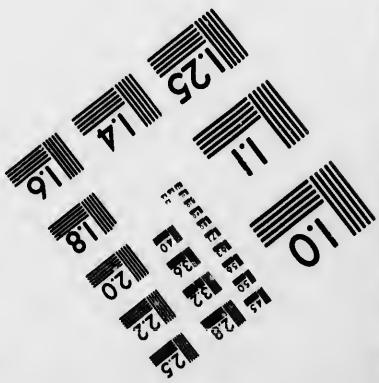

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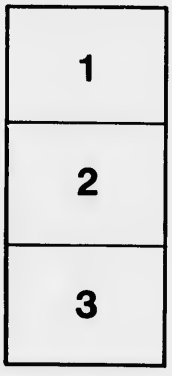

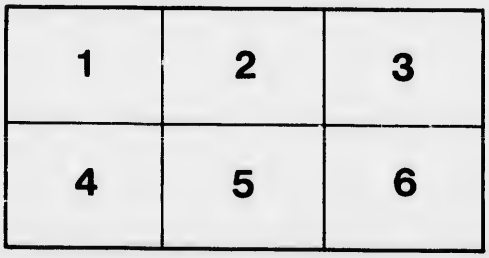

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PROBLEMS
IN
COMMERCIAL ARITHMETIC

FOR USE IN
COMMERCIAL COLLEGES

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ONE

PROBLEMS

IN

COMMERCIAL ARITHMETIC

PREPARED FOR USE IN

BUSINESS COLLEGES,

BY

M. S. CARL,

ONE OF THE PROPRIETORS OF THE ST. THOMAS BUSINESS COLLEGE, ST. THOMAS, ONT.

PUBLISHED BY
PHILLIPS & CARL,
ST. THOMAS, ONT.
1891.
J. MAGINN, PTR.

PREFACE.

The author of Problems in Commercial Arithmetic believes that the explanations usually found in commercial text-books serve rather to mystify than to assist the pupil, that these explanations can be given much more satisfactorily by the teacher himself, and that a text-book on Arithmetic is, therefore, of comparatively little value to the student, except to provide problems for practice.

With the object, therefore, of providing the author's own pupils with a series of problems, free from such explanations, this work has been prepared.

CONTENTS.

PROBLEMS IN COMMERCIAL ARITHMETIC.

COMMON FRACTIONS.

1. Simplify:

$$\frac{1\frac{1}{4}+2\frac{1}{3}}{(\frac{3}{4}-\frac{1}{2})\div\frac{3}{8}}+\frac{6\frac{3}{8}}{\frac{1}{2}\div(\frac{3}{4}+\frac{1}{2})}$$

2. A man had six farms. The first contained $121\frac{4}{15}$ acres; the second $312\frac{5}{12}$ acres; the third $412\frac{7}{30}$ acres; the fourth $116\frac{8}{32}$ acres; the fifth $98\frac{12}{48}$ acres; and the sixth $148\frac{7}{56}$ acres. How many acres of land had he?

3. Find the sum, difference, product, and quotient of $16\frac{3}{8}$ and $12\frac{1}{2}$.

4. If $16\frac{3}{8}$ lbs. of butter are worth $\$3.12\frac{1}{2}$, what are $17\frac{1}{2}$ lbs. worth?

5. A man had $1748\frac{15}{16}$ bushels of oats. He sold $416\frac{2}{3}$ bushels to A, $912\frac{1}{2}$ bushels to B, and the rest to C. How many more bushels did B buy than C?

6. A boy had $\frac{3}{8}$ of a lb. of candy. He gave $\frac{1}{21}$ of it to his mother, and $\frac{3}{4}$ of the remainder to his father. How much had he left?

7. What is the value of $\frac{9}{16}$ of a vessel, if $\frac{3}{4}$ of it is worth $\$37869\frac{3}{8}$?

8. I bought $12\frac{1}{2}$ yards of muslin at $16\frac{2}{3}$ cents a yard; $13\frac{3}{4}$ yards of print at $6\frac{3}{5}$ cents a yard; $19\frac{1}{2}$ lbs. of butter at $20\frac{3}{5}$ cents a lb. What was the total cost?

9. I bought three loads of hay. The first load contained $1760\frac{3}{8}$ lbs., the second $1968\frac{3}{16}$ lbs., the third $1876\frac{1}{20}$ lbs. How many lbs. less than three tons were there?

10. A can do a piece of work in 3 days, B in 4 days, and C in 5 days. In what time can they do the work together?

11. $\frac{3}{4}$ of $\frac{9}{16}$ of a cargo was destroyed by fire, and $\frac{1}{2}$ of $\frac{2}{3}$ of the remainder was damaged by water. What part of the whole cargo remained uninjured?

12. A gentleman divided $\frac{2}{3}$ of a lb. of candy between his two boys, and $\frac{3}{4}$ of the remainder among his three girls. How much more candy did each boy receive than each girl?

13. A barrel has three faucets. If the largest is opened, the barrel will be emptied in 8 minutes; if the smallest only is opened, it will be emptied in 14 minutes, and if the other only is opened, it will be emptied in 10 minutes. In what time will the barrel be emptied, if the three faucets are opened together?

14. If 18 men will consume $\frac{3}{4}$ of a barrel of flour in 6 days, in how many days will 16 men consume $\frac{9}{16}$ of a barrel?

15. I can buy $16\frac{2}{3}$ lbs. of butter for \$2.60$\frac{2}{3}$, or $17\frac{1}{2}$ lbs. for \$2.75. Which is the cheaper butter? How much would I save by purchasing $116\frac{3}{4}$ lbs. at the cheaper price?

16. Find a fraction equivalent to $\frac{8}{17}$, and having its numerator 36 greater than its denominator.

17. A house and lot cost \$1760; the house cost $1\frac{1}{2}$ times what the lot cost. What was the cost of each?

18. If A can do a piece of work in $3\frac{1}{4}$ days, and A and B together can do it in $2\frac{1}{2}$ days, in what time can B do it, working alone?

19. The profits of a garden for two years were \$110. The profits the first year were $\frac{2}{3}$ of those of the second. What were the profits of each year?

20. Find the L. C. M. of $16\frac{2}{3}$, $13\frac{3}{4}$, and $12\frac{1}{2}$.

21. Find the value of $12\frac{1}{2}$ cwt. $+16\frac{3}{4}$ lbs. $+12\frac{1}{2}$ oz. of gold at \$$20\frac{1}{2}$ an oz.

22. I had \$$8\frac{1}{4}$, and divided it equally among a number of boys, giving each boy \$$1\frac{1}{4}$. How many boys were there?

23. If A has $\frac{2}{3}$ as much money as B, what fraction of the total amount has each?

24. A, B and C own a farm. If A owns $\frac{2}{3}$ of the farm, and B owns $\frac{1}{4}$ as much as A, what part of the farm does C own?

25. A and B being $117\frac{3}{4}$ miles apart, started towards each other, A travelling at the rate of $3\frac{1}{4}$ miles an hour, and B at the rate of $2\frac{5}{8}$ miles an hour. How far apart will they be at the end of $10\frac{1}{2}$ hours?

26. A man invested $\frac{3}{4}$ of his money in bank stock, $\frac{2}{3}$ of what remained in real estate, and deposited $\frac{3}{4}$ of what still remained in the bank. What part of his money had he left?

27. If $\frac{3}{4}$ of a dozen of eggs cost $\frac{3}{8}$ of a dollar, what will $\frac{7}{8}$ of a dozen cost?

28. If coffee loses one-sixth in roasting, how much green coffee must I use to obtain 24 lbs. of roasted coffee?

29. A man travelled in one direction for $18\frac{1}{4}$ hours, at the rate of $2\frac{1}{2}$ miles an hour. How long will it take him to return to the place of starting, if he travels at the rate of $3\frac{1}{4}$ miles an hour?

30. A and B have 91 cents. If A has $\frac{5}{8}$ as much as B, how much has each?

31. A can cut $\frac{2}{3}$ of a cord of wood in $3\frac{3}{8}$ days, B can cut $\frac{3}{4}$ of a cord in $1\frac{3}{5}$ days. In what time can they cut a cord, working together?

32. A starts from St. Thomas to walk to Welland, a distance of 100 miles, at the rate of $3\frac{3}{4}$ miles an hour, and 8 hours later B starts from Welland for St. Thomas at the rate of $2\frac{1}{2}$ miles an hour. Where will they meet? If, on his arrival at Welland, A should immediately start on his return journey at the rate of 6 miles an hour, where would he overtake B?

33. A farmer had 427 acres, 2 roods, 24 feet of land, and divided it among his 3 boys and 2 girls, giving each boy twice as much as each girl. How much did each receive?

34. What is the value of 1 ton, 228 cwt. of hay at $\$3\frac{3}{4}$ a ton?

35. A wheel $2\frac{3}{4}$ feet in circumference makes 80 revolutions in crossing a field one way, and 96 revolutions in crossing it the other way. Find the number of acres in the field.

36. If A lost one-fifth of his money, he would then have two-fifths as much as B. If B has three-fourths as much as D, and D has $24, how much money has A?

37. Divide 95 cents among A, B and C, so that A may receive half as much again as B, and B half as much again as C.

38. If A gained 3 cents, he would be worth fifteen-sixteenths as much as B. If he lost 3 cents, he would be worth seven-eighths as much as B. How much money has each?

39. I bought 240 gallons of wine at $2.50 a gallon, and paid $25 for freight, etc. If two-fifths of it be lost by leakage, at what price per gallon must the remainder be sold to net a profit of two-fifths of the cost of the whole?

40. I marked an article at an advance of two-fifths of the cost, and then sold it for three-fifths of the marked price. What fractional part of the cost did I lose?

41. A merchant fails owing $2400, and pays his creditors 35 cents on the dollar. How much will be lost by a creditor to whom three-eighths of the debt was owing?

42. A sold an article to B and gained $\frac{1}{3}$. B sold it to C and gained $\frac{1}{4}$. C spent $50 in repairs and sold it to D for $108 and gained one-fifth. How much more did A pay for the article than D?

43. By selling cloth at $2.50 a yard, I gain one-half as much as I would lose by selling it at $2.23 a yard. How much would I lose by selling 240 yards at 2.37\frac{1}{2}$ a yard?

44. A train leaves St. Thomas at the rate of 37$\frac{1}{2}$ miles an hour. Forty minutes later a second train leaves in the same direction at the rate of 50 miles an hour. If the second train is delayed eight minutes at the first station, at what distance from St. Thomas will it overtake the first train?

45. A person dies and leaves $\frac{1}{3}$ of his property to his wife, $\frac{1}{4}$ to each of his two sons, and the remainder to his daughter. The daughter died and left $\frac{3}{5}$ of her legacy to her mother, and the rest to be equally divided between her two brothers. The youngest son died and left his property to his mother. What part of the property does the mother now own?

46. A man hired a horse for a journey from A to B and back. Half way from the place of starting, he overtook a second man, and $\frac{2}{3}$ of the distance from A he overtook a third man. The three men rode together to B, and then returned to A. If the cost of the rig was $3, and each man paid in proportion to the distance he rode, how much should each pay?

DECIMAL FRACTIONS.

1. What is the sum of 16.234 lbs., 24.1762 lbs., .034 lbs., and 116.12123 lbs. ?

2. What is the difference between 16.012 and 1.00216?

3. Multiply 3.064 by .012.

4. Divide .036254 by .0625.

5. Reduce the following fractions to decimals: $\frac{3}{4}$, $\frac{7}{8}$, $\frac{1}{8}$, and $13\frac{1}{4}$.

6. Reduce the following decimals to fractions in their lowest terms: .0625, .204, 36.125, .0065, and .01228.

7. What is the cost of .0625 tons of hay, at $6.25 a ton ?

8. Divide .75 into two parts, so that one will be .0625 more than the other.

9. A, B and C own a farm. If A owns .25 of it, and B .25 of the remainder, what part of the farm does C own ?

10. The difference between two numbers is .0625. If the larger number is 14.051, what is the sum of the numbers ?

11. A man had $4.60, and spent .35 of it. How much money had he left ?

12. If .25 of a job of work can be done in 4.0365 days, in what time can .35 of it be done ?

13. Multiply the difference between .061 and 1.06 by their sum.

14. A man withdrew from the bank .25 of his deposit, and then .25 of what remained. If his total withdrawals amounted to $287, how much had he still remaining on deposit ?

15. A gentleman bequeathed .35 of his property to his wife, .25 to his son, .15 to each of his two daughters, and the remainder, amounting to $3740, to an orphan asylum. How much did each of the daughters receive?

16. The sum of six addends is 277.274. If four of the addends are 48.0625, 22.013, 68.0125, and 60.001, and the difference between the other two is 21.015, what are the fifth and sixth addends?

17. I bought 7 bags of wheat, weighing respectively 140.035, 160.025, 148.2, 150.215, 120.116, 130.4, and 132.014 lbs., at $1.12 a bushel. Allowing 7.365 lbs. for the weight of the bags, what did I pay for the wheat?

18. A added 24.025 acres to his farm, and B 12.025 acres to his farm. It was then found that A had .0625 acres more than B. If they together have 360.005 acres, how much had each at first?

19. A and B are 266.25 miles apart, and walk toward each other at the rate of 3.625 miles an hour. How far apart will they be at the end of 10.5 hours?

20. I bought 400 yards of muslin as follows: .0625 of the purchase at 6.25 cents a yard, and the remainder at 8.75 cents a yard. Find the average cost per yard.

21. A man paid .825 of a debt, and found that he still owed $168. How much did he owe at first?

22. I purchased an invoice of goods, and disposed of .125 of it at one sale, and .25 of the remainder at a second sale. What part of the invoice remained unsold?

23. Divide 32.0145 by 216.125 to six decimal places; also divide $1\frac{7}{8}$ by 2.5625 to five decimal places.

24. A man sold .0125 of his farm, and then sold .125 of what remained. What part of his farm had he left? What part did he sell?

25. A gentleman gave .25 of .125 of his money to an orphan asylum. He then gave $\frac{1}{4}$ of what remained to each of his three sons. What part of his money had he left?

26. I multiplied .015 by .025. I should have divided by .025. How much too great was my answer?

27. The circumference of a wheel is 78.16 inches. How many revolutions will it make in 101 miles?

28. The circumference of a wheel is 3.1416 times the diameter. Find the diameter of a wheel whose circumference is 16 feet.

29. A man walked a distance of 75 miles, at the rate of 4.16 miles an hour, and returned at the rate of 3.16 miles an hour. How long was he in going and returning?

30. A man paid .03125 of a debt every day until the whole amount was paid. How many weeks was he in paying it?

31. Find the value of a farm containing 1728.125 square yards, at $40.50 an acre.

32. A man can walk 48.25 miles in .025 of 124.16 days of 10 hours each. How far can he walk in 8 hours?

33. The product of two numbers is .0003125. One of the numbers is .025. What is the other number? Reduce .0003125 to a common fraction in its lowest terms.

34. How many times greater is the product of .025 and .005 than their quotient?

35. A borrowed $175.50 from B, and agreed that .08 of the principal was to be added the first year, .08 of the sum thus produced the second year, and .08 of the sum thus produced the third year. How much did he owe at the end of the third year?

DENOMINATE NUMBERS.

1. Add £10 8s. 6¾d., £1 7s. 6½d., £12 6s. 7d., £3 4s. 2¾d., and £7 4s. 5d.

2. A man bought 13 reams of paper, at $1.80 a ream, and sold it at the rate of 6 sheets for 5 cents. How much did he make?

3. What is the cost 136 feet of wood at $2.40 a cord?

4. A man worked from 12 o'clock, Monday noon, to 12 minutes past 3, Tuesday afternoon, and received in payment one-third of a cent a minute. How much did he receive?

5. A grocer sold 4 gal. 1 qt. 1 pt. of syrup daily for 7 days. If the syrup was sold at 45 cents a gallon, how much did he receive?

6. A man walked 1 mile 20 yards 2 feet 6 inches. If he took 4274 steps, how many inches did he step each time?

7. What is the total cost of 4750 lbs. of coal at $3.60 a ton, 4230 lbs. at $5.20 a ton, and 1760 lbs. at $1 a ton?

8. What is the total cost of 1760 lbs. of wheat at 90 cents a bushel, 1460 lbs. of oats at 30 cents a bushel, and 1720 lbs. of barley at 40 cents a bushel?

9. A wheel is 2 ft. 6 in. in circumference. How many revolutions will it make in going 1 mile?

10. How much wheat will a man require to sow a field containing 12½ acres, if he sows 1 bu. 1 gal. 1 qrt. 1 pt. to the acre?

11. I bought 1 ton 220 lbs. of hay at $6 a ton, and paid for it in eggs at 16 cents a dozen. How many eggs were there?

16. A man divided 32 acres of land equally among his boys, giving each boy 5 ac. 53 rods 10 yds. 108 in. How many boys were there?

17. I bought a gross of pens for 80 cents, and sold them at the rate of 3 pens for 2 cents. How much did I make?

18. A man bought 44 gals. of milk at 14 cents a gal., and added a pint of water to each gal. If he sold the milk at 5½ cents a quart, how much did he make?

19. A man can walk 1 mile 8 rods 6 ft. in 1 hour 40 min. How far can he walk in 2 hours 20 minutes?

20. Reduce $96 to £ s. d., and £7 8s. 6d. to dollars and cents.

21. How many bottles, each holding 1 pt. 1 gi., will be required to empty a cask containing 38 gal. 1 qt. 1 gi. of wine?

22. A ring 18 carats fine weighs 18 pwt. Making no allowance for alloy, what is it worth, if pure gold is worth $20 an oz?

23. What is the time in days from Dec. 12, 1880, to Jan. 1, 1883; also the time in minutes from 20 minutes past 12, Monday noon, to 8 minutes to seven, Wednesday morning?

24. A note drawn Jan. 15, 1892, at 90 days, was paid Mar. 1. Making no allowance for days of grace, find how long before due the note was paid.

25. The capacity of a certain mill is 48 bbls. of flour a day. If each bbl. holds 196 lbs. of flour, and each bushel of wheat makes 42 lbs. of flour, how many bushels of wheat will the mill use in 6 days?

26. Find the number of acres in a farm five-eighths of a mile long by ½ a mile wide.

PERCENTAGE.

1. A man spent $364.00 for a lot, and 25 per cent. more than that sum for a house. How much did he pay for both?

2. A merchant bought 360 lbs. of tea at 37½c. a lb., and paid 16 per cent. of the purchase money down. How much did he still owe?

3. A farm contains 1680 acres. 12 per cent. of it is planted with corn, 10 % of the remainder with beans, and 33⅓ per cent. of what still remained with potatoes. How many acres of potatoes were there?

4. A testator died leaving 12½ per cent. of his property to his eldest son, 16¾ % to each of his three daughters, and the remainder to be divided equally between the other two sons. If the youngest son received $2754 more than the eldest, how much did each of the daughters receive?

5. A farmer owned 680 acres of land, and sold 42 acres. What per cent. of his original farm had he left?

6. I deposited in the bank $340, and still had $120 left. What per cent. of my money did I deposit?

7. A liquor dealer mixed 26 gals. of water with 91 gals. of whiskey. What per cent. of the mixture was water?

8. In a certain battle 360 men were killed, and there still remained 2440 men. What per cent. of the army was killed?

9. In a certain town 40 per cent. of the total population were French, 25 per cent. of the remainder Spainards, and what remained natives. If there were 2460 more natives than Spainards, how many French were there?

10. The assets of a bankrupt firm amount to $1121.50, and their liabilities to $21850. What per cent. of their indebtedness can they pay?

11. The population of a city increased 10 per cent. for three consecutive years, and then numbered 31944. What was the population at the beginning of the first year?

12. A house and lot cost $4340. The house cost 24 per cent. more than the lot. What was the cost of each?

13. A man spent $230.00 for a horse and buggy, paying 16 % less for the horse than for the buggy. How much did he pay for each?

14. The sales of a firm increased 20 % the first year, 25 % the second, and 32 % the third year. What were their total sales for the three years, if their third year's sales were $11308?

15. If A has $33\frac{1}{3}$ % less money than B, what per cent. more than A has B?

16. If A has 40 % more money than B, what per cent. of what they together have has each?

17. A has 20 % more money than B, who has 30 % more than C. What % of A's money is C's?

18. If coffee loses 12 % in roasting, how much green coffee must I use to obtain 1100 lbs. of roasted coffee?

19. A man paid 40 % of his money for a farm, and 24 per cent. of what remained for horses and implements. If he had $6480 left, what did he pay for the horses and implements?

20. A sold a carriage to B at a profit of 20 per cent. B paid $40 for repairs, and sold it at a profit of 20 %. If B made $13 more than A, what did A pay for the carriage?

21. A man paid $36 a month for board, $12 for clothes, and $8 for incidentals, and was then enabled to save $44 a month. What per cent. of his wages did he pay for clothes?

22. I sold an article at a profit of 40 per cent. on selling price. What per cent. of the cost did I make?

23. The sales of a firm increased 20 per cent. the first year, $16\frac{2}{3}$ per cent. the second year, and decreased 10 per cent. the third year. The total sales of the three years amounted to $31500. What were their sales for each year?

24. If 30 per cent. of A's money equals 20 per cent. of B's, and A has $105 less than B, how much money has each?

25. A father and son together hired a man to do a piece of work, the agreement being that the father was to pay 20 per cent. more than the son. On the completion of the job it was found that the father had paid $44 and the son $40. How much should the father pay the son?

26. A young man's salary increased 30 per cent. every year; his expenses each year were 30 per cent. of his salary; and at the end of 3 years he had saved $720.90. Find his salary for the third year.

27. A has 20 % more money than B. If B earns $5, how much must A earn so that he may still have 20 % more than B?

28. In a certain school there were 20 % more pupils in the junior than the senior class. Five pupils were promoted, and there were then 20 per cent. less pupils in the junior class than in the senior. How many pupils were there in each class at first?

29. A man lost 40 % of his money, and then lost $40 more than 40 per cent. of what he had left. If his total

losses amounted to $484, how much money had he at first?

30. A had 25 % more money than B. A made $100 and B lost $100, and then A 35 % more than B. How much had each at first?

31. A city increased in population 25 % the first year, decreased 30 % the second, and increased 40 % the third year. If the population was 29400 at the end of the third year, what was the population at the beginning of the first year.

32. A has 20 % less money than B. A and B together have 20 % less money than C. A, B and C together have 20 % less than D. If D has $16.25 more than A, how much has each?

33. A man withdrew 25 % of his bank deposit, and invested 16 % of what he withdrew in purchasing a carriage. If the carriage cost $192, how much had he remaining in bank?

34. I paid $1450 for a certain number of sheep. I afterwards found that I had paid 16 % too much. How much should I have paid?

35. If a number be increased 8 %, and the sum thus produced be increased 8 %, the result will be 1749$\frac{3}{5}$. Find the number.

36. A speculator gained 20 % on three-fourths of his investment, and lost 10 per cent. on the remainder, and his net profits were $1000. What would have been the result had he lost 10 per cent. on three-fourths of his investment, and gained 25 % on the remainder?

37. In a certain election A and B were candidates. A received 20 % more votes than B. Three men, however, who intended to vote for A, inadvertently spoiled their ballots, otherwise A would have received 22 % more votes than B. If 34 % of the electors did not go to the polls, how many electors were there in the constituency?

PROFIT AND LOSS.

1. I bought an article for $14.20, and sold it at 10 per cent. profit. How much did I obtain for it?

2. I sold an article which cost $24 for $32.60. What was my per cent. of profit?

3. A man sold a house and lot for $2400, gaining 20 % on selling price. What per cent. profit did he make on the cost?

4. A speculator sold 300 bushels of wheat for $264, thereby making a profit of 10 % on cost. What was the cost per bushel?

5. By selling a horse for $360 I lost $24. What per cent. of cost did I lose?

6. A merchant sold an article for $3, thereby making 10 % on cost. For what should he have sold it to make 20 % on cost?

7. I bought 2 houses for $1600 each. On the one I made a profit of 20 % on cost, and on the other lost 19 % of cost. Find my net gain.

8. A gentleman sold an article at 24 % profit, and thereby gained $7.20. What did he obtain for the article?

9. A stationer bought 7 reams of paper at $3.60 a ream, and sold it at the rate of 6 sheets for 5 cents. What was his per cent. of profit?

10. A man sold 40 bushels of oats for $13, and by so doing lost 60 cents. What was the cost per bushel?

11. A merchant lost 20 per cent. of a cargo of goods, and sold the remainder at a profit of 30 %. Did he gain or lose?

12. $\frac{1}{3}$ of my sales are on credit. If 10 per cent. of the accounts prove worthless, at what per cent. advance on cost must I mark goods in order to net a profit of 25 %?

13. A man sold two horses for $240 each. He gained 25 % on the one, and lost 20 % on the other. Did he gain or lose, and if so, how much?

14. I received from Toronto a bill of goods amounting to $180, freight, etc., $4.47 additional. What must I sell them for to net a profit of 10 % on selling price?

15. A speculator bought two horses for the same price each. He sold one at a profit of 35 %, and the other at a loss of 28 %. If his net gain was $21.70, what did he obtain for each horse?

16. A sold an article to B at a gain of 10 %, B sold it to C at a gain of 15 %, and C sold it at a loss of 12 %. If C obtained $278.30 more for the article than A paid for it, how much did it cost B?

17. What must be the asking price of cloth which cost $3 a yard, in order that I can throw off 10 % of marked price and still gain 25 % on the cost?

18. I sold $\frac{2}{3}$ of a consignment for $\frac{3}{4}$ of cost of whole. What was my per cent. of profit?

19. A grocer bought sugar at $8 a cwt. Supposing 4 % to be lost in handling, how many lbs. must he give for $1 in order to make a profit of 12$\frac{1}{2}$ % on cost?

20. If a house increase in value 10 % the first year, 15 % the second, and 25 % the third year, and is then worth $3643.20, what was the value at the beginning of the first year?

21. A man bought sugar at 3$\frac{1}{2}$ cts. a lb., and sold it at the rate of 18 lbs. for a dollar. By using a false weight he sells 14 oz. for a lb. What was his per cent. of profit?

22. I sold an article for \$16.20, and by so doing lost \$2.80. What per cent. of the cost did I lose?

23. At what per cent. above cost must a man mark goods so that he can throw off 25 % of the marked price and still gain 25 % on cost?

24. What per cent. is lost by marking goods at a profit of 20 %, and then giving a discount of 20 %?

25. A man sold $\frac{3}{4}$ of a quantity of goods for $\frac{3}{5}$ of the cost of the whole. Find his gain or loss per cent.

26. A man sold two houses for \$1000 each. On the one he gained 20 % of the cost, and on the other he lost 20 % of cost. Find his net gain or loss.

27. A man bought a bbl. of coal oil containing 36 gals. for \$7.20. If 4 gals. be lost by leakage, for how much a gal. must he sell the remainder to net a profit of 25 % on the cost of the whole?

28. By selling an article for \$9.77$\frac{1}{2}$ a merchant makes 5 % more than he would by selling it for \$9.35. Find the cost.

29. A merchant bought whiskey at \$1.20 a gal. If he adds one quart of water to each gal. of whiskey, for how much a pint must he sell the mixture to make a profit of 100 %?

30. A man marks his goods at 25 % profit, and then gives a discount of 10 % on the marked price. What per cent. profit does he make? How much would he make on an article marked at 60 cts.?

31. A merchant has two kinds of tea which cost him 35 cts. and 20 cts. respectively. If he mixes the tea in the proportion of 3 lbs. of the dearer tea to 2 lbs. of the cheaper tea, and sells the mixture at 35 cts. a lb., what per cent. profit does he make?

TRADE DISCOUNT.

Find the net selling price :

Invoice Price.	Discount Off.	Invoice Price.	Discount Off.
1. $640 . .	10, 10, 5	4. $160.50 . .	10, 5, 5
2. 175 . .	20, 10, 10	5. 140.25 . .	5, 5, 5
3. 150 . .	5, 2, 1	6. 180.75 . .	20, 10, 5

7. What single discount on the gross cost is equivalent to discounts thereon of 20 % and 10 % ?

8. What single discount on the gross cost is equivalent to discounts thereon of 25 %, 20 %, and 10 % ?

9. At what price must goods be marked to net $8.55 after allowing a discount of 10 % and 5 % ?

10. An article cost $2.40. At what price must it be marked to net a profit of 25 %, after allowing discounts of 25 % and 20 % ?

11. A bookseller allows a discount of 10 % for cash, and allows teachers an extra discount of 10 %. What is the ordinary cash price of an article for which the teacher pays $1.20 ?

12. What is the difference between 20 % off, and 10 % and 10 % off ? What would be the difference in the cost of an article marked at $2.00 ?

13. A merchant marks goods at a profit of $33\frac{1}{3}$ %, and then allows a discount of 5 %. What % profit does he make ?

14. A dealer mixes 1 quart of water with every gallon of whiskey. If the whiskey costs him $1.20 a gallon, at what price per pint must he mark it to allow discounts of

25 %, and 20 %, and still make a profit of 25 % on the cost?

15. A merchant sold an article for $1.90, after allowing a discount of 20 % and 5 %. What was the marked price?

16. A tradesman marked an article at 10 % above cost, and then allowed a discount of 10 % on the marked price. If by so doing he lost 55 cts., what did the article cost?

17. A merchant allowed a discount of 10 % and 10 %. Had he allowed a discount of 10 % and 5 %, he would have received $1.90. How much did he receive?

18. I sold a lot of goods for $180. I sold $\frac{1}{4}$ of the goods at a discount of 25 % and 20 %, $\frac{1}{3}$ of them at a discount of 25 % and 10 %, and the balance at a discount of $12\frac{1}{2}$ %. What was the total discount?

19. A merchant bought 22 yds. of cloth at $1.20 a yd. He marked it at an advance of 20 % on cost, and allowed a discount of 25 %. If he used a yard measure 3 inches too short, find his net gain or loss.

20. A man bought a barrel of coal oil, containing 35 gals., at 20 cts. a gal. He marked it at an advance of 30 % on cost, and then allowed a discount of 10 %. If 5 gals. be lost by leakage, find his net gain or loss.

21. A merchant marked an article at an advance of 20 % on cost, and then allowed a discount of 10 % and 5 %. What was his net gain or loss per cent.? What would be his net gain or loss on an article which cost $100?

22. At what per cent. advance on cost must a merchant mark goods, so that he can throw off 25 % of the marked price and still make a profit of 20 % on cost? If an article cost $1.50, at what price should it be marked?

COMMISSION.

1. A commission merchant sold a consignment of goods for $640.50, and charged 1½ % commission. What was the commission?

2. An agent charged $7 for selling 80 bbls. of apples. If the apples were sold at $2.50 a bbl., what was the rate per cent. of commission?

3. A commission merchant sold 80 baskets of peaches, at 76 cts. a basket. If his rate of commission was 2½ %, find the net proceeds of the sale.

4. A fruit buyer received an order to buy 250 bbls. of apples. If he paid $1.10 a bbl. for the apples, and his rate of commission was 5 %, find the gross cost of the apples.

5. I remitted to my agent at St. Thomas $257.50, with instructions to deduct his commission of 3 per cent., and invest the balance in grapes at 40 cts. a basket. How many baskets did he buy?

6. I received $544.95 to invest in wool, after deducting all expenses. If my rate of commission for buying is 2½ %, and the sum of my other charges is $2.45, what was my commission?

7. How much money must I send to an agent, so that he may purchase a house and lot for me at $6400, and have his commission of 1¼ %?

8. A commission merchant sold a consignment of pork for $6400, and invested the balance, after deducting his commission, in wheat. If he charged 3 % for selling, and 5 % for buying, how much did he invest in wheat?

9. An agent transmitted to his employer $1562, as the net proceeds of a sale. If his commission amounted to $38, what was the rate per cent. of commission charged?

10. An agent sold a quantity of grapes at 3½ % commission. If he sold the grapes at 50 cts. a basket, and his total commission was $1.12, how many baskets did he sell?

11. An agent received a certain sum of money, with instructions to deduct his commission of 2½ %, and invest the balance in wheat. If his commission amounted to $75.50, how much money did he receive?

12. A commission merchant received $750, with instructions to invest it in flour, after deducting his commission of 2½ % of the amount paid for the flour. What was his commission?

13. An agent sold a consignment of 600 bbls. of apples, at $2.50 a bbl., on a commission of 2 %. After deducting both commissions, he invested the balance in wheat, at 90 cts. a bushel. If he charged 2½ % for buying, how many bushels of wheat did he buy?

14. I sold a consignment of goods for $1120. I deducted $40 for freight, etc., and remitted my employer $1043.60. What rate of commission did I charge?

15. An agent charged 2 % commission on sales, and 3 % on purchases. If he sold grapes, and after taking out his proper commissions, amounting to $175, invested the proceeds in wheat, how much did he receive for the grapes and pay for the wheat?

16. A commission merchant remitted his employer $835, after deducting $40 for commission, and $25 for other expenses. What was the rate of commission?

17. What is the cost of 150 bushels of wheat at 80 cts. a bushel, commission 2½ % additional.

18. A farmer at Welland shipped 5 tons of grapes to his agent at St. Thomas. The agent sold the grapes at 2½ cts. a lb., and after deducting his commission at 3 %, and $1.80 advanced for freight, etc., remitted the balance to his employer by bank draft, for which he paid 25 cts. exchange. Find the face of the draft.

19. What is the cost of 150 bushels of wheat at 80 cts. a bushel, commission 2½ % additional?

20. An agent sold a consignment of goods for $175. If he charged 2½ % commission, and 1 % for guaranteeing payment, how much did he remit his employer?

21. An agent sold a consignment of 150 bbls. of apples at $2 a bbl., and after deducting his commisson and reserving 19 cts. a bbl. for freight, invested the balance in flour at $2.20 a bbl. If he charged 2 % for selling and 5 % for buying, how many bbls. of flour did he buy?

22. I bought, through an agent, 150 lbs. of tea at 30 cts. a lb. If the agent charged 5 % commission, and I paid $5 for freight, etc., for how much per lb. must I sell the tea to make a profit of 20 % on my entire outlay, after allowing 10 % of sales for bad debts?

23. I bought, through an agent, 100 bbls. of sugar, each containing 225 lbs., at $8.50 a bbl., and paid 2 % commission and $48 for freight, etc. How many lbs. should I give for one dollar, in order that I may make a profit of 10 % on the entire outlay?

24. The gross cost of a purchase is $821, which includes the commission $12, and freight $9. What was the rate per cent. of commission?

25. An agent remitted to his principal $433, as his net proceeds of a consignment. His charges for commission were 2½ %, and other charges $5.75. What did he obtain for the goods?

26. An agent received $361 to invest in flour after deducting his commission of 4 %, 2 cts. a bbl. for drayage, and $8.50 for freight and other expenses. If he paid $4.50 a bbl. for the flour, how many bbls. did he buy?

27. An agent sold a consignment of 400 hams, each weighing 20 lbs., at 4 cts. a lb. He charged 3 % commission, 2½ % for guaranteeing payment, and reserved $20 for storage, and $12 for freight advanced. He remitted the balance to his employer by express money order, for which he paid 75 cts. What was the face of the order? What price per lb. did the hams net the employer?

SIMPLE INTEREST.

(Year, 360 days.)

What is the interest at 6 % per annum on:

1.	$260.00	for	25	days.	9.	$125.25	for 16 days.
2.	480.00	"	84	"	10.	410.20	" 22 "
3.	128.60	"	66	"	11.	620.18	" 18 "
4.	820.16	"	128	"	12.	360.75	" 56 "
5.	660.25	"	312	"	13.	620.20	" 26 "
6.	160.60	"	77	"	14.	76.40	" 76 "
7.	940.00	"	117	"	15.	312.25	" 24 "
8.	260.00	"	44	"	16.	680.48	" 96 "

What is the interest on 6 % per annum on:

17.	$620.40	from	Sept.	1,	1884,	to	Nov. 15, 1885?
18.	460.60	"	Jan.	15,	1889,	to	April 1, 1890?
19.	460.25	"	April	1,	1889,	to	Sept. 27, 1889?
20.	612.40	"	Jan.	10,	1888,	to	July 1, 1888?
21.	480.20	"	Sept.	1,	1889,	to	Jan. 16, 1890?

22. 620.00 " June 1, 1889, to May 1, 1890?
23. 480.00 " Sept. 14, 1890, to Jan. 1, 1891?
24. 620.40 " Apr. 1, 1891, to Dec. 12, 1891?
25. 520.17 " July 15, 1891, to Aug. 1, 1891?
26. 26.26 " Sept. 9, 1890, to July 4, 1891?
27. 160.28 " Mar. 1, 1887, to Feb. 12, 1888?
28. 760.40 " Feb. 1, 1888, to July 12, 1888?
29. 120.20 " Mar. 4, 1889, to Sept. 1, 1890?
30. 670.40 " Sept. 12, 1888, to Aug. 11, 1889?

31. At what rate per annum will $620 yield $3.72 in 27 days?

32. In what time will $840 produce $20.37 interest, if loaned at 9 % per annum?

33. What principal will yield $19.01 in 180 days, at 5 %?

34. What principal will amount to $484.40 in 66 days, at 5 %?

35. I borrowed $960.20 on Mar. 1st, 1889, on my note bearing interest at 8 % per annum. How much should I pay Feb. 12, 1890? (Use exact days.)

36. I borrowed $760 on my note at 90 days, bearing interest at the rate of 8 % per annum, and immediately loaned $460 for 90 days at 7 % interest, and the remainder for the same time at 10 %. How much did I gain or lose by the transaction? (Use days of grace.)

37. On May 5 I borrowed $650 on my note, bearing interest at the rate of 10 % per annum. When the note became due I paid $666.79. When did the note mature?

38. I bought a house and lot for $840, and receive $15 a month rent for it. If the taxes, insurance, etc., amount to $75, what rate of interest do I receive on my money?

39. By renting a house for $12\frac{1}{2}$ a month I make 8 % per annum on the money invested. What did I pay for the house?

40. In what time will a sum of money double itself at $7\frac{1}{2}$ %? At $6\frac{3}{4}$ %? At 10 %?

41. On Jan. 15, 1891, I borrowed $1300 at 6 % per annum. When the note became due I paid $1320.15. When did the note mature?

42. I can buy flour at 2.04\frac{1}{2}$ a bbl. on 30 days' credit, at 2.05\frac{1}{2}$ on 90 days' credit, or at $2.00 a bbl. cash. Which is the best offer if money is worth 12 % per annum? If money is worth 8 % per annum? If money is worth 20 % per annum?

43. A buys a horse from B for $1860, and agrees to pay for it in three equal payments, payable in 1, 2 and 3 months respectively, the notes to bear interest at the rate of 5 % per annum. Find the total amount paid. (Use days of grace.)

44. What fraction is the principal of the interest on a note drawn for 3 years at $7\frac{1}{2}$ % per annum?

45. A note bearing interest at the rate of $7\frac{1}{2}$ % per annum amounts to $325 in 4 years. Find the face of the note.

46. A person borrowed a sum of money for 3 years. For the first year he was to pay 4 %, for the second year 5 %, and for the third year 6 %. The total amount of interest and principal was $828. What was the amount borrowed?

47. I bought 360 bushels of wheat at $90\frac{1}{2}$ cts. a bushel, payable in 90 days. I immediately sold the wheat at 90 cts. a bushel, and loaned the money for 90 days at the rate of 8 % per annum. How much did I gain by the transaction?

48. I loaned $560 to a merchant, at the rate of 6 % per annum, the agreement being that the interest was to be added to the principal at the end of each year. How much did I owe at the end of the third year?

49. On April 1st I gave my note for $480, bearing interest at the rate of 8 % per annum, and payable in 90 days. When the note became due I paid $400 and gave a new note for the balance and interest at the same rate per cent., and payable in 60 days. How much did I owe when the second note became due? (Use days of grace.)

COMPOUND INTEREST.

Find the Compound Interest:

	Principal.	Rate per Annum.	Time.	Interest Payable
1.	$7500	6 %	2 yrs.	Annually.
2.	$4750	8 %	1½ "	Semi-Annually.
3.	$3600	7 %	3 "	Annually.
4.	$1500	6 %	1 " 3 mos.	Quarterly.
5.	$1650	10 %	2 " 6 "	Semi-Annually.
6.	$ 620	4 %	2 " 9 "	Quarterly.
7.	$ 254	5 %	3 "	Annually.
8.	$ 145	6 %	1 " 2 mos. 10 dys.	Quarterly.
9.	$ 600	8 %	2 " 5 " 15 "	Quarterly.
10.	$ 260	10 %	4 " 10 " 8 "	Quarterly.
11.	$ 225	5 %	7 " 8 "	Quarterly.
12.	$ 360	6 %	9 " 10 "	Semi-Annually.

13. What is the amount due April 1st, 1891, on a note for $560, drawn Sept. 12, 1890, and bearing interest at the rate of 6 % per annum, interest payable quarterly?

14. Find the interest on a note for $620, dated April 15, 1890, and paid Sept. 18, 1891, the rate of interest being 8 % per annum, and payable semi-annually, no previous payments having been made.

15. I deposited $1200 in a savings bank, and received 3 % per annum, payable quarterly, and compounded if not withdrawn. What amount was to my credit at the end of 1 year and 9 mos.?

16. A certain savings bank pays 5 % interest, added semi-annually. How much must I deposit to produce me $1000 at the end of 2½ years?

17. A banker loans money at the rate of 10 % per annum. How much will $100 produce him at the end of a year, if he re-loans the principal and interest every two months?

18. What sum invested for 3 years, at the rate of 10 % per annum, will produce $2500, interest added quarterly.

19. Find the interest on $1450 for 2 years 1 mo. 10 days, at the rate of 7½ % per annum, interest added quarterly.

20. What is the difference between the simple and compound interest on $1250 for 3 years, compounded annually?

21. What per cent. per annum is equivalent to interest at the rate of 10 % per annum, payable quarterly?

22. In what time will a sum of money double itself at the rate of 20 % per annum, compounded yearly?

23. I borrowed $7500 for two years, at the rate of 4 % per annum, compounded yearly, and immediately loaned the money for two years, at the rate of 4½ % per annum, simple interest. What did I gain or lose by the transaction?

24. I borrowed a sum of money on my note, bearing interest at the rate of 20 % per annum, compounded annually. At the end of the second year I paid $648 as principal and interest. How much did I borrow?

25. A broker loaned $25 for 3 months, and received $5 interest. He then loaned the $30 for another 3 months at the same rate of interest. He then loaned the proceeds of the second note for another 3 months at the same rate of interest, and finally he loaned the proceeds of the third note for 3 months as before. How much did he receive at the end of the year, and what per cent. per annum did he realize on his original investment?

PRESENT WORTH AND TRUE DISCOUNT.

Find present worth and true discount:

	Amount.	Time.	Rate per Annum.
1.	$ 543.60	36 days	4%
2.	$ 281.17	56 "	5%
3.	$ 585.75	225 "	6%
4.	$ 284.90	5 mo. 12 "	8%
5.	$ 166.50	6 " 20 "	5%
6.	$1581.78	1 yr. 2 mo. 10 days	6%
7.	$ 230.35	1 " 3 " 15 "	10%
8.	$ 141.86	2 " 6 " 20 "	6%

9. I can buy apples at $2.10 a bbl., payable in 3 mos., or at $2.20 a bbl., payable in 8 mos. Which is the better bargain, if money is worth 8% per annum?

10. I owe A $250, payable in 1 month, $250, payable in 2 months, and $250, payable in 3 months. Find the present worth of the whole bill, money being worth 10% per annum.

11. I bought a farm for $12000, payable in four quarterly instalments of $3000 each. I immediately sold the farm for $1200, payable in 6 months. Find my present gain, money being worth 10% per annum.

12. The present worth of a sum of money for 9 months, at the rate of 6 % per annum, is $22. What is the sum?

13. A city borrows $10000, payable in 4 equal annual payments of principal and interest. Find the annual payment, money being worth 5 % per annum.

14. On Mar. 1st, 1891, I borrowed $600, and gave my note at 90 days, bearing interest at the rate of 8 % per annum. Find the present worth of the note on April 3, money then being worth 10 % per annum.

15. On April 15, 1891, I borrowed $800, and gave my note at 2 months, bearing interest at the rate of 10 per cent. per annum. Find the present worth of the debt 45 days before maturity, money then being worth 8 % per annum.

16. On Sept. 12, 1890, I borrowed $600, and gave my note at 1 mo., bearing interest at the rate of 10 % per annum. Thirteen days afterwards I paid the present worth of the note. If the note was discounted at the rate of 8 % per annum, how much did I pay?

17. On Jan. 1st, 1891, I bought a horse for $120 on my note at 3 mos., without interest. Find the present worth of the note, if money is worth 7 % per annum.

18. The true discount on $254.40 for one year is $14.40. Find the true discount on the same sum for 8 months.

19. I bought goods amounting to $675 on 4 mos. credit. Three months afterwards I paid the present worth of the bill. How much did I pay, if money is worth 6% per annum?

20. On Sept. 5, 1891, I gave my note, bearing interest at the rate of 10 % per annum, at 3 mos., for $160. I paid the present worth of the note on Sept. 12. How much less than the face of the note did I pay, if money was then worth 12 % per annum?

BANK DISCOUNT.

(Use exact days. Year, 360 days.)

In the following problems find :

(a). When each note becomes due.

(b). The unexpired time in days when the note is discounted.

(c). The present worth by bank discount.

(d). The present worth by time discount.

1. $275.00. St. Thomas, Sept. 1st, 1891.

Sixty days after date, I promise to pay John N. Carl, or order, Four Hundred and Fifty Dollars, value received.

WM. CHAMBERS.

Discounted Sept. 14, 1891, at 8 %.

2. $275.00. St. Catharines, Jan. 21st, 1889.

Three months after date, I promise to pay George Brown, or order, at the Bank of Commerce, here. Two Hundred and Seventy-five Dollars, value received.

FRANKLIN MOORE.

Discounted Mar. 1st, 1889, at 6 %.

3. $500.00. London, Sept. 12, 1890.

Four months after date, I promise to pay W. A. Phillips, or order, at my office, here, Five Hundred Dollars, value received.

M. S. CARL.

Discounted, Nov. 12, 1890, at 10 %.

4. $175.50. St. Thomas, Nov. 12, 1890.

Ten days after date, I promise to pay John Smith, or order, One Hundred and Seventy-five $\frac{50}{100}$ Dollars, value received.

JAMES FERGUSON.

Discounted, Nov. 15, 1890, at 9 %.

5. $3750.00. Toronto, July 10, 1891.

Six months after date, I promise to pay George Brown, or order, at the Imperial Bank of Canada, here, Three Thousand Seven Hundred and Fifty Dollars, value received.

Discounted, Nov. 22, 1891, at 7½%. WM. JOHNSON.

6. $2570.00. Hamilton, Dec. 3, 1887.

Ninety days after date, I promise to pay Herbert Swindel, or order, at my office, here, Two Thousand Five Hundred and Seventy Dollars, value received.

Discounted, Mar. 1, 1888, at 5%. GEORGE BROWN.

7. $3000.00. Ottawa, Jan. 1, 1891.

Thirty days after date, I promise to pay Smith & Ferguson, or order, at the Bank of Montreal, here, Three Thousand Dollars, with interest at 8% per annum, value received. CHAS. SANFORD.

Discounted, Jan. 4, 1891, at 10%.

8. $165.00. Kingston, June 4, 1890.

Two months after date, I promise to pay Geo. Campbell, or order, at my office, here, One Hundred and Sixty-five Dollars, with interest at 10% per annum, value received.

Discounted, July 1, 1890, at 8%. S. MARTIN.

9. $1255.75. St. Thomas, June 5, 1891.

One month after date, I promise to pay Lundy Bennett, or order, at my office, here, One Thousand Two Hundred and Fifty-five $\frac{75}{100}$ Dollars, with interest at 10% per annum, value received. NATHAN WOODWARD.

Discounted, June 5, 1891, at 10%.

10. $1450.00. Toronto, May 16, 1890.

Four months after date, I promise to pay Mark Wallis, or order, One Thousand Four Hundred and Fifty Dollars, with interest at the rate of 7% per annum, value received. CHESTER LINDSAY.

Discounted, Aug. 22, 1890, at 8%.

11. A note for $1750, drawn April 1st, 1890, at 2 months, is discounted May 12, 1890, at 10%. What is the difference between the true and bank discount?

12. A note for $2765, drawn June 12th, 1889, at 30 days, is discounted 10 days before maturity at 8%. What is the difference between the true and bank discount?

13. A note for $850, drawn Sept. 6th, 1890. at 2 months, and bearing interest at the rate of 4% per annum, is discounted immediately at 7½%. Find both true and bank discount.

14. A note for $365, drawn Jan. 12th, 1890, at 3 months, and bearing interest at the rate of 12% per annum, is discounted 10 days before maturity at 10%. Find both the true and bank discount.

15. A note for $875, drawn Sept. 1st, 1891, at 90 days, and bearing interest at the rate of 6% per annum, is discounted Nov. 12th, 1891, at 10% per annum. Find both the true and bank discount.

16. A note is discounted 30 days before due at 8%. If the proceeds amount to $953.60, what is the face of the note?

17. The discount on $960 for 90 days is $15.60. What is the rate per cent.? If the rate is 12%, what is the time? If the rate is 12%, the time 30 days, and the discount $4.50, what is the amount?

18. A note for $750, dated April 1st, 1890, at 60 days, and bearing interest at the rate of 10% per annum, is discounted immediately at a bank at 10%. Find the discount.

19. For what sum must I draw a 30 day note that, when discounted at a bank at 8% per annum, the proceeds will be $238.24?

20. For how much must I draw a 90 day note that, when discounted at a bank at the rate of 6 % per annum, the proceeds will be $708.84?

21. For how much must I draw a 30 day note that, when discounted at a bank at the rate of 8 % per annum, the proceeds will be $238.24?

22. W. A. Phillips offered at the bank the following notes, which were discounted Sept. 1st, 1891, at 8 %:

Note dated July 15, 1891, at 30 days, for $750
" " 25, " " 2 months, " $600
" Aug. 15, " " 3 " " $1200

The last note was bearing interest at the rate of 6 % per annum. What were the total proceeds of the three notes?

23. I owed $3500, and only had $750 on hand. I discounted a note for $1200, due in 12 days at a bank, at the rate of 8 % per annum, and drew an accommodation note at 60 days for such an amount that, when discounted at a bank at the rate of 10 % per annum, I was able to pay my note and have $100 remaining. What was the face of the accommodation note?

24. I wish to raise $2750. I have three notes for $500 each, maturing in 15, 30 and 45 days respectively, which I discount at a bank at the rate of 10 % per annum. For how much must I draw an accommodation note that, when discounted at a bank at the rate of 8 % per annum, I will obtain the money required?

25. Smith & Ferguson offered at the bank the following notes, which were discounted Mar. 15, 1891, at 10 %:

Note dated Feb. 12, 1891, at 1 month, for.....$250
" Mar. 1, " " 60 days, " $250
" " 12, " " 10 " " $500

The first two notes were bearing interest at the rate of 6 % per annum. What were the total proceeds of the three notes?

PARTIAL PAYMENTS.

(Month, 30 days.)

1. $7500. Toronto, Sept. 12, 1889.

On demand, I promise to pay John Smith, or order, Two Thousand Five Hundred Dollars, with interest at 8% per annum, value received. ISAAC MOYER.

On the note were the following indorsements :

Dec. 23, 1889 ..... $1200
Feb. 7, 1891 ..... $1000

What remained due July 29, 1891 ?

2. $1750. London, Sept. 13, 1888.

Two years after date, I promise to pay A. D. McGregor, or order, One Thousand Seven Hundred and Fifty Dollars, with interest at the rate of six per cent. per annum, value received. JAMES BROCK.

On the note are the following indorsements :

Jan. 8, 1889 ..... $500
Dec. 13, " $650

What remained due Sept, 6, 1891 ?

3. $450. St. Thomas, Jan. 12, 1891.

On demand, I promise to pay A. D. Patterson, or order, Four Hundred and Fifty Dollars, with interest at the rate of nine per cent. per annum, value received.

HENRY WISNER.

Following are the indorsements :

April 12, 1891, ... $200
July 17, " $100
Aug. 17, " ..... $ 50

What remained due Jan. 15, 1892 ?

4. $1800. Effingham, Aug. 10, 1889.

One year after date, I promise to pay James Francis, or order, One Thousand Eight Hundred Dollars, value received, with interest at the rate of ten per cent. per annum, until paid.

JOHN N. CARL.

Indorsements:

Dec. 1, 1889 ..... $ 25
Mar. 4, 1890 ..... $100
Feb. 1, 1891 ..... $ 10
Mar. 4, " $500

What remained due June 9, 1891?

5. A note for $1500, dated Mar. 1, 1890, and bearing interest at the rate of 8% per annum, has indorsed on it the following payments: July 5, 1890, $810; Sept. 11, 1890, $125; Jan. 13, 1891, $400; June 18, 1891, $400. What remained due Sept. 30, 1891?

6. A note for $1560, dated April 12, 1888, and bearing interest at the rate of 10% per annum, has indorsed on it the following payments: July 15, 1888, $15; Oct. 15, 1888, $15; Jan. 15, 1889, $30; June 12, 1890, $600. What remained due Dec. 31, 1890?

7. A mortgage for $2400, dated Jan. 1, 1887, and bearing interest at the rate of 10% per annum, has indorsed on it the following payments: Mar. 16, 1888, $1000; June 12, 1888, $10; Dec. 8, 1889, $240; Jan. 15, 1890, $100; July 6, 1890, $175. What remained due Dec. 11, 1891?

8. A note for $360, dated April 5, 1890, and bearing interest at the rate of 5% per annum, has indorsed on it the following payments: Dec. 1, 1890, $25; June 8, 1891, $25; Nov. 18, 1891, $25. What remained due Jan. 1, 1892?

9. A note for $3650, dated Jan. 1, 1888, and bearing interest at the rate of 7% per annum, has indorsed on it the following payments: July 6, 1889, $200; Sept. 2, 1888, $50;

Jan. 1, 1889, $10; Mar. 16, 1890, $500; Dec. 12, 1890, $500; June 4, 1891, $250; July 4, 1891, $1000. What remained due Dec. 9, 1891?

10. A note for $360, dated July 8, 1889, and bearing interest at the rate of 9 % per annum, has indorsed on it the following payments: Aug. 3, 1890, $100; Dec. 15, 1890, $10; Jan. 15, 1891, $10; July 1, 1891, $100; Dec. 31, 1891, $10. What remained due Feb. 5, 1892?

11. What was the balance due Dec. 31, 1891, on a note for $820, at 5 %, dated Sept. 5, 1889, if it had indorsed on it the following payments: Feb. 2, 1891, $50; April 7, 1891, $100; Jan. 12, 1892, $50; July 1, 1892, $200; July 6, 1892 $100?

12. On Mar. 1, 1890, I gave my note for $1250, at 8 %, on which I subsequently made the following payments: Sept. 10, 1890, $25; Jan. 1, 1891, $25; Feb. 1, 1891, $250; Sept. 15, 1891, $200. What amount remained due Nov. 20, 1891?

13. A mortgage for $1600, dated June 12, 1890, and bearing interest at the rate of 5 % per annum, has indorsed on it the following payments: June 10, 1890, $500; Sept. 8, 1890, $250; April 10, 1891, $100; June 15, 1891, $100. What remained due Jan. 1, 1892?

14. On July 8, 1889, I gave my note for $300, at 10 %, on which I subsequently made the following payments: June 3, 1890, $10; July 3, 1890, $10; Aug. 8, 1890, $10; Sept. 3, 1890, $10; Oct. 3, 1890, $20. What remained due Mar. 8, 1891?

15. A note for $125.50, dated April 12, 1888, and bearing interest at the rate of 4 % per annum, has endorsed on it the following payments: July 10, 1889, $25; Mar. 10, 1891, $50; Sept. 5, 1891, $10; Jan. 20, 1892, $30. What remained due Feb. 1, 1892?

STOCKS AND BONDS.

1. What is the dividend on $4200 par of stocks, if the rate of dividend is $4\frac{5}{8}\%$?

2. What is the market value of 48 shares of stock, which sell at $3\frac{1}{4}\%$ discount, brokerage $\frac{1}{8}\%$?

3. What is the cost of $3600 par of stocks bought at $6\frac{1}{4}\%$ premium, brokerage $\frac{1}{4}\%$ additional?

4. I sold $22000 par of stocks at $68\frac{7}{8}$, and with the proceeds purchased other stocks at $124\frac{7}{8}$. How many shares did I buy if the brokerage was $\frac{1}{8}\%$ for buying and the same for selling?

5. At what price must 7% stocks be bought to realize 8% on the investment?

6. I can buy 8% stocks at 120, or 9% stocks at 130. Which investment will produce me the greater per cent. of income on the investment?

7. What per cent. stocks can be bought at $79\frac{7}{8}$ to yield 8% on investment, the brokerage being $\frac{1}{8}\%$?

8. A speculator bought 40 shares of 5% stocks $59\frac{1}{2}$, received an annual dividend, and then sold out at $54\frac{7}{8}$. What was his gain or loss if the brokerage in each case was $\frac{1}{4}\%$?

9. A gentleman bought stocks at $63\frac{3}{4}$ and sold out at $64\frac{1}{2}$. He found that he had gained $44 after paying $\frac{1}{8}\%$ for buying and the same for selling. How many shares did he buy?

10. A capitalist purchased sufficient 6% stocks at $42\frac{1}{4}$ to produce him an annual income of $426. How much did he invest, if the brokerage was $\frac{1}{4}\%$?

11. I sold \$4800 par of 6% stocks at $63\frac{7}{8}$, and bought 10% stocks at $95\frac{1}{2}$. How much was my income increased, if the brokerage in each case was $\frac{1}{8}$%?

12. A gentleman invested \$12560 as follows: \$6420 in manufacturing stock at $106\frac{3}{4}$, paying 7% annual dividends; \$3140 in 4% bonds, at $156\frac{3}{4}$; and the balance in bank stock at $124\frac{3}{4}$, paying 6% dividends. What was the annual income if the brokerage in each case was $\frac{1}{4}$%?

13. I paid \$2790 for U. S. $4\frac{1}{2}$ bonds, and realized 5% per annum on my investment. What was the par value of the bonds?

14. How many railway shares (100 each) at 4% discount must be sold in order that the proceeds invested in bank stock, at 12% below par, and paying a dividend of 6%, may yield an income of \$1260?

15. I invested \$21315 in Bank of Commerce stock at $122\frac{1}{4}$, brokerage $\frac{1}{4}$% additional, the half yearly dividends being $3\frac{1}{2}$%. Find my annual income from the investment.

16. I sold \$5000 par of 5% stocks at 112, and with the proceeds purchased Bank of Commerce stock, paying 6% dividends. If my yearly income is increased \$170, at what quotation did I purchase the Bank of Commerce stock?

17. A person bought \$12000 of Bank of Montreal stocks at $170\frac{1}{2}$, brokerage $\frac{1}{2}$% additional. What rate % of dividend should the stocks pay in order that he may make 5% on his money?

18. A broker received \$42100 to invest in U.S. 5-20 bonds, after reserving as brokerage $\frac{1}{4}$% on the par value of the amount purchased. What was the commission, the bonds being at a premium of 5%?

19. A man invested \$4800 in bank stock at 120, and \$5535 in railway stocks at 135. If the former stocks pay 4% dividends and the latter $4\frac{1}{2}$%, what is the total income?

20. A gentleman, having $25000 of Dominion Bank stock paying 8 % per annum, sells out at 120 and invests the proceeds in Bank of Commerce stock which is at 125, and pays 8½ %. Find the alteration in his income.

21. A gentleman sold 120 shares of 5 % stocks at 70⅛, and invested the proceeds in U.S. 3 per cent. bonds at 60⅜. Find the alteration in his income, if the brokerage each way was ⅛ %.

22. A man bought 40 shares of 5 % stocks at 63⅞, and after receiving a half yearly dividend sold out at 62¾. Find his net gain or loss, if the brokerage each way was ⅛ %.

23. I bought 5 per cent. stocks at 54¼, and after receiving a quarterly dividend sold out at 54. My net gain, after paying ¼ % brokerage each way, was $18. How many shares did I buy?

24. A broker, on his own account, bought 30 shares of 5 % stocks at 60, and 20 shares of 6 % stocks at 70. Find his average per cent. of interest on his outlay.

25. A gentleman bought, through a broker, 100 shares of bank stock at 174¾, 20 shares of manufacturing stock at 95¼, and 40 shares of loan company stock at 102. What was his total investment, if he paid ⅛ % brokerage in each case? What was the total brokerage?

26. I sold $3000 par of 9½ stocks at 167⅝, and after deducting ⅛ % brokerage for selling and ¼ % for buying, bought 12 % stocks at 199¾. How much is my income increased?

27. The net profits of a company, whose capital stock is $25000, is $1000. If $125 be reserved, to meet unforseen losses, and the remainder be divided among the shareholders, what rate per cent. of dividend will the company declare? If I have 25 shares of the stock, purchased at 75, what rate per cent. will I make on my investment?

FIRE INSURANCE.

1. A man insured his house, valued at $1750, at $\frac{4}{5}$ its value. What was the premium paid, if the rate of insurance was $\frac{3}{4}$ %?

2. A gentleman insured a building at $\frac{1}{2}$ % premium. The premium paid was $7.68. What was the value of the building, if it was insured at $\frac{3}{4}$ its value?

3. A store and contents was insured for $27000 as follows: $\frac{2}{3}$ in one company at $\frac{3}{5}$ % premium; $\frac{1}{3}$ of the remainder in a second company at $\frac{3}{4}$ % premium; and what remained in a third company at $\frac{7}{8}$ % premium. What was the total premium paid? What was the average rate per cent. of premium paid on the whole?

4. A stock of goods valued at $20000 is insured in one company for $9000, in another for $4500, and in a third for $2700. If the goods were partially damaged to the extent of $5500, how much should each company pay?

5. A fire insurance company charged $48.15 for insuring a house for $6420. What was the rate % of insurance?

6. A fire insurance company took a risk of $24000 on a stock of goods. If a partial damage of $7600 should take place, what % of the risk should the company pay?

7. For what sum should a house be insured, valued at $2145, to realize the value of the house and the insurance, if the rate of premium is $2\frac{1}{2}$ %?

8. An insurance company took a risk of $1800 at $\frac{3}{4}$ % premium, and reinsured $\frac{1}{3}$ of the risk in one company at $\frac{5}{8}$ % premium, and $\frac{1}{5}$ of the remainder in another company at $\frac{7}{8}$ % premium. What did the company gain or lose by re-

insurance. What per cent. of premium did the company net on the remainder of the risk?

9. A merchant has a stock of goods valued at $1715.04. He wishes to have them insured at such a sum as will cover the value of the goods and the premium in case of loss. For what sum should the goods be insured, if the rate of premium is $\frac{3}{4}\%$?

10. A merchant insured a stock of goods for $5260.25, covering both the value of the goods and the premium in case of loss. What was the value of the goods, if the rate of premium was 4%?

11. A company took a risk of $25000 at $\frac{3}{4}\%$ premium, reinsured $\frac{1}{5}$ of the risk at $\frac{7}{8}\%$ premium, and $\frac{1}{2}$ of the remainder at $\frac{1}{2}\%$ premium. What rate did the company net on the balance of the risk?

12. A gentleman insured a house for $\frac{3}{4}$ of its value at $\frac{3}{4}\%$ premium. If the premium amounted to $5.40, what was the value of the house?

13. I insured a house for such a sum as to cover both the value of the house and the premium in case of loss. If the house was insured for $760, and the rate of premium was $1\frac{1}{4}\%$, what was the value of the house?

14. A cargo was insured for $7500 at $\frac{3}{4}\%$ premium in one company, and for $2500 at $\frac{1}{2}\%$ premium in another company. The cargo was insured at $\frac{3}{5}$ of its value. Find the net loss to the owner, if the cargo is destroyed.

15. A building worth $25000 is insured in one company for $10000 at $\frac{3}{4}\%$ premium, in a second company for $8000 at $\frac{7}{8}\%$ premium, and in a third company for $7000 at $\frac{1}{2}\%$ premium. What was the average per cent. of premium paid? If the building was damaged to the extent of $14000, what should each company pay?

16. A merchant insured 8000 bushels of potatoes at $1\frac{1}{4}\%$ premium. If the premium was \$34, at what price per bushel were the potatoes insured?

17. For what sum must a vessel worth \$20000 be insured to cover the value of the vessel, \$1.50 for policy and survey, and the premium, if the rate of premium is $2\frac{1}{2}\%$?

18. A block of buildings worth \$8000 was insured in one company for \$3000 at $\frac{3}{4}\%$ premium, and in another company for \$2000 at $\frac{1}{2}\%$ premium. If the building should be damaged by fire to the extent of \$2400, how much should each company pay?

19. A building worth \$7500 was insured at $\frac{2}{3}$ of its value. If the premium paid was \$43.75, what was the rate per cent. of premium?

20. A merchant insured a cargo of goods worth \$1500 in one company for \$8000 at $\frac{7}{8}\%$ premium, and in another company for \$7000 at $\frac{3}{4}\%$ premium. What was the average rate per cent. of premium paid? What was the total premium paid?

21. A merchant insured a lot of goods valued at \$16000 in one company for \$8000 at $\frac{3}{4}\%$ premium, in a second company for \$3000 at $\frac{1}{2}\%$ premium, and in a third company at 1 per cent. premium for such an amount as to cover the cost of the goods and the total amount of premiums paid in case of loss. For how much were the goods insured in the third company?

22. A fire insurance company took a risk of \$25000 at $\frac{3}{4}\%$ premium on a building worth \$40000. The building was insured for \$10000 in another company at $\frac{7}{8}\%$ premium. If the building should be damaged by fire to the extent of \$7500, how much should the first company pay? What was the average per cent. of premium paid on the whole amount insured?

TAXES.

1. The rate of taxation in a certain city is 16 mills on the dollar. What is the amount of my taxes, if my property is assessed at $2400?

2. The estimated expenditure in a certain city is $36000. What will be the rate of taxation, if the taxable property is assessed at $2,880,000?

3. Find the tax on property assessed at $1750, when the rate of taxation is 18 mills on the dollar.

4. A township assessed at $1,250,000 wishes to build a bridge for $8000. What will be the rate of taxation expressed as mills on the dollar? What will be the amount of a man's taxes who is assessed at $6000?

5. A man's income is $1250 a year, of which $400 is exempt from taxation. What tax does he pay, if the rate of taxation if $1\frac{1}{2}$ cents on the dollar?

6. The property of a town is assessed at $800,000. The council wishes to raise $5850 and the collector's charge of $2\frac{1}{2}\%$ on the amount collected. What will be the rate of taxation?

7. A ratepayer's taxes amount to $2.94. What is the rate of taxation, if his property is assessed at $1200? What will be the total amount of taxes raised, if the assessed valuation of the property is $2,150,000?

8. The assessed valuation of the property in a town is $1,500,000. The amount of money required for the yearly expenses is $19000 and the collector's charge of 5%. What will be the rate of taxation?

9. I bought a house and lot for $800. The property is insured at $\frac{3}{4}$ of its value, and the rate of taxation is 15 mills on the dollar. The house is insured for $400 at $\frac{3}{4}$% premium. If money is worth 6% per annum, what monthly rent am I really paying for the house?

10. My property is assessed at $\frac{3}{4}$ of its value, and my taxes are $10.80. If the rate of taxation is $1\frac{1}{2}$ cents on the dollar, what is the value of my property?

11. The taxable property in a certain city was $1,128,756. The taxes were assessed as follows:

For school purposes ..... 8.5 mills on the dollar.
" general " ..... 14 " "

What was the amount of money required for each purpose?

12, I own property on a certain street assessed at $1200. The taxes are assessed as follows:

For general purposes ..... 8 mills on the dollar.
" frontage ..... 4 " "
" school purposes ..... 14 " "
" sewerage ..... 3 " "

What amount of taxes do I pay for each purpose? What is the total amount of my taxes?

13. The assessed valuation of the property of a town is $1,500,000. The council wishes to raise $7760 and the collector's commission of 3%. What will be the rate of taxation?

14. What is the total tax on real estate assessed at $7500, and personal property assessed at $2400, if I am allowed a discount of 3% for prompt payment, the rate of taxation being 14 mills on the dollar?

15. The taxes on a certain property amount to $17.10. If the property is worth $2700, and is assessed at $\frac{2}{3}$ of its value, what is the rate of taxation?

16. In a certain town the following is the

ESTIMATED EXPENDITURE.

Market buildings	$ 3000.00
Police department	7550.00
Fire "	3000.00
Salaries	12000.00
Public schools	10500.00
Insurance	596.24
Interest on debentures	7246.17
Lighting streets	3000.00
Printing, etc.,	400.00
Election expenses	364.00
Sundries	6274.00

Following is the

ESTIMATED REVENUE.

Balance from last year	$2460.71
Rents	1764.13
Licenses	1250.00
Police court funds	800.00
Poll tax	160.00

If the assessed valuation of the property of the town is $3,674,000, what will be the rate of taxation, expressed as the lowest number of even mills on the dollar? What will be the estimated surplus?

17. What rate of taxation will be necessary to raise $9750 and the collector's commission of 2½% on property assessed at $500,000? What will be the taxes on property assessed at $1750? On property assessed at $2100?

DUTIES AND CUSTOMS.

1. What is the duty on an importation of books invoiced at $37, if the rate of duty is 35 % ad valorem?

2. What is the duty on 15 bbls. of molasses, each containing 40 gallons, at 15 % ad valorem?

3. At $\frac{3}{4}$ of a cent a cubic foot, what is the duty on a stick of timber 25 ft. long, $2\frac{1}{2}$ ft. wide, and 2 ft. thick?

4. What is the duty on an importation of 1200 yds. of cotton, 27 inches wide, invoiced at $4\frac{1}{2}$ cts. a yard, the rate of duty thereon being 2 cts. a square yard and 15 % ad valorem?

5. What is the duty on 16 bbls. of cider, each containing $31\frac{1}{2}$ gallons, at 10 cts. a gallon, allowing 2 % for leakage?

6. What is the duty on 960 lbs. of nail plate, the rate of duty thereon being $13 per ton?

7. What is the duty on an importation of 960 yds. of woollen cloth, weighing 1200 lbs., and invoiced at $1.25 a yard, the rate of duty thereon being 10 cts. a lb. and 20 % ad valorem?

8. A grocer marks goods at an advance of 25 % on the gross cost. How much is an imported article, invoiced at $2.40, increased in price by the imposition of a duty of 30 %?

9. A dealer imported a consignment of 50 lbs. of tobacco, and paid thereon $15 duty. What was the invoiced price per lb., if the rate of duty was 20 cts. a lb. and 20 % ad valorem?

10. I imported a quantity of sugar candy invoiced at 8 cts. a lb. If the rate of duty is $1\frac{1}{4}$ cts. a lb. and 25 % ad valorem, and the total cost was $8.55, how many lbs. did I buy?

11. A merchant imported a consignment of watches invoiced at £80 10s. 6d. What is the duty thereon at 25 % ad valorem?

12. What is the duty on an importation of 100 baskets of champagne invoiced at $13 per basket, at 4 % duty, allowing 3 % for leakage?

13. A merchant marks goods at an advance of 30 % on gross cost. He imports an article on which there is a duty of 30 %. The freight, etc., amounted to $2.40. If the article was marked at $13.36, what was the invoice price?

14. I imported a piano on which there was a specific duty of $50 and 20 % ad valorem. The freight, etc., amounted to $24.60. If the invoice paid was $360, what did the piano cost me?

15. A merchant imported goods invoiced as follows:

280 yds. broadcloth at ..... 18s. a yd.
112 " carpeting " ..... 9s. "
75 casks maderia " .....$36 a cask.

The duty on broadcloth is 35 % ad valorem; on carpeting 25 % ad valorem; on maderia 40 % ad valorem. What was the total duty paid?

16. I imported 800 yds. of flannel 27 inches wide, and invoiced at 40 cts. a yd. What is the total duty, if the rate of duty is 4 cts. a yd. and 20 % ad valorem?

17. What is the duty on a consignment of watches invoiced at £100 10s. 6d., at 25 % ad valorem?

EXCHANGE.

1. What is the cost of a sight draft on Toronto for $1200 at $\frac{3}{8}$ % premium?

2. What is the cost of a draft on Chicago for $860 at $\frac{3}{4}$ % discount?

3. Find the cost of a bill of exchange on London for £800, the course of exchange being £1 for $4.60.

4. I wish to remit $480 to Liverpool. What will be the face of the bill, the course of exchange being £1 for $4.85.

5. Find the cost of a bill of exchange on London for £1500, exchange being quoted at $8\frac{3}{4}$.

6. What is the cost of a bill of exchange on Liverpool for £900, exchange being quoted at par.

7. A merchant in Toronto wishes to transmit $1000 to New Orleans. Exchange on New Orleans is quoted at $\frac{1}{4}$ % premium. Exchange on New York is quoted at $\frac{3}{4}$ % discount, and from New York on New Orleans at $\frac{1}{4}$ % premium. Should he buy the bill direct or through New York? What would be the cost each way?

8. A merchant in Toronto transmitted £500 to London by way of Paris. Paris exchange is quoted at 5.375 francs for $1, and exchange from Paris to London is quoted at 26.28 francs per £1. Find the cost of the bill.

9. Find the cost of a bill on London for £16 10s. 8d., exchange being quoted at 8 % premium.

10. I wished to remit $1200 to New York. Find the cost of the draft at $\frac{1}{4}$ % discount.

11. A sight draft on New York for $1500 was purchased for $1503.75. What was the course of exchange?

12. A merchant in Hamilton remits £500 to London as follows: First to Paris, at 5.36 francs per $1; thence to Hamburg at 175 francs per 100 marcs; thence to London at 15.25 marcs to the £. What must he pay for the draft? What would he have paid had he remitted the money direct, exchange being quoted at 10% premium?

13. A merchant in Glasgow ships to a commission merchant in Toronto goods invoiced at £100 10s. 12d. The agent pays $45 freight and 35% duty, and sells the goods for $850. After deducting 3% commission, he sends the balance by bill of exchange on London. If exchange is quoted at 7½% premium, how much did the Glasgow merchant gain or lose by the transaction?

14. I shipped from Toronto to an agent in New Orleans goods invoiced at $600. The agent paid $140 freight, 30% duty and $18 for storage, etc. He sold the goods for $1000, and after deducting his commission of 5%, remitted the balance by draft. If exchange from New Orleans to Toronto is quoted at ¼% premium, how much did I gain or lose by the transaction?

15. A Hamilton merchant owes 1200 francs in Paris. He buys a draft on London when exchange is at 8, and exchange between London and Paris is 25.25 francs per £1. What does he pay for the draft? What would he have paid for the draft had he bought it direct, exchange being 5.40 francs per $1?

16. A London merchant ships to his agent at St. Thomas goods invoiced at £200 10s. 6d. The agent pays $100 for freight, 30% duty, and $125 for other expenses. The agent sells the goods for $500, and after deducting his commission of 5%, remits the balance to his employer by bill on London. If exchange is quoted at 8% premium, how much did the merchant gain or lose?

SIMPLE AND COMPOUND PROPORTION.

(This subject might profitably be introduced immediately after Decimal Fractions.)

1. If 31 lbs. of butter cost $6.82, what will 27 lbs. cost?

2. If I pay $1.65 for 22 lbs. of beef, how much must I pay for 18 lbs.?

3. If the interest on $650 is $14 for a certain time, what is the interest on $725 for the same time and at the same rate per annum?

4. If 47 horses cost $1465, how many horses can be bought for $3610?

5. A received $175 dividend on $3500 of stock. If B received a dividend of $37.50, how much stock did he own?

6. A can walk 1 mile in 16 minutes. How long will it take him to walk 200 yards at the same rate?

7. If 14 men can do a certain piece of work in 21 days, how long will it take 21 men to do it? How many men would be required to do the work in 49 days?

8. A pays $4.32 taxes on a farm assessed at $2160. How much should B pay on a farm assessed at $5000?

9. Two railroads together charge $27.50 freight for carrying certain goods 275 miles. If the first railroad carries the goods 160 miles, how should the money be divided?

10. A man can walk from A to B in 12 days by travelling 9 hours a day. In how many days can he make the journey if he walks 10 hours a day?

11. If a pile of wood 16 ft. long, 4 ft. wide, and 7 ft. high is worth $27, what is the value of a pile of wood 28 ft. long, 5 ft. high, and 4 ft. wide?

12. If $475 will accrue $3.80 interest in 48 days, how much will $560 accrue in 28 days?

13. How many bbls. of flour will 27 laborers consume in 48 days, if 16 laborers consume 28 bbls. in 54 days?

14. By laboring 10 hours a day, 250 men can perform a piece of work in 25 days. How many hours a day must 350 men work to perform the job in 30 days?

15. A pile of stone 30 ft. long, 25 ft. wide, and 10 ft. high is worth $250. How high must another pile be, 40 ft. long and 36 ft. wide, to be worth $350?

16. If 8 men, working 10 hours a day, can plow a field 130 rods long and 20 rods wide in $7\frac{1}{2}$ days, in what time will 1 man plow $2\frac{1}{2}$ acres, if he works 9 hours a day?

17. If a cord of wood is worth $3.60, what is the value of a pile of wood 40 ft. long, 9 ft. high, and 4 ft. wide?

18. A piece of work can be done by 12 men in 8 days, by working 10 hours a day. After working 6 days, 4 men are discharged. How many hours a day must the remainder of the men work to have the work completed in the 8 days?

19. A certain map is drawn on a scale of 8 miles to an inch. How many acres are there in a township which measures $1\frac{1}{4}$ inches by $\frac{7}{8}$ of an inch?

20. Eight men and 3 women can do a piece of work in 12 days by working 12 hours a day. If one man can do as much work in a day as two women, in what time can 3 men and 8 women do the work by working 14 hours a day?

21. If $525 accrue $3.50 in 30 days at 6% interest, how much money will be required to accrue $4.50 in 45 days at 8% interest?

22. Forty men have provisions for 27 days, when each man is allowed 25 oz. a day. If 10 men are withdrawn, how

many oz. may each man be allowed, in order that the provisions will last the remainder of the men 30 days?

23. If 12 men can cut 40 cords of wood in $2\frac{1}{2}$ days, how many men will be required to cut 28 cords in 7 days?

24. If a pile of wood 30 ft. long, 10 ft. high, and 4 ft. wide, is worth $57, what is the value of a pile 20 ft. long, 8 ft. high, and 4 ft. wide?

25. A man can walk around a field 300 yds. long by 150 yds. wide in 12 minutes. In what time can he walk around a field $\frac{3}{4}$ of a mile square?

STORAGE.

1. At $1\frac{1}{2}$ cents a bushel per month of average storage, what is the storage due July 10 on the following receipts: Jan. 12, 312 bu.; Feb. 8, 221 bu.; Mar. 16, 75 bu.; Mar. 31, 160 bu.; Apr. 12, 186 bu.?

2. At 2 cents a bbl. per month of average storage, what is the storage due Nov. 1 on the following receipts: Mar. 16, 362 bbl.; June 1, 260 bbl.; June 15, 128 bbl.; Aug. 4, 150 bbl.; Sept. 25, 240 bbl.; Oct. 5, 130 bbl.?

3. At 45 cents a head per month of average grazing, what is the sum due Oct. 4 for grazing cattle received as follows: Mar. 8, 28 head; June 1, 50 head; July 16, 12 head; Sept. 8, 22 head; Oct. 4, 24 head?

4. A merchant made the following deliveries of pork at a warehouse: Mar. 1, 36 bbl.; Sept. 12, 46 bbl.; Sept. 28, 45 bbl.; Oct. 6, 24 bbl.; Nov. 3, 40 bbl. He withdrew pork as follows: June 1, 20 bbl.; July 4. 10 bbl.; Sept. 25, 25 bbl.;

Oct. 24, 30 bbl.; Nov. 15, 30 bbl. What is the sum due Dec. 31, at 2 cents a bbl. per month of average storage?

5. A warehouseman received wheat as follows: Jan. 16, 250 bu.; Feb. 10, 175 bu.; Feb. 28, 340 bu.; Mar, 16, 185 bu.; Apr. 30, 280 bu.; July 1, 160 bu. He made the following deliveries: Feb. 25, 300 bu.; June 1, 225 bu.; July 16, 120 bu. What was the sum due Aug. 1, at $\frac{1}{4}$ cent a bushel per week of average storage?

6. Compute the storage on the following account to Nov. 28, 1891, at 3 cents a bbl. of average storage: Received May 13, 1891, 175 bbl.; June 13, 210 bbl.; Aug. 4, 110 bbl.; Sept. 8, 50 bbl.; Oct. 3, 125 bbl. Delivered June 1, 80 bbl.; July 4, 150 bbl.; Aug. 31, 25 bbl.; Oct. 22, 95 bbl.

7. Compute the storage on the following account to Dec. 31, 1890, at $\frac{1}{2}$ a cent a bushel per week of average storage:

RECEIVED.		DELIVERED.	
1890.		1890.	
Mar. 22,	175 bu. wheat.	April 15,	90 bu. wheat.
June 1,	150 "	July 8,	125 "
July 31,	210 "	Sept. 12,	350 "
Sept. 8,	371 "	Dec. 8,	212 "
Nov. 28,	164 "		

8. Compute the storage on the following account to Jan. 15, 1890, at $3\frac{1}{2}$ cents a bbl. per month of average storage:

RECEIVED.		DELIVERED.	
1889.		1889.	
July 31,	210 bbl. mdse.	Aug. 1,	175 bbl. mdse.
Aug. 18,	175 "	Sept. 10,	150 "
Sept. 21,	216 "	Oct. 28,	200 "
Oct. 4,	199 "	Dec. 31,	150 "
Dec. 29,	200 "		

9. A warehouseman received and delivered mdse. as follows:

RECEIVED.		DELIVERED.	
1889.		1886.	
Aug. 8,	185 bbl. mdse.	Oct. 1,	300 bbl. mdse.
Sept. 29,	210 "	Nov. 28,	150 "
Nov. 9,	135 "	1887.	
Dec. 28,	250 "	Jan. 12,	75 "
1887.		" 29,	100 "
Jan. 8,	160 "		

Find the amount due to Feb. 1, 1887, at 3½ cents a bbl. per month of average storage.

10. What will be the pasturage to Aug. 31, at 45 cents a month of average pasturage, on the following account:

RECEIVED.		DELIVERED.	
1891.		1891.	
June 1,	210 head.	July 15,	100 head.
July 25,	165 "	Aug. 12,	200 "
" 29,	60 "	" 19,	50 "
Aug. 1,	140 "	" 25,	200 "

EQUATION OF PAYMENTS.

1. Brown loaned me $125 for 4 months. For how long should I loan him $50 to balance the favor?

2. I loaned Jones $150 for 4 months. How much should he loan me for 5 months to balance the favor?

3. I owe A $300, payable in 6 months, and $200, payable in 4 months. When should I pay $500 to cancel the debt?

4. I owe Brown $200, payable in 3 months, and $400, payable in 4 months. When should I pay $900 to cancel the debt?

5. On Jan. 15, 1891, a merchant bought goods from a wholesale house on the following terms: $500 payable in 3 months, $100 payable in 6 months, and $300 payable in 7 months. Find the average term of credit.

6. Bought on Mar. 1, 1890, goods on the following terms: $400 cash, $500 on 10 days, $300 on 20 days, $300 on 1 month. Find the average term of credit.

7. Bought on Sept. 12, 1890, goods on the following terms: $200 cash, $500 on 15 days, $400 on 20 days, and $900 on 90 days. Find the equated date for the payment of the whole account.

8. I owe $300, payable in 10 days; $200, payable in 30 days; and $250, payable in 45 days. Find the equated date for the payment of the whole amount.

9. A merchant bought goods from a wholesale house as follows: On Sept. 12, 1891, $100; on Nov. 12, 1891, $500; on Jan. 12, 1892, $300. If no credit was allowed, find the equated date for the payment of the whole amount.

10. Bought goods as follows: On Jan. 15, 1890, $600; on Feb. 4, 1890, $500; on Mar. 1, 1890, $250; and on June 12, 1890, $350. Find the equated date for the payment of the whole amount.

11. Bought goods as follows: On Mar. 1, 1890, $500; on July 15, 1890, $140; on Sept. 1, 1890, $220; on Sept. 13, 1890, $560. Find the equated date for the payment of the whole amount.

12. Bought goods as follows: On April 3, 1891, $240, on 30 days' credit; on July 4, 1891, $330, on 60 days' credit; on Aug. 15, 1891, $130, on 45 days' credit. Find the equated date for the payment of the whole amount.

13. Bought goods as follows: On Sept. 15, 1891, $250, on 1 month; on July 15, $140, on 30 days; on Aug. 1, $110,

on 60 days; on Oct. 15, $250, on 2 months. Find the equated date for the payment of the whole amount.

14. Bought goods as follows: On Jan. 12, 1890, $360, on 30 days; on Feb. 1, $164, on 40 days; on Mar. 15, $180, on 60 days; on Mar. 20, $120, on 30 days; on July 1, $75, on 10 days. Find the equated date for the payment of the whole amount.

15. Jones bought of Smith & Ferguson goods as follows: On Mar. 12, 1891, $300; June 1, 1891, $250; On July 15, 1891, $420; on July 20, 1891, $160. If 60 days' credit was allowed on each item, what was the average date of payment of the entire amount?

16. A retail dealer bought of George Brown & Co.:

July 12, 1889,	merchandise	amounting	to	$360.25
Aug. 1,	"	"	"	176.60
Sept. 8,	"	"	"	260.40
Nov. 25,	"	"	"	176.75

If a credit of 90 days was allowed on each item, what was the equated date for the payment of the whole amount?

17. Brown sold to Smith merchandise as follows:

Sept. 12, 1890,	an invoice	amounting	to	$175.40
Oct. 14,	"	"	"	360.14
Dec. 1,	"	"	"	172.84
Jan. 15, 1891,	"	"	"	264.16

If 30 days' credit was allowed on each item, what was the equated date for the payment of the entire amount?

18. Brown & Co. bought of Smith & Ferguson:

Jan. 12, 1890,	an invoice	amounting	to	$240	on 10 days' credit
Mar. 16,	"	"	"	365 " 25	"
Apr. 8,	"	"	"	176 " 30	"
May 31,	"	"	"	160 " 15	"

Find the equated date for the payment of the whole amount.

19. Jones bought of Hayes & Co.:

Jan. 6, 1890, an invoice amounting to $350 on 1 month's credit
Feb. 12, " " " 620 " 30 days' "
Apr. 1, " " " 325 " 15 " "
May 16, " " " 155 " 20 " "

Find the equated date for the payment of the whole account.

20. Bennett & Co. bought mdse. as follows:

Sept. 12, 1891, ... a bill of $360.25 on 60 days' credit.
Oct. 1, " ..... " 175.60 " 2 months' "
" 15, " ..... " 312.17 " 90 days' "
Nov. 3, " ..... " 160.23 " 30 " "
Dec. 8, " ..... " 620.18 " 60 " "
" 25, " ..... " 162.57 " 30 " "

What was the equated date of payment?

AVERAGING ACCOUNTS.

Find the equated date for the payment of the balances of the following:

Dr. (No. 1.) GEORGE THOMPSON. Cr.

1890.		$ c.	1890.		$ c.
Sept. 12,	To mdse.,	175 00	Nov. 5,	By cash,	100 00
Oct. 1,	"	150 00	Dec. 15,	"	140 00

Dr. (No. 2.) GEORGE T. BUTLER. Cr.

1890.		$ c.			$ c.
Mar. 1,	To mdse.,	225 00	Mar. 12,	By cash,	275 00
June 15,	"	450 00			

Dr. (No. 3) JOHN W. JOHNSON. Cr.

1891.		$ c.	1891.		$ c.
Jan. 15,	To mdse.,	362 00	Feb. 18,	By cash,	157 00
Mar. 12,	"	875 00	Mar. 25,	"	200 00

Dr. (No. 4.) WM. CORNFORTH. Cr.

1887.		$	c.	1887.		$	c.
Mar. 1,	To mdse.,	410	00	Mar. 29,	By cash,	200	00
" 4,	"	450	00	June 30.	"	650	00
June 29,	"	240	00				

Dr. (No. 5.) JOHN THOMPSON. Cr.

1889.		$	c.	1889.		$	c.
Oct. 8,	To mdse.,	350	00	Nov. 10,	By cash,	300	00
" 31,	"	784	00	Dec. 1.	"	200	00
Nov. 15,	"	186	00	" 25,	"	250	00

Dr. (No. 6.) NATHAN WOODWARD. Cr.

1888.		$	c.	1888.		$	c.
Mar. 12,	To mdse.,	126	00	May 12.	By cash,	125	00
Apr. 17,	"	174	00	June 16.	"	200	00
June 9,	"	360	00	July 1,	"	100	00

Dr. (No. 7.) SAMUEL GARDNER. Cr.

1889.		$	c.	1889.		$	c.
Sept. 1,	To mdse.,	316	00	Oct. 12,	By cash,	150	00
Oct. 12,	"	454	00	Dec. 1,	"	200	00
Nov. 30.	"	160	00	1890.			
Dec. 8,	"	160	00	Mar. 12,	"	100	00

Dr. (No. 8.) WM. A. PHILLIPS. Cr.

1887.		$	c.	1887.		$	c.
Jan. 12,	To mdse.,	180	00	Mar. 12,	By cash,	200	00
Mar. 21,	"	325	00	June 1,	"	180	00
Apr. 16,	"	400	00	" 27,	"	100	00
May 1,	"	200	00	July 25,	"	125	00

Dr. (No. 9.) GEORGE ROBERTSON. Cr.

1891.		$	c.	1891.		$	c.
July 8,	To mdse.,	160	00	Sept. 1,	By cash,	300	00
Aug. 1.	"	225	00	Oct. 31.	"	50	00
Sept. 8.	"	125	00	Nov. 8,	"	50	00
Oct. 1,	"	300	00	1892.			
				Mar. 1,	"	150	00

Dr. (No. 10.) W. H. ANGER. Cr.

1890.			$	c.	1890.		$	c.
Apr. 15	To mdse.,		550	00	July 1	By cash,	400	00
June 4	"		160	00	Sept. 15	"	250	00
July 25	"		400	00	Oct. 27	"	350	00
Sept. 12	"		160	00				

Dr. (No. 11.) W. IRWIN. Cr.

1890.			$	c.	1890.		$	c.
Aug. 31	To mdse.	10 d.	260	00	Sept. 30	By cash,	300	00
Sept. 25	"	1 m.	140	00	Nov. 12	"	150	00
Oct. 22	"	30 d.	250	00	Dec. 1	"	150	00
Nov. 16	"	net.	300	00				

Dr. (No. 12.) EDWARD BEATTY. Cr.

1888.			$	c.	1888.		$	c.
Sept. 9	To mdse.	30 d.	400	00	Oct. 8	By cash,	350	00
Oct. 18	"	60 d.	525	00	Nov. 16	"	400	00
" 31	"	net.	225	00	1889.			
Dec. 17	"	2m.	300	00	Mar. 1	"	225	00

Dr. (No. 13.) W. L. WICKETT. Cr.

1890.			$	c.	1890.		$	c.
May 27	To mdse.	2 m.	560	00	June 25	By cash,	300	00
June 1	"	10 d.	200	00	Aug. 16	" "	200	00
July 13	"	30 d.	150	00	Sept. 1	" note 10 d	200	00
Aug. 25	"	net.	240	00	Oct. 31	" cash,	150	00
Sept. 30	"	1 m.	150	00				

Dr. (No. 14.) JOHN CAMPBELL. Cr.

1887.			$	c.	1887.		$	c.
Sept. 1	To mdse.	10 d.	300	00	Oct. 15	By cash,	300	00
Oct. 15	"	1 m.	250	00	Dec. 1	" note 1 m	400	00
Nov. 8	"	30 d.	250	00	1888.			
Dec. 12	"	60 d.	160	00	Jan. 12	" cash,	200	00
1888.					" 1	" note 10 d	150	00
Jan. 1	"	net.	200	00	" 25	" cash.	100	00
Mar. 16	"	net.	300	00				

CASH BALANCE.

1. Find the cash balance of the following account to July 1, 1887, at 8 % interest:

Dr. A IN ACCOUNT WITH B. Cr.

1887.		$ c.	1887.		$ c.
Mar. 1,	To mdse.,	410 00	Mar. 29,	By cash.	200 00
" 4,	"	450 00	June 30.	"	650 00
June 29,	"	240 00			

2. Find the cash balance of the following account to Jan. 1, 1890, at 6 % interest:

Dr. W. A. Phillips in Account with Wm. Chambers. Cr.

1889.		$ c.	1889.		$ c.
Oct. 8,	To mdse.,	350 00	Nov. 10,	By cash,	300 00
" 31,	"	784 00	Dec. 1,	"	200 00
Nov. 15,	"	183 00	" 25,	"	250 00

3. Find the cash balance of the following account to Aug. 31, 1888, at 7 % interest:

Dr. L. H. Tarrant in Account with Griffin & Co. Cr.

1888.		$ c.	1888.		$ c.
Mar. 12,	To mdse.,	126 00	May 12,	By cash,	125 00
Apr. 17,	"	174 00	June 16,	"	200 00
June 9,	"	360 00	July 1,	"	100 00

4. Find the cash balance on the following account to April 15, 1890, at 6 % interest:

Dr. John Brown in Account with George Smith. Cr.

1889.		$ c.	1889.		$ c.
Sept. 1,	To mdse.,	316 00	Oct. 12,	By cash,	150 00
Oct. 12,	"	454 00	Dec. 1,	"	200 00
Nov. 30.	"	160 00	1890.		
Dec. 8,	"	160 00	Mar. 12,	"	100 00

5. Find the cash balance on the following account to Oct. 30, 1890, at 6 % interest:

Dr. J. S. McKay in Account with F. Finch. Cr.

1890.		$	c.	1890.		$	c.
Apr. 15	To mdse.,	550	00	July 1	By cash,	400	00
June 4	"	160	00	Sept. 15	"	250	00
July 25	"	400	00	Oct. 27	"	350	00
Sept. 12	"	160	00				

6. Find the cash balance on the following account to Jan. 1, 1891, at 6 % interest:

Dr. John Maginn in Account with W. W. Coulter. Cr.

1890.			$	c.	1890.		$	c.
Aug. 31	To mdse.	10 d.	260	00	Sept. 30	By cash,	300	00
Sept. 25	"	1 m.	140	00	Nov. 12	"	150	00
Oct. 22	"	30 d.	250	00	Dec. 1	"	150	00
Nov. 16	"	net.	300	00				

7. Find the cash balance on the following account to Dec. 15, 1890, at 6 % interest:

Dr. Harry Misner in Account with Frank Moore. Cr.

1890.			$	c.	1890.		$	c.
May 27	To mdse.	2 m.	560	00	June 25	By cash,	300	00
June 1	"	10 d.	200	00	Aug. 16	" "	200	00
July 13	"	30 d.	150	00	Sept. 1	" note 10 d	200	00
Aug. 25	"	net.	240	00	Oct. 31	" cash,	150	00
Sept. 30	"	1 m.	150	00				

8. Find the cash balance on the following account to Jan. 15, 1888, at 7 % interest:

Dr. A. E. Griffith in Account with Jas. Lilly. Cr.

1887.			$	c.	1887.		$	c.
Sept. 1	To mdse.	10 d.	300	00	Oct. 15	By cash,	300	00
Oct. 15	"	1 m.	250	00	Dec. 1	" note 1 m	400	00
Nov. 8	"	30 d.	250	00	1888.			
Dec. 12	"	60 d.	160	00	Jan. 12	" cash,	200	00
1888.					" 1	" note 10 d	150	00
Jan. 1	"	net.	200	00	" 25	" cash,	100	00
Mar. 16	"	net.	300	00				

BANKRUPTCY.

1. A merchant failed with liabilities amounting to $75000 and assets amounting to $2700. How many cents can he pay on the dollar? What sum will be paid to a creditor whose claim is $675?

2. John H. Thompson failed with assets amounting to $3670 and liabilities amounting to $12650. How much will each creditor receive on the dollar if the expenses of the assignment are $128?

3. The assets of a bankrupt firm amounted to $375. They owed A $1260, B $3275, C $980, D $175, and E $310. If the expenses of the assignment amounted to $184, what will each creditor receive?

4. A company failed with liabilities amounting to $3674.24. If they were able to pay 87½ cents on the dollar and the expenses of the assignment, amounting to $126.40, what was the amount of their assets?

5. A firm failed with assets amounting to $7860. They owed A $1750, B $3275, C $5280, D $1695. If the expenses of the assignment amounted to $60, what did each creditor receive? How many cents on the dollar did the estate pay?

6. A firm failed with liabilities amounting to $4000. Their book debts were sold for $960, the stock of goods for $2860, and there was $480 collected on notes. If the expenses of the assignment amounted to $190, how many cents on the dollar did the estate pay?

7. A merchant failed with liabilities amounting to $4500. His assets, exclusive of real estate, amounted to $2075. If

the expenses of the assignment amounted to $150, and the creditors received 65 cents on the dollar. What did the real estate sell for?

8. A bankrupt firm is able to pay 37½ cents on the dollar, provided there is no expense in winding up the estate. The expenses of the assignment were $275, and the estate was only able to pay 25 cents on the dollar. What was the amount of the liabilities?

9. George Johnson & Co. failed with liabilities amounting to $5000 and assets amounting to $2090.90. If the expenses of the assignment are 1½ % of the amount distributed to the creditors, how much will each creditor receive on the dollar?

10. A bankrupt firm presented the following statement to their creditors:

ASSETS.		LIABILITIES.	
Mdse. on hand	$3600	Bills payable	$5800
Real Estate	2000	Personal accounts due creditors	4200
Notes on hand	1750		
Accounts	2600		

The firm offer a settlement of 70 cents on the dollar. It is estimated that the goods would sell in bulk at 75 cents on the dollar, that the real estate would sell for $2000, and that the notes and accounts are worth 80 % of the face value. If the expenses of disposing of the property and winding up the estate would amount to $200, should the creditors accept the offer? If the creditors wound up the estate, how much would each creditor receive on the dollar?

PARTNERSHIP.

1. A and B engaged in business, A investing $3500 and B $2500. If gains and losses were to be divided in proportion to capital invested, how should a gain of $1500 be divided?

2. A, B and C engaged in business, A investing $1750, B $1250, and C $1000. If gains and losses were to be divided in proportion to capital invested, how should a gain of $2700 be divided?

3. Jones and Brown entered into partnership, Jones investing $3000 and Brown $2000. It was agreed that Jones should receive for his services $1200 a year and Brown $2000. At the end of the year it was found that their gain, exclusive of salaries, amounted to $5250. If gains and losses were to be divided in proportion to capital invested, how should this profit be divided?

4. A, B and C formed a partnership, each investing $2000. At the end of six months A withdrew $1000, and at the end of 9 months B withdrew $500. It was found that their net gain during the year amounted to $2560. If gains and losses were to be divided in proportion to capital invested, how should this gain be divided?

5. Beatty, Smith and Ferguson formed a partnership. Beatty invested $2000 for six months, Smith $1500 for 9 months, and Ferguson $1000 for 12 months. How should a gain of $3000 be divided?

6. A invested $3000 for 12 months, B $2000 for 8 months, and C $1500 for 10 months. It was agreed that A was to act as manager at a salary of $1000 a year, and that B was to take charge of the books at a salary of $1200 a year.

Their total gain during the year, exclusive of salaries, amounted to $6000. How much should each receive?

7. A and B formed a partnership, each investing $3000. At the end of 8 months A withdrew $2500, and at the end of 10 months B withdrew $1500. At the end of the year their resources were $7550 and their liabilities $2750. If the gains and losses were to be divided in proportion to capital invested, what was each partner's gain?

8. A, B and C formed a partnership, investing in the proportion of 3, 4 and 5 respectively. At the end of six months A withdrew $\frac{1}{3}$ of his capital, and B $\frac{1}{4}$ of his capital. At the end of 8 months B withdrew $\frac{2}{5}$ of his capital. If gains and losses were to be divided in proportion to capital invested, how should a gain of $3000 be divided?

9. At the end of a certain year the assets of a firm amounted to $7500 and their liabilities to $2500. The three partners invested in the proportion of 3, 4 and 5. If the net gain during the year was $1200, how much did each partner invest?

10. The assets of a firm of two partners at the end of a certain year consisted of cash $2000, bills receivable $1500, personal accounts $1200. Their liabilities were, bills payable $1200, and personal accounts $2500. If the total gain during the year was $2500, and neither partner made any withdrawals, find the insolvency of the firm at the beginning of the year.

11. A, B and C entered into partnership. A investing $\frac{2}{5}$ of the capital, B $\frac{1}{5}$, and C $\frac{2}{5}$. At the end of six months A withdrew $\frac{1}{2}$ of his capital, B $\frac{1}{3}$ of his, and C $\frac{1}{3}$ of his. At the end of the year their assets and liabilities were as follows: Assets—cash $3000, bills receivable $2150, merchandise $1750, and personal accounts $1000. Liabilities—bills payable $2000, and personal accounts $1200. If their net gain

during the year was $1100, how much did each partner invest? What was each partner's share of gain?

12. A and B engaged in business on Jan. 1st, 1891, each investing $5000. On Mar. 1 A invested $1000 additional, on July 1 he invested $1200 additional, and on Oct. 1 he withdrew $3000. On June 1st B invested $900 additional, and on Sept. 1st he invested $1100 additional. If gains and losses were to be divided in proportion to capital invested, how should a gain of $2400 be divided?

13. Jones and Brown engaged in business on Jan. 1st, 1890, each investing $4000. On Mar. 1st Jones invested $3000 and Brown withdrew $1000. On Aug. 1st Jones withdrew $4000 and Brown invested $4000. If gains and losses were to be divided in proportion to capital invested, how should a gain of $2500 be divided?

14. A, B and C entered into partnership on Jan. 1st. 1891, A investing $2500, B $2000, and C $1500. On Mar. 1st A invested $1000 additional; on July 1st he invested $2000; on Sept. 1st he invested $2000; on Nov. 1st he withdrew $3000. On July 1st B invested $2000 additional; on Oct. 1st he withdrew $1000. On July 1st, Aug. 1st, and Sept. 1st. C invested $500 additional. On Nov. 1st he withdrew $1000. How should a gain of $3200 be divided?

15. A, B and C formed a partnership on Jan. 1st, 1891. It was agreed that they should invest equally and share equally in gains and losses, interest at 8 % to be allowed on the excess and charged on the deficiency of each partner's required investment. On Jan. 1st A invested $3000; on Nov. 1st he withdrew $1200, and on Oct. 1st he invested $800 additional. On Jan. 1st B invested $2500; on Oct. 1st he invested $500 additional. On Mar. 1st, B invested $2500. How should a gain of $3000 be divided?

16. Griffin and Drake entered into partnership on Jan. 1st, 1891. It was agreed that Griffin should contribute $\frac{3}{5}$ of

the capital and Drake $\frac{1}{3}$, interest at 10 % to be allowed on the excess and charged on the deficiency of each partner's required investment. Gains and losses were to be divided in proportion to the required investment. On Jan. 1st, 1890, Griffin invested $2000; on Mar. 1st he invested $1000 additional; on July 1st he withdrew $500. On Jan. 1st Drake invested $2500; on Nov. 1st he invested $1500 additional. How should a gain of $4200 be divided?

17. Lennox, McGregor and Gardner entered into partnership on Jan. 1st, 1890. It was agreed that Lennox should invest $\frac{1}{4}$ of the capital, McGregor $\frac{1}{3}$, and Gardner $\frac{1}{2}$, interest at 12 % to be allowed on the excess and charged on the deficiency of each partner's required investment. Gains and losses were to be divided in proportion to the required investment. On January 1st Lennox invested $2000; on March 1st he invested $1000 additional; on July 1st he withdrew $500; on October 1st he withdrew $500. On Jan. 1st McGregor invested $1500; on Oct. 1st he invested $1000 additional. On Jan. 1st Gardner invested $1800; on Sept. 1st he invested $200 additional. How should a gain of $1500 be divided?

18. A, B and C formed a partnership on Jan. 1st, 1889. It was agreed that they were to invest equally and share equally in gains and losses, interest at 10 % to be allowed on the excess and charged on the deficiency of each partner's required investment. On Jan. 1st A invested $800; on Feb. 1st he invested $200 additional; on July 1st he withdrew $300; on Oct. 1st he invested $500 additional. On Jan. 1st B invested $900. On Jan. 1st C invested $1300; on Aug. 1st he withdrew $600. At the end of the year the firm's assets exceeded their liabilities by $2000. How much was each partner worth on Jan. 1st, 1890?

19. Jones and Brown entered into partnership to do contracting. Each partner was to receive $1.50 a day for every day that he worked. Gains and losses were to be equally

divided. During the year Brown paid for material, etc., $1750, and Jones paid $1960. Jones collected $3675, and Brown collected $2950. If Jones worked 298 days, and Brown 247 days, how should the partners adjust their accounts?

20. A and B formed a partnership, investing equally, and agreeing to share equally in gains and losses. It was agreed that A should receive a salary of $1200 a year, and B $900. C was employed as book-keeper at a salary of $1000 a year. At the end of the year it was found that their gain, exclusive of salaries, was $2880. It was decided to divide the profits. How much of the money should each partner get?

21. Jones and Smith entered into partnership, investing $3000 and $2000 respectively, and agreeing to share gains and losses in proportion to investments. At the end of the year the liabilities exceeded their resources by $1750. Find each partner's insolvency at the end of the year.

22. A and B formed a partnership, each investing $3000, and agreeing to share equally in gains and losses. During the year A withdrew $420, and B $570. At the end of the year their net gain was found to be $1000. Their resources, not including cash on hand, exceeded their liabilities by $3100. How much cash had they on hand?

23. A and B entered into partnership to manufacture plows. A was to furnish the building at an annual rental of $400. B was to do the work at a salary of $2.25 a day. A advanced B $150. During the year A furnished material at a cost of $3750 and received from sales $6987. B paid sundry expenses amounting to $212, and received from sales $453. A bought from B a horse for $175, and from the firm machinery to the value of $290. At the end of the year they had machinery on hand valued at $570. If B purchased A's interest in the business, how should a settlement be effected?

PRACTICAL MEASUREMENTS.

(Before taking up this subject the student should have a thorough knowledge of Square Root.)

RULE 1.—To find the length of the hypotenuse of a right-angled triangle, the perpendicular height and the base being given, add together the squares of the lengths of the two sides enclosing the right angle, and extract the square root.

RULE 2.—To find the circumference of a circle, multiply the length of the diameter by $\frac{22}{7}$ (or more accurately, 3.1416).

RULE 3.—To find the area of a rectangle, multiply the length by the breadth.

RULE 4.—To find the area of a rhomboid, multiply the length of the base by the perpendicular height.

RULE 5.—(a). To find the area of a triangle, multiply the length of the base by the perpendicular height, and divide by 2.

(b). From half the sum of the lengths of the three sides subtract the length of each side separately. Multiply together the three remainders and half the sum of the lengths of the sides, and extract the square root.

RULE 6.—To find the area of a circle, square the radius and multiply by $\frac{22}{7}$ (or more accurately, 3.1416).

RULE 7.—To find the volume of any six-sided figure having its opposite sides equal and parallel, and having all its angles right angles, multiply together the length, breadth and thickness.

RULE 8.—To find the volume of a cylinder, multiply the area of the base by the perpendicular height.

RULE 9.—To find the area of any figure enclosed by straight lines, divide the figure into triangles and add together the sum of the areas of the triangles.

1. I have a field in the shape of a right-angled triangle. The lengths of the sides enclosing the right angle are 30 and 40 rods respectively.

(a). Find the distance around the field.

(b). Find the area of the field in acres.

2. Find the area of a rectangular field 40 rods 10 yds. long by 32 rods 10 yds. 2 ft. wide.

3. Find the area in acres of a circular racecourse $\frac{1}{4}$ of a mile in diameter.

4. What is the value of a pile of wood 4 ft. wide, 160 ft. long, and 2 yds. high, at $1.50 a cord?

5. What quantity of lumber will be required to enclose a building 80 ft. long, 40 ft. wide and 18 ft. high, the height of the gables being 15 ft. (four walls and roof)?

6. How many thousand bricks, each 8 in. x 4 in. x $2\frac{1}{2}$ in., will be required to build a wall 16 ft. wide, 20 ft. high and 30 rods long, making no allowance for mortar?

7. How many gallons of water will a cistern hold 5 ft. square and 39 ft. deep, if $34\frac{2}{3}$ cub. in. make 1 pint?

8. How many gallons of water will a circular cistern hold $5\frac{1}{2}$ ft. in diameter and 26 ft. deep, if $34\frac{2}{3}$ cub. in. make 1 pint?

9. Which will hold the more, a square cistern $5\frac{1}{2}$ ft. in diameter and 13 ft. deep, or a circular cistern $5\frac{1}{2}$ ft. in diameter and 13 ft. deep? If $34\frac{2}{3}$ cub. in. equal 1 pint, how many more gallons will the larger cistern hold?

10. Find the value of a walnut board 16 ft. long, 23 in. wide at one end and 13 in. wide at the other, at $65 per thousand feet.

11. What will it cost to enclose a shed 24 ft. long, 12 ft. wide, and 8 ft. high at one end and 6 ft. high at the other, with lumber worth $25 per thousand feet (walls and roof)?

12. Find the cost of carpeting a room 30 ft. long and 25 ft. wide, with carpet 25 in. wide, and cost 65 cts. a yd.

13. A circular racecourse, $\frac{1}{4}$ of a mile in diameter, has a track around the inside 22 yds. wide. How many acres does the track contain?

14. What will it cost to plaster the four walls of a room 30 ft. long, 20 ft. wide, and 10 ft. high, at 16 cts. a square yard, allowing $\frac{1}{4}$ for doors and windows?

15. A cow is tethered with a rope 45 ft. long. Over what area can she graze?

16. At $30 per thousand feet, what is the value of 10 boards, each 18 ft. long, 16 in. wide at one end and 8 in. wide at the other?

17. How many cubic feet are contained in a stove pipe 6 in. in diameter and 40 ft. long?

18. What will be the cost of carpeting a room 45 ft. long by 35 ft. wide, with carpet 26 in. wide, and costing $1.80 a yard?

19. A and B start from the same place, A going due north and B due east. If A travels at the rate of 3 miles an hour, and B at the rate of 4 miles an hour, how far apart will they be in 12 hours?

20. A room is 30 ft. long, 20 ft. wide, and 10 ft. high. How many yards of paper 27 in. wide will it take to cover the four walls and ceiling?

21. A gallon measure is 6 inches in diameter. How deep is it, if $34\frac{3}{5}$ cub. in. equal 1 pint?

22. A wheel is 22 inches in diameter. How many revolutions will it make in going 3 miles?

23. How many square feet are contained in the four walls and ceiling of a room 14 ft. long, 10 ft. wide, 8 ft. high at one end and 7 ft. high at the other.

24. How many posts are required for a fence around a circular field 14 rods in diameter, if the posts are placed 6 ft. apart? How many thousand feet of boards will it take to enclose the field with a fence 8 ft. high? How many acres does the field contain?

25. A circular fort is 100 ft. in diameter. Find the cost of paving an asphalt walk 6 ft. wide around the fort at $1.80 a square yard.

26. The sides of a triangular field are 30, 40 and 50 rods respectively. How many acres does the field contain?

27. How many yards of wire will be required to enclose a retangular field 40 rods long and containing 5 acres, if there are 5 wires in the fence? How many thousand feet of boards, each 5 inches wide, will it take to enclose the same field, if there are 5 tier of boards?

28. What is the shortest string that will reach from any one point to any other point of a room 40 ft. long, 30 ft. wide, and 10 ft. high?

29. The front of a house is 40 ft. wide and the side 30 ft. wide. The distance from the ground to the bottom of the rafters is 14 ft., and the gables at the sides are each 6 ft. high. At the rear of the house there is a kitchen extending the whole length of the house and 14 ft. back. If the kitchen is 12 ft. high at the front and 9 ft. high at the back, how much will it cost to paint the house at $1\frac{1}{2}$ cts. a square yard (no allowance for windows)?

30. How many bricks will be required to build a wall 40 ft. high and 120 ft. long, if for every foot in height and foot in length 14 bricks are required?

31. The height of a wall is 50 ft. A ladder is placed against the building, the foot of the ladder being 30 ft. from the foot of the wall. If the ladder reaches within 10 ft. of the top of the wall, find the length of the ladder.

32. I have an irregular four sided field ABCD. The length of the side AB is 50 rods, of BC 30 rods, of CD 55 rods, and of AD 45 rods. The distance from A to C (through the field) is 50 rods. How many acres does the field contain?

GENERAL PROBLEMS.

1. Simplify: $\dfrac{3\frac{1}{4}}{1\frac{2}{3}} \div \left(\dfrac{1\frac{7}{8}}{7\frac{1}{2}} - \dfrac{6\frac{2}{3} \times \frac{1}{4}}{\frac{1}{2} - \frac{1}{8}}\right) + 1\frac{1}{6}$.

2. If $\frac{3}{5}$ of $\frac{3}{4}$ of a field is worth $\frac{4}{5}$ of $\frac{7}{8}$ of $1\frac{1}{4}$ of \$10, what is the value of .7125 of the field?

3. A horse and carriage are together worth \$1760. What is the value of the carriage, if the horse is worth $\frac{3}{4}$ of the value of both together?

4. If 3 men can dig a trench 16 rods long, 4 ft. wide and 4 ft. deep, in 9 days, by working 8 hours a day, in how many days of 10 hours each can 4 men dig a trench $5\frac{1}{2}$ ft. wide, 100 ft. long, and 4 ft. deep?

5. At what per cent. above cost must I mark goods, so that I can allow a discount of 25% on the marked price, and still make a profit of 20% on the cost?

6. Find the simple interest, at the rate of 7% per annum, on \$760 from Mar. 30, 1879, to July 1, 1880.

7. Find the compound interest on \$140, at the rate of 8% per annum, from Mar. 1, 1889, to Feb. 21, 1890, interest being added quarterly.

8. On a note for \$7500, dated Nov. 6, 1890, and bearing interest at the rate of 12% per annum, the following payments were made: Sept. 12, 1890, \$20; Dec. 30, 1890, \$25; June 1, 1891, \$120; Sept. 16, 1891, \$2000; Dec. 1, 1891 \$500. What remained due Mar. 16, 1892?

9. On July 6, 1891, I owed \$1500 at the bank, and only had \$760 to apply on the debt. I discounted a note for \$500, dated July 1, 1891, at 2 months, at the bank, at the

rate of 10% per annum, and drew an accommodation note at 60 days for such an amount that, when discounted at the bank at the rate of 10% per annum, I was able to meet my obligation and have $50 remaining. What was the face of the accommodation note?

10. I wish to build a circular cistern 3 ft. in diameter, and of sufficient depth to hold 2693 gal. of water. How deep must I make the cistern, if $34\frac{2}{3}$ cub. in. are equal to 1 pint?

11. $1000 $\frac{00}{100}$ St. Thomas, Ont., Nov. 1st, 1891.

Three months after date I promise to pay George Brown, or order, at the Imperial Bank, here, One Thousand Dollars, with interest at the rate of Eight per cent. per annum.

JOHN JONES.

The note was discounted Dec. 12, 1891 at 10%.

(a). Find the present worth, using bank discount.

(b). " " true "

12. I sold $2500 par of 6% stocks at $116\frac{1}{8}$, and with the proceeds purchased $31\frac{1}{2}$ of stocks at $57\frac{7}{8}$. If I paid $\frac{1}{8}$% brokerage in each case, how much is my income increased?

13. Find the equated date for the payment of the balance of the following account:

Dr. EDWARD ANDERSON. Cr.

1891.			$	c.	1891.			$	c.
Mar. 4	To mdse.	30 d.	200	00	May 12	By cash.		200	00
Apr. 1	"	2 m.	400	00	June 1	" note	10 d.	100	00
May 12	"	1 m.	300	00	July 8	" cash,		200	00
June 16	"	net.	100	00					

14. On Mar. 12, 1891, I borrowed a sum of money on my note bearing interest at the rate of 5% per annum. On May 31, 1891. I paid $637 as principal and interest. What was the face of the note?

15. How many yards of carpet, 27 inches wide, will be required to carpet a room 40 ft. 8 in. long and 31 ft. 6 in. wide?

16. An insurance agent accepted a risk of \$48000 at $\frac{3}{4}\%$ premium, reinsured $\frac{1}{3}$ of the risk in one company at $\frac{5}{8}\%$ premium, and $\frac{1}{3}$ of the remainder in another company at $\frac{7}{8}\%$ premium. What did the company gain or lose by reinsurance? What per cent. premium did the company net on the remainder of the risk?

17. Two pulleys, 7 inches and $4\frac{1}{2}$ inches in diameter respectively, are connected by a belt. If the larger pulley revolves 3150 times in a minute, find the rate of the smaller pulley.

18. On Mar. 1 a merchant sold an invoice of goods for \$360 on two months' credit. He received a note for the amount, bearing interest at the rate of 8% per annum. On April 3 he discounted the note at a bank at 10%. How much did he receive? How much would he have received had the note been discounted by true discount?

19. Find the duty on an importation of watches valued at £200 10s. 8d., at 10% ad valorem.

20. A grocer bought sugar at \$8 a cwt. Suppose 4% to be lost in handling, how many lbs. must he give for a dollar so that he may make a profit of 12% on the cost of the whole.

21. Find the value of a triangular field, whose sides are 30, 40, 50 rods in length respectively, at \$40 an acre.

22. I remitted to my agent \$508.95, to invest in potatoes, after deducting all expenses. He paid \$46 for bbls., \$38.60 for drayage, and charged $2\frac{1}{2}\%$ commission for buying. How many bbls. did he buy, at \$2.25 a bbl.?

23. A man bought 24 shares of stock at $117\frac{3}{8}$, and sold the same at a net profit of \$27. At what quotation were they sold, brokerage in each case being $\frac{1}{4}\%$?

24. On a note for \$4500, dated Mar. 1, 1889, and bearing interest at the rate of 6% per annum, the following pay-

ments were made: April 16, 1889, $300; Sept. 6, 1889, $10; Mar. 22, 1890, $100. What remained due Mar. 1, 1891?

25. A firm failed, with liabilities amounting to $1200, and assets amounting to $683.10. What dividend can they pay on the dollar, if the expenses of the assignment are $3\frac{1}{2}$ % of the amount distributed to the creditors? What amount will a creditor receive who has a claim of $360?

26. For what sum must a note be drawn at 60 days, so that when discounted at a bank at the rate of 10% per annum, it will produce $472.30?

27. What is the value of 4 inch-boards, 16 ft. long and 10 in. wide, at $25 per thousand feet?

28. A can cut $\frac{2}{3}$ of a cord of wood in $2\frac{2}{3}$ days. B can cut $\frac{1}{3}$ of a cord in $\frac{2}{3}$ of a day. In what time can they cut $8\frac{2}{3}$ cords, working together?

29. I sold two lots of goods for the same sum each. In collecting, however, $\frac{1}{3}$ of the accounts were found to be worthless. Had all the accounts been good, I would have made 20% on the cost of the first lot of goods, and would have lost 20% on selling price of the second lot. What was my gain or loss per cent.?

30. A commission merchant charged $7.20 commission for selling a consignment. If his rate of commission was $\frac{3}{4}$ %, how much did he remit the shipper?

31. At what price must I mark goods which cost $16.20 a yard, so that I can allow a discount of 10% on the marked price and still make a profit of 10% on cost, allowing 10% of sales to be bad debts?

32. What will be the cost of a bill on London for £10 8s. 6d., exchange being quoted at 8% premium?

33. I buy pens for 90 cts. a gross, and sell them at the rate of 6 pens for 5 cts. What per cent. profit do I make?

34. For how much must a house be insured which cost $3600, so that in case of loss I may obtain both the price of the house and premium, if rate of premium is $2\frac{1}{2}$ %?

35. A merchant buys a quantity of syrup for $1512. By the use of a false measure, and by marking his goods at a profit of 20%, his gain is $604.80. Find the size of the measure.

36. I bought 32 shares of 6% stocks at $101\frac{3}{4}$, received a half yearly dividend, and sold out at par. What did I gain or lose, if brokerage each way was $\frac{1}{8}$ %?

37. Find the value of a field containing 1728.125 square yards, at $40.50 an acre.

38. A circular cistern is 22 inches in diameter and 7 feet deep. How many gallons of water will it hold, if $34\frac{2}{3}$ cubic inches equal 1 pint?

39. A and B entered into partnership on Jan. 1, 1891, A investing $2000 and B $3000. It was agreed that A should receive $\frac{2}{5}$ of the gain and B $\frac{3}{5}$. On Jan. 1, 1890, their resources and liabilities were as follows:

RESOURCES.		LIABILITIES.	
Cash	$2000	Bills payable, outstanding	$360
Bills receivable	1000	Personal accounts due by firm	140
Interest due on same	26		
Personal accounts due firm	400		
Merchandise on hand	4680		

A bought goods from B for $120. It was agreed that this amount was to be paid by adjusting the partners' accounts. How much was each partner worth in the business on Jan. 1, 1890?

40. Divide 99 cts. among A, B and C, so that B may receive 20% more than A, and C half as much as A and B together.

41. What will it cost to carpet a room 60 ft. long by 45 ft. wide with carpet 27 in. wide and costing 60 cts. a yard?

42. In the above problem, if the room is 12 ft. high, what will it cost to plaster the four walls and ceiling at 40 cts. a square yard, allowing $\frac{1}{5}$ of the whole space for doors and windows?

43. A commission merchant sells 100 bbls. of apples at $1.50 a bbl. on a commission of 3%, and with the proceeds, after deducting 2% for buying, purchased certain goods for his principal. Find the whole amount of commission.

44. A man sold 5 articles for what 6 articles cost. Find his gain per cent.

45. A farmer sold 50 bushels of wheat for $38.24. A part of the wheat was sold at 80 cts. a bushel and the remainder at 69 cts. a bushel. How many bushels were sold at each price?

46. The true discount on a certain sum of money at 8% for 60 days is $82.24. What is the bank discount on the same sum for the same time and at the same rate of interest?

47. I can buy 5% stocks at 79$\frac{1}{4}$, or 6% stocks at 89$\frac{3}{4}$. Which investment will produce me the greater per cent. of interest on the investment, brokerage in each case being $\frac{1}{4}$%?

48. If 16 men can do a piece of work in 8 days by working 10 hours a day, in how many days can 24 men do a piece of work three times as large, if they work 8 hours a day?

49. A Glasgow merchant shipped his Buffalo agent goods invoiced at £100 8s. 4d. The agent paid $212 freight, 33$\frac{1}{3}$% duty, and advanced $162 for other expenses. He sold the goods for $1200 cash, and after deducting his commission of 5%, remitted the balance to his employer by bank draft. If

exchange on Glasgow is quoted at 8 % premium, how much did the Glasgow merchant gain or lose by the transaction ?

50. A firm failed with assets amounting to $630 and liabilities amounting to $1250. If the expenses of the assignment are 5 % of the amount distributed to the creditors, how many cents on the dollar will the estate pay ?

51. What principal will amount, at simple interest, to $397.25 at 6 % per annum ?

52. I mixed 30 lbs. of tea at 50 cts. a lb. with a sufficient quantity of tea at 60 cts. a lb., so as to make a profit of 25 % on the cost of the mixture by selling it at 70 cts. a lb. How many lbs. of 60 cent tea did I use ?

53. A and B agree to pay their travelling expenses in the proportion $2\frac{1}{2}$ to $3\frac{1}{2}$. If they each pay $36.60, how much should B pay A ?

54. Find the cost of fencing a circular racecourse 210 rods in diameter, at 50 cts. a rod.

55. How many bushels of oats will be required to sow a field 40 rods long by 30 rods wide, if it requires $1\frac{3}{4}$ bushels of oats to sow 1 acre ?

56. A commission merchant sold flour, and after deducting 3 % for selling and 2 % for buying, invested the proceeds in apples at $1.25 a bbl. If his total commission was $485, how many bbls. of apples did he buy ?

57. I drew an accommodation note at 90 days for a sufficient amount to realize $1260, when discounted at a bank at the rate of 8 % per annum. What was the face of the note ? For what sum should I have drawn the note to realize $1260 when discounted by true discount ?

58. Find the cost of papering the four walls of a room 36 ft. long, 20 ft. wide, and 10 ft. high, in which there are three windows 3 ft. by 6 ft., and two doors 4 ft. by 7 ft., with paper 30 inches wide, and costing 8 cts. a yard.

59. By selling an article for \$36 I lose 25 % on selling price. What per cent. of cost do I lose?

60. A merchant marked cloth at an advance of 40 % on cost, and in selling used a yard measure one inch too short. What per cent. profit does he make?

61. A jeweller marked goods at an advance of 20 %. In selling, however, his clerk gave a lb. avoirdupois weight instead of a lb. troy. Find the jeweller's gain or loss per cent.

62. A boy agreed to work a year for \$100 and a suit of clothes. At the end of 8 months he throws up the job and receives \$60 and the clothes. What were the clothes valued at?

63. An insurance company accepted a risk of \$1760 at $1\frac{1}{4}$ % premium, and immediately re-insured $\frac{3}{4}$ of the risk at $1\frac{1}{8}$ % premium. What per cent. premium did the company net on the remainder of the risk?

64. A certain sum amounts to \$372.60 in 7 months, and \$376.20 in 9 months. What is the rate per cent.?

65. The expense of constructing a railroad is \$25,000,000. One-half of this sum is borrowed on mortgage at $5\frac{1}{2}$ %, and the remainder is held in shares. The shareholders receive a yearly dividend of 6 %. If the expense of running the road is 75 % of the gross receipts, what are the average weekly receipts?

66. A dealer marks whisky at an advance of 50 % on cost. He afterwards finds it necessary to reduce the marked price 20 %. What proportion of water must he mix with the whisky in order that he may still make a profit of 50 % on cost?

67. A and B entered into partnership, their insolvency being in the proportion of 2 to 3. At the end of the year their assets and liabilities were as follows:

ASSETS.		LIABILITIES.	
Cash on hand,	$260	Notes outstanding	$200
Mdse.,	540	Accounts due by firm,	150
Notes and accounts,	200		

During the year A withdrew $160, and B invested $80 additional. If their net gain was $1500, what was each partner's insolvency at commencing? What is each partner's present worth?

68. A farmer buys a triangular field, ABC. The length of the side AB is 50 rods 10 ft., and of the side BC 40 rods 4 yds. The distance from A to the nearest point in the line BC is 30 rods. How many acres does the field contain?

69. A note for $1200, dated Jan. 1, 1889, and bearing interest at the rate of 10 % per annum, has endorsed on it the following payments: Mar. 11, 1889, $300; Sept. 3, 1889, $20; Jan. 21, 1890, $100; Mar. 3, 1890, $150. What remained due Dec. 23, 1890?

70. A merchant buys coal oil at 20 cts. a gallon, and mixes 1 gallon of water with each 5 gallons of coal oil. He sells the mixture at 25 cts. a gallon, using a gallon measure one-half a pint too small. What per cent. profit does he make?

71. A and B entered into partnership to run a flouring mill, A owned the mill and rented it to the firm at $350 per annum. B was employed as miller at a salary of $475 a year. It was agreed that A, who owned a team of horses, should receive $3 for every load of flour drawn from the mill. During the year B received $375 from sales at the mill. A drew away 50 loads of flour and received from sales $3750. A paid for wheat, etc., $1050, and B paid $496. B paid sundry expenses amounting to $65. A advanced B $400. At the end of the year they had on hand wheat, flour, etc., amounting to $950, and accounts amounting to $275. How should a settlement be effected? If A purchased B's interest in the business, how much should he pay him?

ANSWERS.

COMMON FRACTIONS. (PAGE 7.)

(1) $26\frac{8}{9}$. (2) $1208\frac{9}{11}\frac{7}{2}$ acres. (3) Sum $29\frac{1}{6}$; difference $4\frac{1}{6}$; product $208\frac{1}{3}$; quotient $1\frac{1}{3}$. (4) $\$3.28\frac{1}{3}$. (5) $492\frac{3}{4}\frac{5}{8}$ bushels. (6) $\frac{1}{2}\frac{1}{2}\frac{1}{4}$ of a lb. (7) $\$28402\frac{1}{3}\frac{1}{2}$. (8) $7.03. (9) $393\frac{1}{4}\frac{9}{0}$ lbs. (10) $1\frac{3}{4}\frac{3}{7}$ days. (11) $\frac{3}{5}\frac{7}{6}$ of the cargo. (12) $\frac{1}{12}$ of a lb. (13) $3\frac{3}{8}\frac{1}{3}$ minutes. (14) $5\frac{1}{16}$ days. (15) The former; $8\frac{4}{7}\frac{7}{0}\frac{1}{0}$ cents. (16) $\frac{3}{6}\frac{2}{8}$. (17) Lot cost $704; house cost $1056. (18) $7\frac{1}{2}$ days. (19) First year, $164; second year, $246. (20) 550. (21) $311876.75. (22) 7 boys. (23) A $\frac{2}{5}$ and B $\frac{3}{5}$. (24) $\frac{1}{6}$ of the farm. (25) $48\frac{3}{1}\frac{1}{6}$ miles. (26) $\frac{1}{6}\frac{1}{4}$ of money. (27) $\frac{7}{16}$ of a dollar. (28) $28\frac{4}{5}$ lbs. (29) $14\frac{1}{2}\frac{1}{6}$ hours. (30) A has 35 cts.; B has 56 cts. (31) $1\frac{5}{1}\frac{7}{0}\frac{1}{4}\frac{1}{0}$ days. (32) 72 miles from St. Thomas; 20 miles from St. Thomas. (33) Each boy has 106 ac. 8 roods 20 rods 6 ft.; each girl, 53 ac. 1 rood 30 rods 3 ft. (34) $83.70. (35) $1\frac{1}{3}$ acres. (36) $9. (37) A 45 cts.; B 30 cts.; C 20 cts. (38) A 87 cts.; B 96 cts. (39) $6 08 –. (40) $\frac{4}{25}$ of cost. (41) $585. (42) D paid $84 more than A. (43) $8.40. (44) 120 miles. (45) $\frac{13}{18}$ of property. (46) A $\$1.24\frac{4}{9}$; B $\$.93\frac{3}{9}$; C $\$.82\frac{8}{9}\frac{8}{9}$.

DECIMAL FRACTIONS. (PAGE 12.)

(1) 156.56543 lbs. (2) 15.00981. (3) .036768. (4) .580064. (5) .75; .875; .125; 13.25. (6) $\frac{1}{16}$; $\frac{5}{2}\frac{1}{5}\frac{1}{0}$; $36\frac{1}{8}$; $\frac{1}{2}\frac{3}{0}\frac{1}{0}\frac{3}{0}$; $\frac{3}{2}\frac{0}{5}\frac{0}{0}\frac{7}{0}$. (7) $.390625. (8) .40625; .34375. (9) .5625 of the farm. (10) 28.0395. (11) $2.99. (12) 5.6511 days. (13) 1.119879. (14) $369. (15) $5610. (16) 29.085; 50.1. (17) $18.18 –. (18) A had 156.00875 acres; B had 167.94625 acres. (19) 190.125 miles. (20) 8.59375 cents a yard. (21) $960. (22) .65625 of invoice. (23) .148129; .73177. (24) .8640625 of

farm; .1359375 of farm. (25) .2421875 of money. (26) .599625 too small. (27) 81875+revolutions. (28) 5 ft. 1.11+ inches. (29) 41 hrs. 45 min. 47 sec. (30) 4.5714 + weeks. (31) $14.46+. (32) 12.43+miles. (33) .0125; $\frac{1}{80}$. (34) The quotient is 39 times greater than the product. (35) $221.079+.

DENOMINATE NUMBERS. (PAGE 15.)

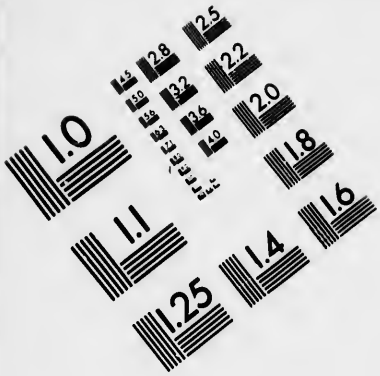
(1) £34 11s. 4d. (2) $28.60. (3) $2.55. (4) $5.44. (5) $13.78+. (6) 15 inches. (7) $23.15−. (8) $53.62−. (9) 2112 revolutions. (10) 14 bus. 2 pks. 1 gal. 1½ pts. (11) 41⅔ doz. (16) 6 boys. (17) 16 cents. (18) $4.73. (19) 1 mi. 3 fur. 19 rods 3 yds. 2 ft. 8⅗ in. (20) £19 14s. 6$\frac{18}{19}$d; $36.13½. (21) 245 bottles. (22) $13.50. (23) 750 days; 2552 minutes. (24) 44 days. (25) 1344 bushels. (26) 200 acres.

PERCENTAGE. (PAGE 17.)

(1) $819. (2) $113.40. (3) 443.52 acres. (4) $7344. (5) 93$\frac{14}{17}$ %. (6) 73$\frac{11}{18}$ %. (7) 21⅜ %. (8) 12$\frac{8}{7}$ %. (9) 3280 French. (10) 4$\frac{861}{1097}$ %. (11) 24000. (12) House cost $2402.50; lot cost $1937.50. (13) Horse cost $105; buggy cost $125. (14) $26728. (15) 50 %. (16) A has 58⅓ %; B has 41⅔ %. (17) 64$\frac{4}{89}$ %. (18) 1250 lbs. (19) $2046.32−. (20) $125. (21) 17$\frac{1}{7}$ % of wages. (22) 66⅔ % of cost. (23) First year's sales, 9792\frac{144}{1093}$; second year's sales, 11424\frac{168}{1093}$; third year's sales, 10282\frac{74}{1093}$. (24) A has $210; B has $315. (25) $1.82. (26) $436.20. (27) $6. (28) 27½ in junior class; 22 in senior class. (29) $693.75. (30) A had $2937.50; B had $2350. (31) 24000. (32) A has $3.05−; B has $7.62+; C has $17.16−; D has $19.30−. (33) $3600. (34) $1250. (35) 1499$\frac{64}{729}$. (36) He would have lost $100. (37) 504$\frac{6}{11}$.

PROFIT AND LOSS. (PAGE 21.)

(1) $15.62. (2) 35⅗ %. (3) 25 %. (4) 80 cts. (5) 6¼ %. (6) 3\frac{3}{11}$. (7) $19. (8) $37.20. (9) 11⅑ %. (10) 34 cts.



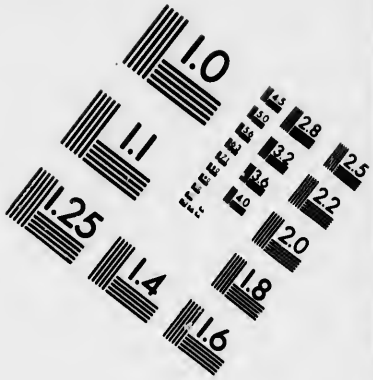
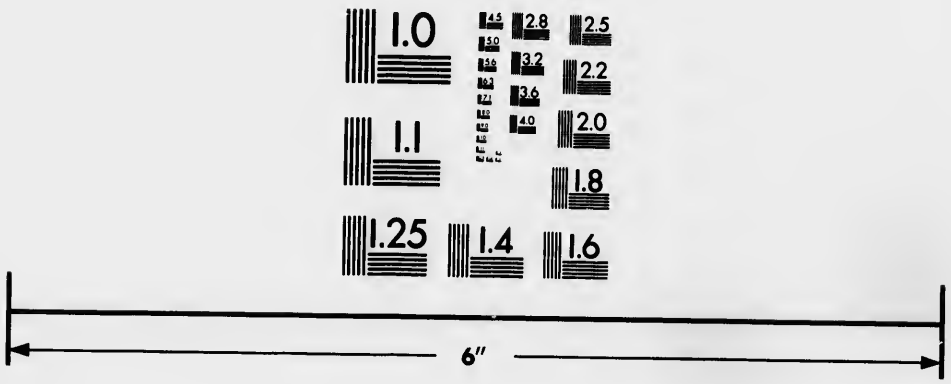
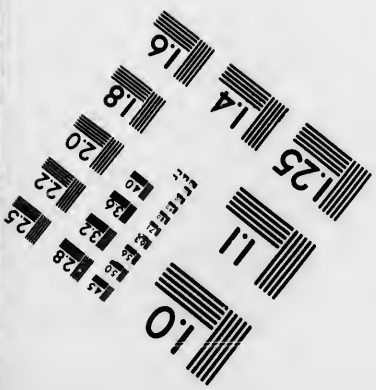
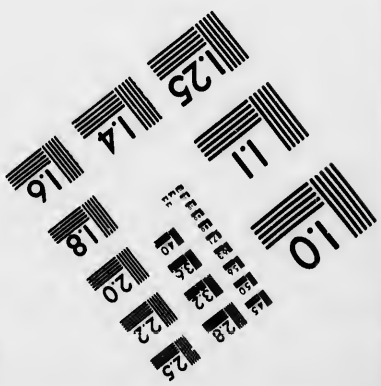


IMAGE EVALUATION
TEST TARGET (MT-3)







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(11) Gained 4 %. (12) $29\frac{9}{29}$ %. (13) Lost $12. (14) $538.30. (15) $418.50; $223.20. (16) $2704\frac{93}{283}$. (17) $4.16\frac{2}{3}$. (18) $12\frac{1}{2}$ %. (19) $10\frac{2}{3}$ lbs. (20) $2304. (21) $81\frac{79}{441}$ %. (22) $14\frac{14}{19}$ %. (23) $66\frac{2}{3}$ %. (24) 4 %. (25) $11\frac{1}{9}$ % loss. (26) Lost $83\frac{1}{3}$. (27) $28\frac{1}{8}$ cts. (28) $8.50. (29) 24 cts. (30) $12\frac{1}{2}$ %; 6 cts. (31) $20\frac{20}{29}$ %.

TRADE DISCOUNT. (PAGE 24.)

(1) $492.48. (2) $113.40. (3) $138.25. (4) $130.37. (5) $120.25. (6) $123.63. (7) 28 %. (8) 46 %. (9) $10. (10) $5. (11) $1.33\frac{1}{3}$. (12) 1 % off; 2 cts. (13) $26\frac{2}{3}$ %. (14) 25 cts. (15) $2.50. (16) $55. (17) $1.80. (18) $125. (19) Lost 48 cts. (20) Gained 2 cts. (21) $2\frac{2}{3}$ % gain; $2.60 gain. (22) 60 %; $2.40.

COMMISSION. (PAGE 26.)

(1) $9.61. (2) $3\frac{1}{2}$ %. (3) $59.28. (4) $288.75. (5) 625 baskets. (6) $13.23. (7) $6480. (8) $5912.38. (9) $2\frac{3}{8}$ %. (10) 64 baskets. (11) $3095.50. (12) $18.29. (13) $1593\frac{61}{128}$. (14) $3\frac{1}{4}$ %. (15) Received $3605 for the grapes; paid $3430 for the wheat. (16) $4\frac{4}{9}$ %. (17) $123. (18) $237.45. (19) $123. (20) $168.87. (21) $344\frac{63}{77}$. (22) $46\frac{67}{150}$ cts. a lb. (23) $22\frac{238}{671}$ lbs. (24) $1\frac{1}{2}$ %. (25) $450. (26) 75 bbls. (27) Face of order, $269.65; $3\frac{503}{1600}$ cts. a lb.

SIMPLE INTEREST. (PAGE 29.)

(1) $1.08. (2) $6.72. (3) $1.42. (4) $17.50. (5) $34.34. (6) $2.06. (7) $18.33. (8) $1.91. (9) $ .33. (10) $1.50. (11) $1.86. (12) $3.37. (13) $2.69. (14) $ .97. (15) $1.25. (16) $10.89. (17) $44.98. (18) $33.47. (19) $13.73. (20) $17.66. (21) $10.96. (22) $31.51. (23) $8.72. (24) $26.36. (25) $1.47. (26) $1.30. (27) $9.30. (28) $20.53. (29) $10.84. (30) $37.20. (31) 8 %. (32) 97 days. (33) $760.40. (34)

$480. (35) $74.26. (36) Gained 36 cts. (37) Aug. 12th. (38) 12½%. (39) $1875. (40) 13⅓ years; 14⅔ years; 10 years. (41) April 18, 1891. (42) Second offer; third offer; second offer. (43) $1876.27½. (44) 4/9. (45) $250. (46) $720. (47) Gained $4.68. (48) $666.97. (49) $91.18.

COMPOUND INTEREST. (PAGE 32.)

(1) $927. (2) $593.10. (3) $810.15. (4) $347.77. (5) $455.87. (6) $71.71. (7) $40.54. (8) $10.70. (9) $128.99. (10) $160.03. (11) $2.88. (12) $16.98. (13) $578.85. (14) $73.83. (15) $1264.42. (16) $883.85. (17) $110.42. (18) $1858.87. (19) $246.33. (20) $13.77. (21) 10.38+per cent. (22) 3 years 9⅓ mo. (23) Gained $63. (24) $450. (25) $51.84; 107 9/25 %.

PRESENT WORTH & TRUE DISCOUNT. (PAGE 34.)

(1) $541.43; $2.17. (2) $279; $2.17. (3) $564.58; $21.17. (4) $275; $9.90. (5) $162; $4.50. (6) $1476; $105.78. (7) $204; $26.35. (8) $122; $18.86. (9) The first offer. (10) $737.73. (11) $126.63. (12) $22.99. (13) $2820.12. (14) $602.36. (15) $806.16. (16) $602.82. (17) $117.87. (18) $9.78. (19) 671.68. (20) 58 cts.

BANK DISCOUNT. (PAGE 36.)

(1) Nov. 3, 1891; 50 days; $445; $445.05. (2) April 24, 1889; 54 days; $272.52; $272.55. (3) Jan. 15, 1891; 64 days; $491.11; $491.27. (4) Nov. 25, 1890; 10 days; $175.06; $175.06. (5) Jan. 13, 1892; 52 days; $3709.37; $3709.81. (6) Mar. 5, 1888; 4 days; $2568.57; $2568.57. (7) Feb. 3, 1891; 30 days; $2996.82; $2997.02. (8) Aug. 7, 1890; 37 days; $166.54; $166.55. (9) July 8, 1891; 33 days; $1255.65; $1255.75. (10) Sept. 19, 1890; 28 days; $1476.29; $1476.34. (11) 7 cts. (12) 1 cent. (13) $11.26;

$11.41. (14) $1.04; $1.05. (15) $5.15; $5.18. (16) $960. (17) 6½%; 48¾ days; $450. (18) $13.35. (19) $240. (20) $720. (21) $240. (22) First note was drawn at 60 days. $2522.77. (23) $1682.65. (24) Accommodation note was drawn at 30 days. $1271.83. (25) $999.09.

PARTIAL PAYMENTS. (PAGE 40.)

(1) $496.12. (2) $778.42. (3) $121.91. (4) $1482.82. (5) On June 18, 1891, he overpaid the amount due by $158.16. (6) $1306.09. (7) $1774.83. (8) $315.03. (9) Note should read, "Sept. 2, 1889," and "Jan. 1, 1890," $2065.53. (10) $199.13. (11) Should read, "Dec. 31, 1892," $440.79. (12) $906.43. (13) Should read, "June 12, 1889," $800.87. (14) $288.96. (15) $25.97.

STOCKS AND BONDS. (PAGE 43.)

(1) $194.25. (2) $1638. (3) $3834. 121 shares. (5) 87½. (6) The latter, by $\frac{10}{88}$%. (7) 6⅔% ...ks. (8) Lost $5. (9) 88 shares. (10) $3017.50. (11) $32. (12) $644. (13) $3100. (14) 192½ shares. (15) $1218. (16) 80. (17) $8\frac{11}{20}$%. (18) $100. (19) $344.50. (20) Increased $40. (21) Decreased $181.74+. (22) Gained $45. (23) 36 shares. (24) $8\frac{7}{16}$%. (25) $23480; $20. (26) $16.05. (27) 3½%; 4⅔%?

FIRE INSURANCE. (PAGE 46.)

(1) $10.50. (2) $1280. (3) $191.25; $\frac{17}{24}$%. (4) $2500; $1875; $1125. (5) ¾%. (6) 31⅔%. (7) $2200. (8) Gained 67 cents; $\frac{15}{88}$%. (9) $1728. (10) $5049.84. (11) $\frac{15}{16}$%. (12) $960. (13) $750.50. (14) $5068.75. (15) $\frac{18}{25}$%; $5600; $4480; $3920. (16) 34 cents. (17) $20514.36. (18) $1440; $960. (19) ⅞%. (20) $\frac{18}{60}$%; $122.50. (21) $5126.26. (22) $5357.14.

TAXES. (PAGE 49.)

(1) $38.40. (2) 12½ mills on the dollar. (3) $31.50. (4) 6⅔ mills; $38.40. (5) $12.75. (6) 7½ mills on the dollar. (7) $\frac{7}{16}$ of a mill on the dollar; $1505. (8) 13⅓ mills on the dollar. (9) $5. (10) $960. (11) For school purposes, $9594.426; for general purposes, $15802.584. (12) For general purposes, $9.60; for frontage, $4.80; for schools, $16.80; for sewerage, $3.60; total amount, $34.80. (13) 5⅓ mills on the dollar. (14) $134.442. (15) 9½ mills on the dollar. (16) 13 mills on the dollar; $266.43. (17) 2 cents on the dollar; $35; $42.

DUTIES AND CUSTOMS. (PAGE 52.)

(1) $12.95. (2) Not sufficient data given. (3) 93¾ cents. (4) $26.10. (5) $49.40. (6) $6.24. (7) $350. (8) 90 cents. (9) 50 cents. (10) 76 lbs. (11) $97.97+. (12) $50.44. (13) $6.06−. (14) $506.60. (15) $1570.56. (16) $88. (17) $122.31−.

EXCHANGE. (PAGE 54.)

(1) $1204.50. (2) $853.55. (3) $3680. (4) £98 19s. $4\frac{6}{7}$d. (5) $7250. (6) (new par) $4380. (7) Should buy bill via New York; via New York, $994.98; direct, $1002.50. (8) $2444.65+. (9) $79.36. (10) $1197. (11) ¼% premium. (12) $2189.51−. (13) Gained £26 15s. 1d−. (14) Lost $19.45. (15) Via London, $228.12; direct, $222.22. (16) The merchant would owe agent $42.77. He would therefore lose this amount together with value of goods.

SIMPLE & COMPOUND PROPORTION. (PAGE 56.)

(1) $5.94. (2) $1.35. (3) $15.62−. (4) 38 horses. (5) $1750. (6) $1\frac{9}{11}$ min. (7) 14 days; 6 men. (8) $10. (9) $16; $11.50. (10) 10⅘ days. (11) $27.72+. (12) $2.61+. (13)

42 bbls. (14) $5\frac{10}{21}$ hrs. (15) $7\frac{7}{24}$ ft. (16) $10\frac{1}{8}$ days. (17) $40.50. (18) 15 hrs. (19) 44800 ac. (20) $13\frac{17}{40}$ days. (21) $337.50. (22) 30 oz. (23) 3 men. (24) $30.40. (25) $70\frac{2}{5}$ min.

STORAGE. (PAGE 58.)

(1) $65.42. (2) $111.05. (3) $204.93. (4) $8.50. (5) $44.82. (6) $51.72. (7) $51.94. (8) $51.51. (9) $40.22. (10) $16.43.

EQUATION OF PAYMENTS. (PAGE 60.)

(1) 10 months. (2) $360. (3) $5\frac{1}{8}$ months. (4) $3\frac{3}{5}$ months. (5) 5 months. (6) $13\frac{1}{3}$ days. (7) Oct. 30, 1890. (8) 27 days. (9) Nov. 7, 1891. (10) Feb. 27, 1890. (11) June 21, 1890. (12) July 27, 1891. (13) Oct. 22, 1891. (14) Mar. 28, 1890. (15) Aug. 2, 1891. (16) Nov. 23, 1889. (17) Dec. 11, 1890. (18) April 7, 1890. (19) Mar. 22, 1890. (20) Jan. 3, 1892.

AVERAGING ACCOUNTS. (PAGE 63.)

(1) Mar. 11, 1890. (2) June 21, 1890. (3) Feb. 18, 1891. (4) July 28, 1886. (5) Sept. 12, 1889. (6) Mar. 14, 1888. (7) Sept. 9, 1889. (8) Jan. 19, 1887. (9) April 2, 1891. (10) Aug. 18, 1889. (11) Oct. 28, 1890. (12) Dec. 18, 1888. (13) July 18, 1890. (14) Dec. 10, 1887.

CASH BALANCE. (PAGE 66.)

(1) $268.78. (2) $580.55. (3) $242.77. (4) $663.25. (5) $289.49. (6) $353.79. (7) $461.25. (8) $312.17.

BANKRUPTCY. (PAGE 68.)

(1) $3\frac{3}{5}$ cents on the dollar; $24.30. (2) 28 cents on the dollar. (3) A $40.11; B $104.25; C $31.20; D $5.57; E $9.87.

(4) $3341.36. (5) A $1137.50; B $2128.75; C $3432; D $1101.75; 65 cents on the dollar. (6) Estate can pay 100 cents on the dollar and have $200 remaining. (7) $1000. (8) $2200. (9) 41½ cents on the dollar. (10) Creditors should not accept offer; 79½ cents on the dollar.

PARTNERSHIP. (PAGE 70.)

(1) A $875; B $625. (2) A $1181.25; B $843.75; C $675. (3) Jones $2430; Brown $2820. (4) A $714.42; B $893.02; C $952.56. (5) Beatty $960; Smith $1080; Ferguson $960. (6) A $3041.79; B $2107.46; C $850.75. (7) A $1233.90; B $1566.10. (8) A $707.55; B $877.36; C $1415.09. (9) $950; $1266.67; $1583.33. (10) $1500. (11) A invested $2400; B invested $1200; C invested $2400; A's gain $412.50; B's gain $229.17; C's gain $458.33. (12) A $1178.40; B $1221.60. (13) Jones $1250; Brown $1250. (14) A $1563.80; B $955.66; C $680.54. (15) Should read, "On Mar. 1 C invested," etc. A $1033⅓; B $1006⅔; C $960. (16) Griffin $2702.78 –; Drake $1497.22+. (17) Lenno $921.83+; McGregor $1473.67 –; Gardner $2104.50. (18) $795.56; B $694.72; C $509.72. (19) Jones should pay Brown $219.25. (20) A $1090; B $790. (21) A's insolvency $1050; B's insolvency $700. (22) Such a state of affairs would be impossible. Why? (23) B worked 312 days. A should pay B $1618.

PRACTICAL MEASUREMENTS. (PAGE 75.)

(1) 120 rods; 3¾ ac. (2) 8 ac. 3 roods 19 rods 8 yds. 5 ft. 36 in. (3) 31⅞ ac. (4) $135. (5) 8920 ft. (6) 3421$\frac{1}{25}$ thousand. (7) 6075 gal. (8) 3850$\frac{1}{28}$ gal. (9) The first by 525$\frac{3}{56}$ gal. (10) $1.56. (11) $19.82+. (12) $78. (13) 5$\frac{14}{15}$ acres. (14) $13.33. (15) 707$\frac{1}{7}$ sq. yds. (16) $5.40. (17) 7$\frac{9}{7}$ cub. ft. (18) $436.15. (19) 60 miles. (20) 237$\frac{1}{77}$ yds. (21) 9$\frac{39}{107}$ in. (22) 2749$\frac{1}{11}$ revolutions. (23) 500 ft. (24) 121 posts; 58$\frac{8}{25}$

thousand feet; $\frac{77}{160}$ of an acre. (25) $399.77. (26) $3\frac{3}{4}$ acres. (27) 3300 yds.; $4\frac{1}{8}$ thousand feet. (28) 50.9902+ feet. (29) $3.86−. (30) 67200 bricks. (31) 50 ft. (32) 11.1+ acres.

GENERAL PROBLEMS. (PAGE 79.)

(2) $.7125. (3) $440. (4) $2\frac{3}{11}$ days. (5) 60%. (6) $66.94. (7) $35.45. (8) Should read, "Nov. 6, 1889." $6919.23. (9) $303.64. (10) 61 ft. 1+in. (11) (a) 1005.79; (b) 1006.02. (12) $25. (13) Mar. 9, 1891. (14) $630. (15) $189\frac{7}{9}$ yds. (16) Gained $6.67; $\frac{25}{32}$%. (17) 4900 times a min. (18) $361.98; $362. (19) $97.59. (20) $105\frac{5}{7}$ lbs. (21) $150. (22) 184 lbs. (23) $119. (24) $4600.04. (25) 55 cents on the dollar; $198. (26) $480.71. (27) $1.33. (28) $11\frac{6}{9}$ days. (29) Lost $34\frac{26}{61}$%. (30) $952.80. (31) $22. (32) $50.04. (33) $33\frac{1}{3}$%. (34) $3692.31. (35) $\frac{6}{7}$ of a gal. (36) Gained $32. (37) $14.46. (38) $115\frac{19}{104}$ gal. (39) A $2922.40; $4683.60. (40) A 30 cents; B 36 cents; C 33 cents. (41) $240. (42) $185.60. (43) $7.35. (44) 20%. (45) 34 bus. at 80 cents and 16 bus. at 69 cents. (46) $83.34. (47) The latter by $1\frac{5}{9}$%. (48) 20 days. (49) Gained £25 4s. 6½d. (50) 48 cents on the dollar. (51) Not sufficient data given. (52) 45 lbs. (53) $6.10. (54) $330. (55) $13\frac{1}{8}$ bus. (56) 7532 bbls. (57) $1286.59; $1286.04. (58) $10.77. (59) 20%. (60) 44%. (61) Lost 10%. (62) $20. (63) $1\frac{5}{8}$%. (64) 6%. (65) $110576\frac{1}{18}$. (66) 1 gal. of water to 4 gal. of whisky. (67) A's insolvency $308; B's insolvency $462. (68) 3 ac. 3 roods 10 rods $27\frac{1}{2}$ yds. nearly. (69) $803. (70) 60%. (71) A should pay B $1030.50; $1643.

$33\frac{3}{4}$ acres.
eet. (29)
+ acres.

) $66.94.
36919.23.
1006.02.
$89\frac{7}{6}$ yds.
n. (18)
50. (22)
s on the
$1\frac{5}{3}$ days.
04. (33)
ned $32.
4683.60.
0. (42)
80 cents
atter by
48 cents
45 lbs.
s. (57)
0) 44 %.
$0576\frac{2}{1\,8}$.
olvency
ods $27\frac{1}{2}$
pay B