

4. A note made June 1st, at 3 months, was discounted immediately at 8% per annum. and produced \$357.40. What was the face of the note?

The note is due Sept. 4th, counting grace days. Therefore it is discounted for 95 days or $\frac{19}{73}$ years.

$$\text{If } f \text{ be the face value, } f\left(1 - \frac{19}{73} \cdot \frac{8}{100}\right) = 357.4$$

Whence $f = \$365.00$.

5. Find to the third decimal place—

a. $(12345) \div (2.3456)^2$

b. The cube-root of 2.

a should be done by contracted processes.

2.3456	5.5018) 1.2345(0.2243 +
65432	11004 Quotient.
-----	1341
46912	1100
7037	241
.938	220
117	21
14	16
-----	5

$$5.5018 = (2.3456)^2$$

b. Employ Horner's synthetic method. (See Dupuis' Algebra, art. 155)

$$1.25992 \dots = \sqrt[3]{2}$$

0	0	2
1	1	1
2	3..	1000
3.	364	728
32	432..	272...
34	45025	225125
36.	46875..	46875
365	47213	42492
370	47552	4383
376.		103

6. Find the amount of \$275 in 2 years at 6% per annum compounded half-yearly.

This is equivalent to 3% per annum for 4 years.

$$\therefore \text{The amount} = (1.03)^8 \times 275 = \$309.51 \dots$$

7. What rate % per annum compounded half-yearly is equivalent to 6% per annum compounded yearly?

Let t denote any number of years. Then we must have $(1.06)^t = (1+r)^{2t}$ r being the rate.

$$\therefore 1+r = \sqrt{1.06}, \text{ and } r = \sqrt{1.06} - 1 = 0.02956 \dots \text{per unit, or } 2.956 \dots \%$$

8. The 3% consols are at 120, dividends payable half-yearly. A man invested a certain sum and also the first dividend. His next dividend was \$410. What amount of consols did he then hold?

Let 1 share of consols be \$100. His first dividend is \$1.50, and his investment is now \$101.50. His second dividend is $1\frac{1}{2}\%$ on this, or $101.50 \times$