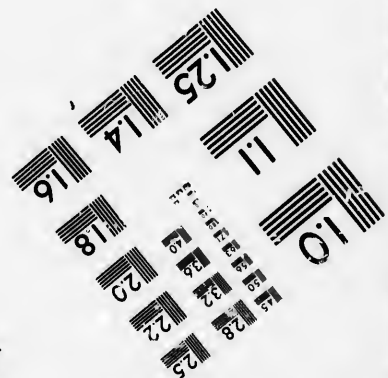
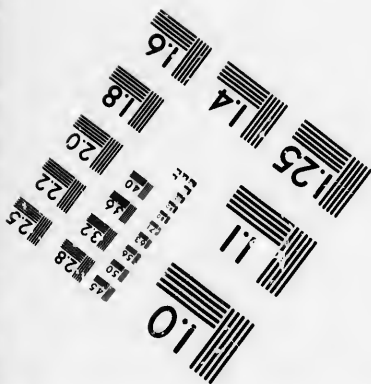
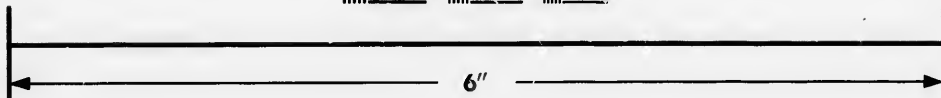
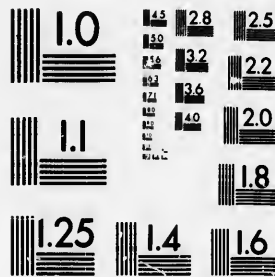


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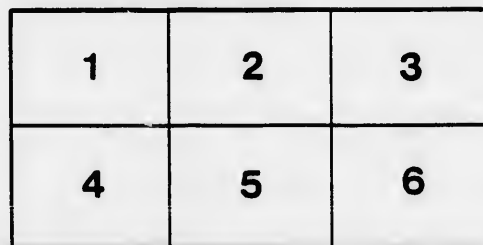
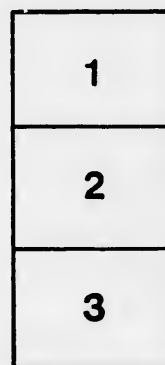
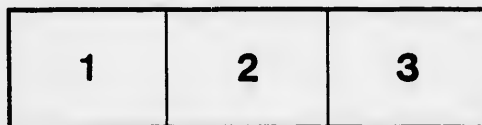
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NORMAL SCHOOL FOR UPPER CANADA.

THIRTY-FIFTH SESSION—JUNE, 1866.

*Examiners in Department of Mathematics, Chemistry, and Natural Philosophy:*JOHN HERBERT SANGSTER, Esq., M.A., *Second Master, Normal School.*

REV WILLIAM ORMISTON, D.D.

ARITHMETIC—JUNIOR DIVISION.

Time—Three Hours.

1. Give and prove the common Arithmetic rule for discount. Explain the difference between true discount and bank discount.
2. What sum must be put on the face of a note drawn for 7 months in order that discounted at once by the Bank at the rate of 7 per cent per annum its immediate proceeds may just pay for 777 tons of coal at \$7.77 per ton, less discount for cash of 7 per cent.
3. Divide \$8888.88 among four persons, A, B, C and D, in the following manner: A is to have \$68.88, more than 60 per cent. of the other three shares; B is to have \$55.55 less than 70 per cent of the shares of C and D; while C is to have \$99.99 more than three-sevenths of D's share—require the share of each.
4. Give and prove in full the common rule for finding the greatest common measure of two or more numbers.
5. Find the greatest and the least numbers in the *duodenary* scale which can be expressed as *proper fractions* in the *quinary* scale with six figures in numerator and denominator.
6. Extract the square root of $413\frac{2}{3}$ *senary* true to three places to the right of the separating point.
7. Explain the reasons of the following steps in the extraction of roots:
 - I. Pointing off into periods.
 - II. Doubling the part of the root already found for a trial divisor in square root.
 - III. Multiply by 300 and by 30 in completing the trial divisor in the cube root.
8. A, B and C can do a piece of work together in 5 days, to accomplish which A alone would require 20 days, and C alone would require 12 days—In what time could B, working alone, finish the job. If A and B have worked at it $1\frac{1}{2}$ days, and B and C have worked at it together $2\frac{1}{2}$ days, in what time can A and C, working together, finish the remainder?
9. How much wheat at \$1.10 per bushel is there in 250 bushels of a mixture worth \$1.25 per bushel, and containing likewise wheat at \$1.45, \$1.05 and 0.95.
10. Give and prove the common rule for reducing mixed repetends to their equivalent vulgar fractions.
11. Find the value of $119.913426 + 76.9 - 120.09134 + 26.123429167 - 9.9134263$.
12. Express $\frac{2}{7}$ of $\frac{9\frac{1}{4}}{11\frac{3}{7}}$ of $\frac{16\frac{3}{9}}{.92}$ of $\frac{22}{37}$ of 3 roods 17 per. as a decimal of $\frac{3}{11\frac{3}{5}}$ of $\frac{960}{423}$ of $\frac{11}{56}$ of $\frac{12\frac{3}{8}}{17}$ of 9 acres 16 perches.
13. If 11 men in 9 weeks, working $5\frac{1}{2}$ days per week and 11 hours per day, can dig 88 acres of land, how many acres ought 15 men to trench in 14 weeks, working 6 days per week and $10\frac{1}{2}$ hours per day—assuming that the time required to trench a square yard is to that required to dig a square yard as $2\frac{3}{7} : 1$?
14. I remit \$30000 to my agent in Hong Kong with instructions to deduct his commission at $4\frac{1}{2}$ per cent, and also the insurance on cargo at a premium of $\frac{3}{4}$ per cent, and invest the balance in Young Hyson at $24\frac{1}{2}$ cents per lb. Upon the arrival of the tea in Toronto I have further to pay $7\frac{1}{2}$ cents per lb. for carriage, \$129.80 for storage and harbour dues, and an *ad valorem* duty of 25 per cent. Assuming that 11 months have elapsed between the time I remitted the money and that at which I received the tea, that, one month subsequently, I sell the whole consignment at $62\frac{1}{2}$ cents per lb., cash and allowing me interest on my outlays at the rate of 8 per cent. per annum, what do I gain or lose per cent. on the transaction?

