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We give you a handsomely executed bust portrait, size 16x20 for \$8.50 former price \$20.00. A \$15.00 portrait for \$5.50 and a \$10.00 portrait for \$3.50

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## TEACHER'S COLUMN.

Devoted to the Interests of the Provincial Teachers.

In Which We Publish the Entrance, Monthly and Final Examination Papers Used in the Normal School.

This Column is Open for Communications, and Will Contain Articles of Special Interest to Every Teacher.—Teachers wishing for Information on Any School Question Can Obtain the Same by Enquiring Through This Column.

TEACHERS—I prepare teachers for advancement of class at their own homes. For particulars address, W. M. McDonald, P. O. Box 129, Moncton, N. B.—Adv. 3t.

Eighty-four applicants for admission to the Normal School were examined at the Normal School this week by Inspector Bridges.

Over 400 applicants have been examined in the province this week for admission to the Normal School.

Under the new system the candidates for admission in their application state what class they wish to apply for and they are examined accordingly. On some subjects they pass their final examination, that is they will not be required to write papers on this subject again at the close of their term at the Normal School. These include the following subjects for all classes, viz.: Reading, spelling, writing, English grammar and composition, geography, history, arithmetic, (including the keeping of accounts), and elementary natural history.

### A USEFUL FORMULA.

For Ascertaining the Cubic Contents of Cylindrical Vessels.

A correspondent has sent us a very useful formula which is thought to be quite new. In finding the contents of cylindrical vessels the ordinary rules call for the use of aggravating decimals or fractions. This neat little device does away with all the bother. Let the diameter of any cylindrical tank be given in feet; then take five times the square of the diameter; take off 2 per cent, and the result is gallons per foot high. This is simplicity itself. Both the simplicity of the rule and the near approach of its results to the accurate contents will appear from an example or two.

Let the tank be 10 feet diameter (inside of course).

$$10 \times 10 = 100$$

$$5$$

$$500$$

$$\text{Take off 2 per cent} \dots \dots 10$$

$$490 \text{ gallons}$$

per foot deep which is within one gallon of the accurate measurement (490.87 gallons).

Take an 11 foot tank:

$$11 \times 11 = 121$$

$$5$$

$$605$$

$$2 \text{ per cent} \dots \dots \dots 12.1$$

$$592.9 \text{ gallons}$$

per foot deep, which is only one gallon away from the accurate contents (593.96).

A rule so simple and so useful almost deserves a place in the common school texts. A note by the author draws attention to the fact that the 2 per cent to be subtracted is always just one-tenth of the first term written down—10 for 100 and 12.2 for 121 and so on.

### Normal School Papers.

Concluded.

#### Algebra.

CLASS I. F. AND II. M. Time, 1 1/2 hrs.

1. Find the highest common factor of  $x^3 - x$ ,  $2x^2 - 4x + 2$ ,  $x^3 + x^2 - 2x$ .

2. Find the least common multiple of  $5x^3 + 2x^2 - 15x - 6$  and  $7x^3 - 4x^2 - 21x - 12$

3. Find the value of  $\frac{4}{9(x-2)} + \frac{5}{9(-1)}$

$\frac{3(x+1)^2}{4}$

4. Solve  $(x+a)(x+b) = x(x+c)$

Also solve  $4(10x-3) - 64(3-2x) = 3(24x-4) + 96$

5. Solve  $\frac{x+2}{7} + \frac{y-x}{4} = 2x-8$

$\frac{2y-3x}{3} + 2y = 3x+4$

6. Find two numbers whose difference is 6, such that if 1.3 the less be added to 1.6 the greater, the sum shall be equal to 1.3 the greater diminished by 1.5 the less.

7. A after doing three fifths of a piece of work in 30 days finishes it in 10 days with the help of B. Find in what time each would do it.

8. A certain number of two digits is equal to five times the sum of its digits; and if 9 be added to the number the digits are reversed; find the number.

#### Domestic Economy.

CLASS I, II, III. Time, 1 1/2 hrs.

(For Female Candidates only.)

#### PART I.—THEORY.

1. Why should especial care be taken of the cellar and pantry in a home?

2. Exercise and Rest—Explain fully:—(a) What is to be aimed at in exercise? (b) Why is competition in games often injurious? (c) How do muscles rest?

3. What hints can you give for the proper measure of heat to cook veal—a loaf of bread—old potatoes, and beef hash.

4. Give an outline lesson to your older pupils on: 'Earning Spending and Saving.'

5. In Knitting how do you 'cast on,' 'cast off,' 'widen,' 'decrease' 'purl.'

#### PART II.—PRACTICE

(Material, 1/2 yd. unpressed white cotton.) Work the following on the cotton

furnished you: 1. Cut and make a night dress sleeve with a buttonhole in wrist-band.

#### Composition.

CLASS I. Time, 1 hr.

1. Define accurately (1) Composition, (2) Style. How may a good style be secured?

2. Point out the distinction between the following pairs of synonyms, and construct short sentences to illustrate the accurate use of each: custom, habit; character, reputation; strong, powerful; delay, defer.

3. Explain what is meant by figurative language. Define the following, giving at least one example of each: Metaphor, synecdoche, metonymy, hyperbole, irony.

4. Punctuate the following:—  
So saying her rash hand in evil hour  
Forth reaching to the fruit she plucked  
she ate  
Earth felt the wound and nature from  
her seat  
Sighing through all her works gave signs  
of woe  
That all was lost

5. Distinguish between rhyme and rhythm. State the conditions which are essential to perfect rhyme. Give perfect rhymes for each of the following: Importance, beware, speech, united, golden.

6. Scan the following lines. Name the metre. 'Many a night I saw the Pleiads, rising thro' the mellow shade, glitter like a swarm of fire-flies tangled in a silver braid.'

#### Reading.

CLASS I. Time, 1 hr.

1. Give a definition of good reading.

2. Name what you consider the principal things to be kept in view in teaching reading.

3. What are inflections?

4. What does the rising inflection indicate? Give an example.

5. What is the use of the circumflex or double inflection? Give an example.

6. What is pitch? What are the different degrees of pitch used in reading?

#### Book Keeping.

CLASS I. Time, 1 hr.

1. What advantage has the double entry over the single entry method of book-keeping?

2. What is trial balance?

3. In closing a property account, on which side should you place an inventory entry showing an asset? What other entry is usually needed to close the account? To re-open the account, on which side should you bring down your balance representing the asset?

4. Write out a specimen of a negotiable note.

5. Make the proper entries (ledger only) for the following transactions:—May 1. Sold H. M. Block, mds., \$700; for which I received cash \$200, and his note at 3 months for balance.

May 4. Discounted above note at Peoples Bank, receiving cash, less 90 days' discount at 6 per cent.

May 5. Gave towards a fund for a public library, cash \$500.

#### Geometry.

CLASS I. F. II. M. Time 1 hr. 30 min.

1. If the side of an equilateral triangle is equal to unity find the length of the perpendicular from any vertex to the side opposite. In an isosceles right-angled triangle if each of the equal sides is equal to unity find the length of the hypotenuse.

2. Describe a parallelogram that shall be equal to a given triangle and have one of its angles equal to a given rectilinear angle.

3. To a given straight line to apply a parallelogram which shall be equal to a given triangle, and have one of its angles equal to a given rectilinear angle.

4. In a right angled triangle what is the square of the side opposite the right angle equal to? In an obtuse angled triangle what is the square of the side opposite the obtuse angle equal to? In any triangle what is the square of a side opposite an acute angle equal to?

5. If a straight line be bisected and produced to any point the rectangle contained by the whole line thus produced and the part of it produced, together with the square on half the line bisected, is equal to the square on the straight line made up of the half and the part produced.

N. B.—Female candidates for class I will omit the 3rd and 5th and work the following:

(a) Equal chords in a circle are equally distant from the centre and converse.

(b) The opposite angles of a quadrilateral inscribed in a circle are equal to two right angles. After proving this, state its converse.

#### Teaching and School Management.

CLASS I. Time, 2 hrs.

1. Why should a teacher have a practical knowledge of psychology as a preparation for teaching?

II. How is skill in teaching and managing a school to be acquired? What is the relation between knowledge and skill?

11. What is the distinction between the oral and the text book stages of teaching a subject? Outline a plan of oral lessons for any one year or standard, in one of the following subjects, viz.: number, color, composition, health.

IV. On what general principles would you teach the following subjects from the text book: geography, arithmetic, grammar, reading. In addition to the general answer select a topic from one of the subjects named and show, in detail, how you would give a lesson on it.

V. What do you regard as the essentials

to good school discipline? How do you propose to secure them?

VI. How would you deal with such faults and offences as (a) inattention, tardiness, talking, noisy and careless movements, (b) falsehood, disobedience, copying at examinations, impertinence. Select one each from (a) and (b).

VII. Show, on scientific principles, the necessity for proper ventilation in school rooms.

VIII. What are the dangers of improper admission and control of light? What is the nearest approach to ideal conditions of lighting school rooms.

IX. What are the principles on which time tables should be constructed? What are the difficulties to be met in arranging a daily programme of work for a school of four or more classes, and how may these difficulties be partially overcome.

X. Write a brief historical sketch of Pestalozzi or Rousseau.  
N. B.—III. and IV.—VII. and VIII. are alternates.

#### Physiology and Hygiene.

I. II. Time, 1 hr.

1. What organs fill the chest of man? How are they connected and upon what mechanical arrangements does their action depend?

2. Explain the nature of disease, and some of the causes in which they originate.

3. What simple rule should govern the taking of food as to time, quality and quantity?

4. What causes led (1) to the vitiation, (2) to the purification of the air as a medium of respiration?

5. What is the duty of glands as organs of the body? Name the chief glands and their special office.

6. What is the cause of animal heat? How does its amount differ in different groups of animals, and with what other features of structure or habits is this amount usually associated?

7. Explain the deleterious effects likely to result from the use of tobacco, alcohol or opium.  
NOTE.—Five questions, including the last, make a full paper.

#### Chemistry and Agriculture.

I. II. Time, 1 hr. 30 m.

#### PART I.

1. How would you show the presence of carbonic acid in the air? How may it be made artificially? its relations to animal and vegetable life? Its chief mineral compounds?

2. From what source do plants derive their nitrogen? into what vegetable products does it enter? from which is it absent? How do these differ in their relative nutritive value and why?

3. How far is the character of soil dependent (first) on its origin? (secondly) on tillage? (thirdly), on the extent and method of cropping?

4. Explain the chemical nature of wheat flour, milk, cheese, butter, eggs, salt, soap.

5. The following substances are all taken, more or less, into the body as foods, viz: sugar, salt, lime, iron, water, oxygen. Explain the part subsequently taken by each.

6. What is fat? What kinds of food favor its formation? What part does it play in animal life?

7. State what you know of the element sodium? What is soda? Whence is it obtained? For what use?

8. Compare the burning of hydrogen, street gas, sulphur, phosphorus and charcoal. What are the characters of the products in each case?

#### PART II.

1. What physical and what chemical changes are illustrated in the firing of a gun, in the ignition of a match, in the combustion of mixed H. and O?

2. What are the common acids? From what sources are they derived? What do they all contain? What takes place when they are treated with metallic elements? Illustrate in each case?

3. Give symbols for ammonia gas, ammonia water, ammonium chloride, ammonium nitrate.

4. What gaseous products result from the action of nitric acid upon copper; hydrochloric acid on zinc; sulphuric acid on chalk? If possible, formulate the reactions involved.

5. Give symbols for hydrochloric acid, water, quick lime, calcium chloride, hydrogen sulphide, ammonia gas, carbonic acid, potassium hydrate. How may the same symbols be written so as to indicate the valency of the elements involved?

6. How would you proceed to get chlorine out of common salt? To get nitrogen from air? Hydrogen from water?

7. What right have we to express chemical changes in the form of equations? What amount of matter does an equation represent? Contrast a chemical with an algebraic equation.

8. Mention the principal natural compounds of the following elements: Iodine, Sulphur, Calcium, Phosphorus, Silicon, Magnesium, Aluminium.

9. State what you know of the composition of Porcelain, Steel, Bronze, Glass, Alum, Bleaching-powder. etc.  
N. B. Six questions, selected at will, constitute a full paper.

Continued on page 6.

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