

Examination Papers.

BOARD OF EDUCATION, MANITOBA (Protestant Section.)

Examination of Teachers, July 1886.

ARITHMETIC—THIRD CLASS.

Examiner—D. McINTYRE.

Time—three hours.

1. From the sum of 61 gal. 3 qts. 1 pt., and 36 gal. 1 pt. take 28 gal. 2 qts., and divide the result by 18.

2. In excavating a cellar 3,240 cubic feet of earth were removed by three men in eight days. How much did each man earn if the work was paid for at the rate of 27½ cents per cubic yard?

3. From a lb. Troy of standard gold are coined 46.725 sovereigns. How many grains in each sovereign?

4. If a quantity of wheat fills 1,155 sacks, each holding 8 bushels, 4 qts., how many sacks will it take to contain the wheat when each sack holds 6 bushels, 3 qts.?

5. I receive \$400 in uncurrent money, which I deposit in a bank at ½% discount. With how much shall I be credited?

6. If two men can reap 2½ acres in 2¼ days, how long will it take 11 men to reap 15 acres?

7. Write the note which, being discounted at a bank at 7% on the day of making, will produce \$450.

8. An executor of an estate finds it encumbered with debts to the amount of \$4,322.50 over and above its realized value of \$10,929.50. How many cents on the dollar can he pay the creditors?

9. In what time will \$2.73 amount to \$3.73 at 9 per cent. simple interest?

10. Find the square root of 17242,3161.

11. A man invests his property in four successive ventures. In the first he gains as much as he invested, and in each of the others he loses ½. What fraction of his original outlay does he gain on the whole?

12. A man deposits in a savings bank £1 per month. Simple interest at the rate of ½% per month for each pound is allowed, and the interest is added to the principal at the end of the year. What sum will he have saved in 2½ years?

GEOGRAPHY—THIRD CLASS.

Examiner—D. J. GOGGIN.

Time—two hours.

1. Give a short explanation of deltas, the equatorial current.

2. Two points on the Arctic Circle have the same difference of longitude as two points on the Tropic of Capricorn. Which two points are the farthest apart in miles? Why?

3. Trace and explain the correspondence between the river systems of North and South America.

4. If rain is plentiful on one side of a mountain range, and is lacking on the other side, what is the prevailing direction of the winds?

5. Draw a map of Manitoba, showing the counties, railroads, and the farm of Mr. B. who lives on 12 in 2-3, west of the first principal meridian.

6. Under these heads:—(a) Surface and drainage. (b) Climate and productions. (c) Exports and manufactures. (d) People and government.

Describe one of the following countries: Ontario, China, Egypt, Brazil, France.

7. With what is a vessel from Yokohama bound for San Francisco likely to be freighted?

8. Give the position of the following places, mentioning anything notable about them: Valparaiso, Halifax, Havana, Manchester, Cronstadt, Melbourne, Heligoland, Malta, Indus River, Crimea, Nelson River, Laurentian Hills.

HISTORY—THIRD CLASS.

Examiner—REV. CANON O'MEARA.

Time—three hours.

1. Give the divisions of Britain—(a) Under the Romans. (b) Under the Saxons.

2. Sketch briefly the leading events of the reign of William the Conqueror.

3. "The title of 'King of France' was claimed until lately by our monarchs, but Henry of Monmouth was the only English monarch who really deserved the name."—*Collier*.

Explain and justify this statement.

4. Show clearly the claim of Henry VIII. to the English throne as proved by his descent from William the Conqueror.

5. Give some account of the rebellion under Monmouth.

6. Describe the circumstances which led to the union of England and Scotland, and enumerate the chief provisions of the treaty of union.

7. Give a full description of the Battle of Waterloo.

8. Describe the discoveries of Cabot and Jacques Cartier.

9. Give a full account of the taking of Quebec by the British.

10. Give a brief account of the two North-west rebellions.

DICTATION—THIRD CLASS.

NOTE TO THE PRESIDING EXAMINER.—This paper is not to be seen by the candidates. It is to be read to them *three times*—first at the ordinary rate of reading, they simply listen to catch the meaning of the passages; second, slowly, the candidate writing; third, for review. Candidates are not to be permitted to re-write the passage.

The school house should be located in a pleasant situation remote from disturbing influences to the quiet activity of the mental and physical development of the pupils. The grounds should be elevated above the level of the surrounding country, and should, for drainage purposes, slope gradually away from the locality.

The house should be exposed to the direct rays of the sun, and to currents of fresh air, and the soil should be of such a loose nature as readily to absorb water that is not drained off or evaporated. The grounds should be of sufficient extent to allow of healthful exercise, and should include separate enclosures, if practicable, exclusively allotted to boys and girls respectively.

The temperature of the school room should be maintained at a degree that will prevent restlessness from overheating or discomfort from cold, and evenness of temperature should be regarded as indispensable. The ventilation should be thorough and systematic, not occasional or capricious. It should be regulated by well known hygienic laws, and not by the sensations of the inmates.

UNIVERSITY OF TORONTO.

Annual Examinations, 1886

JUNIOR MATRICULATION—ARTS.

EUCLID—HONOURS.

Examiner—A. K. BLACKADAR, M.A.

1. Define the terms, *straight line*, *angle*, *circle*.

Draw a straight line perpendicular to a given straight line from a point without it.

Find a point within an isosceles triangle, such that its distance from the base will be double its distance from either of the equal sides.

2. If a side of any triangle be produced, the exterior angle is equal to the two interior and opposite angles; and the three interior angles of every triangle are together equal to two right angles.

The internal and external angles at *A* of the triangle *BAC* are bisected by *AD* and *AE* respectively, which meet the base *BC* and *BC* produced in the points *D* and *E*. If the angle *ABC* be greater than the angle *ACB* by two-thirds of a right angle, prove that *DE* is double of *DA*.

3. In obtuse-angled triangles, if a perpendicular be drawn from either of the acute angles to the opposite side produced, the square on the side subtending the obtuse angle, is greater than the squares on the sides containing the obtuse angle, by twice the rectangle contained by the side upon which when produced the perpendicular falls, and the straight line intercepted without the triangle between the perpendicular and the obtuse angle.

A point *O* is taken in the base *AB* of the triangle *ABC*, so that *AO* is double of *OB*; if the vertex *C* be joined to *O*, prove that $AC^2 + 2BC^2 = OA^2 + 2OB^2 + 3OC^2$.

4. If a straight line drawn through the centre of a circle bisect a straight line in it which does not pass through the centre, it shall cut it at right angles; and conversely, if it cut it at right angles, it shall bisect it.

If *AB* be the diameter of a circle, and *AC*, *AD* any two chords, and if with the centre *B* another circle be described cutting *AC*, *AD* in the *G*, *H* respectively, prove that

$$AC^2 - AD^2 = GC^2 - HD^2,$$

5. Inscribe an equilateral and equiangular pentagon in a given circle.

If an isosceles triangle be drawn having the same altitude and area as a regular pentagon, shew that each angle at the base will be equal to three-fourths of the vertical angle.

6. Give the geometrical definition of proportion.

Triangles and parallelograms of the same altitude are one to the other as their bases.

If from the extremities of a diameter *AB* of a circle, any two chords *AH*, *BG* be drawn in the same semi-circle, and meeting in *C*, and *O* be the centre of the circle, prove

$$\frac{\triangle AHB}{\triangle HBC} + \frac{\triangle AGB}{\triangle AGC} = \frac{4AO^2}{AO^2 - OC^2}$$

7. If an angle of a triangle be bisected by a straight line, which likewise cuts the base; the rectangle contained by the sides of the triangle is equal to the rectangle contained by the segments of the base, together with the square on the straight line which bisects the angle.