

3. In how many ways can trustees obtain moneys for the support of their school?—distinguishing the sources from which these moneys are obtained.
4. Mention four out of the five purposes or objects for which Trustees cannot lawfully impose an assessment.
5. In making out the Collector's Roll, how must the Trustees be guided in regard to (1) mistakes or omissions in the Township Assessment Roll, (2) inequality in the assessment of the Union Sections, (3) an "undivided lot," (4) two or more "owners," and (5) "unpatented land"?
6. In what respect do the provisions of the new law differ from the old, in regard to the formation and alterations of School Section, and Union School Section boundaries?
7. How can trustees collect School-rates from (1) "non-residents" of their Section, and (2) "unknown owners"?
8. Distinguish between the "lawfulness" and "expediency" of trustees' School expenditure?
9. What are the powers and duties respectively of School Auditors, Public School Meetings, and County Inspectors, in deciding between the "lawfulness" and "expediency" of a School expenditure.
10. Mention the cases in which "arbitration" has been abolished and retained in the School Law; and give a summary of the law in regard to arbitrations and awards.
11. What are the provisions of the law and regulations affecting teachers in regard to (1) Holidays and Vacations, (2) Visiting Schools, (3) Teachers' meetings, and (4) Discipline in the Schools.
12. Point out fully what are the powers and duties of "Inspectors" under the new law, as distinguished from those of "Local Superintendents" under the old law.
13. Classify the powers and duties of County, Township, and City Councils, in regard to the Public Schools, and shew in what respect they differ, especially in financial matters.
14. Mention the cases in which the law is "permissive" and "obligatory" on Township Councils in providing moneys for school trustees upon their application.
15. On what grounds can you defend the "compulsory" feature of our system, as a complement to Free Schools; and state how the "compulsory" provisions of the law can be best carried out.
21. What are your views about favourites in school?
22. Give your views of corporal punishment. Can it be dispensed with?
23. How do you prevent tardiness and absence?
24. Should the teacher have a uniform method in opening and closing school? What is your method?
25. How would you teach your pupils in composition?
26. What should be the teacher's leading motive in his work?
27. What are the objects of study?
28. What are the objects of recitation?
29. What is true education?
30. What do you think of teacher's institutes?
31. Of what items should a teacher keep a record in the school registrar?
32. Give the characteristics of a satisfactory answer?
33. Why should the teacher aim to make his school govern itself?
34. Give such a programme as you would use for daily exercises and recitations?
35. Would you have certain recitations assigned for the early part of the day, and others for the afternoon, and if so, why?
36. Give your reasons for and against the self-reporting system.
37. How do you reform a pupil who is inattentive in recitation?
38. How do you deal with a pupil who uses profane language?
39. In reciting, when should pupils use their own language, and when the word of the text-book?
40. What means do you adopt to make your pupils think?
41. To what extent and how should normal instruction be given?
42. What is meant by the topical method of recitation?
43. What are the advantages of oral instruction?
44. What is the greatest obstacle to good government in school?

II. Mathematical Department.*

MATHEMATICAL NOTES.

J. C. GLASHAN.

MATHEMATICAL: R. S. Finlay, Feby., 1872.—Mr. Finlay is right, as the veriest tyro in mathematics would at once acknowledge. * There was no need of authorities, and, besides, *authorities are of no authority* in mathematics. The rule given by the Mathematical Editor of the *Canadian Almanac* is the correct and only one, but he does not know how to apply it, thus showing that he did not appreciate the only point in the question. "Of all four-sided figures of equal perimeter, the square has the greatest area." In arithmetical geometry the figure will be a *square in perimeter-units*, or a square relative to unit rectangles of a length-unit by a width-unit. The problem considered geometrically is really one in projections, being, "Find the quadrilateral of maximum area in the plane A, whose projection on the plane B shall have a given perimeter." The following is a problem similar in principle, but relieved of the ambiguity lurking in that proposed in the *Canadian Almanac*:—Two persons, A and B, are to mark off a rectangular piece of land to be 500 of their steps in semi-perimeter, A to mark off the front and B the side. Now, A takes but 2 ft. at a step, while B takes 3 ft.; how many steps must each take that the rectangle may be of maximum area? Mr. Findlay would be right answering 250 each (giving a *square-in-two-by-three-units*), thus actually marking off a rectangle 500 ft. by 750 ft. = 375,000 s. ft. The Editor gives, A 300 steps, B 200 steps, thus marking off an absolute square of 600 ft. by 600 ft. = 360,000 s. ft.

INTEREST THAT IS INTERESTING: J. Cameron, April, 1872.—The problems are simply questions (and extremely easy ones) in annuities, and the formulæ for their solution are given in *Sangster's National Arithmetic*, No. II., page 358, and No. VI., page 361. In the former read $v(1+rt)$ for A, to adapt it to the questions proposed. For this change see No. V., page 248.

THE CARPENTER'S SQUARE: J. Ireland, April, 1872.—The method of solution exhibited must appear rather awkward to those accustomed to "rationalize" right-angled triangles. General solution for sides a and b — $\frac{a+x}{b-x} = \frac{m^2-1}{2m}$, m being any rational number,

$\therefore x = \frac{b(m^2-1)-2am}{m^2+2m-1}$. In Mr. Ireland's problem $a=1$ and $b=2$,
 $\therefore x = \frac{2(m^2-m-1)}{m^2+2m-1}$. And $x < \frac{1}{12}$ but $> 0 \therefore m < \frac{13+\sqrt{698}}{23}$ but $> \frac{1+\sqrt{5}}{2}$. Let $m = \frac{5}{3} \therefore x = \frac{1}{23}$.

The readers of the *Journal* may perhaps here remember that ap-

* All communications for this Department of the *Journal* are to be sent to Mr. A. Doyle, Hamilton, Ont.

QUESTIONS FOR TEACHERS TO ANSWER.

The character of the questions used in any locality for the examination of teachers is a very good key to the standard of education in that locality. The last report of the school commissioner of Ohio gives about fifty pages of questions used in the different counties of the State for examining teachers. They are upon all the common-school branches, and also upon the theory and practice of teaching and school management. From the last-named class we have selected a few from each county. If teachers will give them careful thought and answer them, they will find it an exercise that will do much for their own improvement.

1. State briefly how you would organize your school.
2. How will you secure obedience and respect from your pupils?
3. What special preparation have you made for teaching?
4. What qualifications should a teacher possess to manage a school well?
5. Why do you teach? Do you love the work?
6. What plans would you recommend to create an interest in study?
7. What advantage is there in pupils giving an analysis of their respective lessons.
8. What is your method of assigning lessons?
9. Do you permit your pupils to pass from one lesson to another before they comprehend and master it? Give the reasons for your answer.
10. What means do you make use of, and how do you use them to govern your school?
11. Name five characteristics of a good teacher,—giving reasons for the same.
12. Name three characteristics of a good school,—giving reasons.
13. What ends can be secured by object lessons?
14. In teaching, should rules or processes first receive attention? Why?
15. Give a short account of your method of conducting a recitation.
16. Do you take an educational journal?
17. What works on education have you read?
18. What incentives to study should be used in school?
19. The difference between education and knowledge?
20. Give some of your mode of punishment.