6. The first part of this question is familiar book work. The second part may be solved as follows:—

$$\frac{1-x}{1-y} = \frac{(2-9x+x^2)+(5+10x-x^2)}{(2-7y+y^2)+(1+8y-y^2)} = \frac{7+x}{3+y}$$

$$\therefore 7-7y+x-xy=3+y-3x-xy$$

$$\therefore x=2y-1.$$

Substitute this value of x in the equation

$$\frac{1-x}{1-y} = \frac{2-9x+x^2}{2-7y+y^2}.$$

Then $y^2-4y+4=0$ $\therefore$ $y=2$; and $x=2y-1=3$.

Another Method.—Miss Anna Living solves the problem by putting

$$\frac{1-x}{1-y} = \frac{2-9x+x^2}{2-7y+y^2} \text{ and } \frac{1-x}{1-y} = \frac{5+10x-x^2}{1+8y-y^2}.$$

She clears the equations of fractions, and, by combining the results, obtains $2y=x+1$, the same result as was found above. From this, the values of the x and y are easily deduced.

7. The following solutions is from the papers of Mr. George A. Somerville:—

Let p and q be the roots of $x^2+\frac{b}{a}x+\frac{c}{a}=0$.

Then $p+q = -\frac{b}{a}$, and $pq=\frac{c}{a}$

$\therefore a(p+q) = -b$, and $apq=c$ $\therefore \frac{p+q}{pq} = -\frac{b}{c}$.

In like manner, assuming p and r to be the roots of the equation $x^2+\frac{nx}{m}+\frac{nc}{mb}=0$, Mr. Somerville shows that $\frac{p+r}{pr} = -\frac{b}{c}$.

$\therefore \frac{p+q}{pq} = \frac{p+r}{pr}$ $\therefore p^2r+pqr = p^2q+pqr$ $\therefore r=q$.

8. The first of the given equations can be put in the form,

$$(x+y)(x^2-xy+y^2)+xy(x+y)=108$$

$$\therefore (x+y)(x^2+y^2)=108.$$

If, now, we put z for $x+y$, and v for x^2+y^2, this becomes

$$vz = 108.$$

But, we have also given $v+z=24$

$\therefore v=18$, and $z=6$ $\therefore x=y=3$.

9. Mr. Arthur Brown alone has solved this question. His solution is correct, except for a slight mistake in the working, towards the close. The following is the solution:—

Multiply both sides by $\sqrt{1-x}-1$;

then $n+1-\sqrt{1+x}=n\sqrt{1-x}$.

By squaring both sides,

$$2(n+1)+x(n^2+1) = 2(n+1)\sqrt{1+x}.$$

Square again, and transpose. Then

$$x^2(n^2+1)^2+4nx(n^2-1)=0.$$

$$\therefore x = -\frac{4n(n^2-1)}{(n^2+1)^2}$$

10. The following solution, which, though correct, is awkward, is from the papers of Mr. George A. Somerville:—

Let x = distance from A to B.

y = distance from B to C.

$\therefore 2y-x$ = distance from C to D.

Then, $\frac{2y-x}{3\frac{1}{3}}$ = Q's rate at first.

$\therefore \frac{6y-3x-5}{10}$ = Q's rate in the second case.

And, $\frac{3y}{10}$ = P's rate at first.

$\frac{3y}{10}+2$ = P's rate in the second case.

Mr. Somerville then obtains the equations—

$$\frac{10y}{6y-3x-5}+\frac{1}{2} = \frac{20y-10x}{3y+20}$$

$$\text{And, } \frac{10x+10y}{6y-3x-5} = \frac{20y-10x}{3y+20}+\frac{3}{4}.$$

Mr. Somerville did not finish the solution, but his equations give $x=5$, and $y=10$; hence, the required distance is 30.

Another solution, by Miss Anna Living, is as follows:—

Let x = the distance from A to B,

y = the distance from C to D,

Then, $\frac{x+y}{2}$ = the distance from B to C,

$\frac{3x+3y}{20}$ = P's rate per hour.

$\frac{3y}{10}$ = Q's rate per hour.

$\frac{3y-5}{10}$ = Q's decreased rate per hour.

$\frac{3x+3y+40}{20}$ = P's increased rate per hour.

$\frac{5x+5y}{3y-5}$ = Q's time to reach B.

$\frac{15x+5y}{3y-5}$ = Q's time to reach A.

$\frac{20y}{3x+3y+40}$ = P's time to reach D.

$$\frac{5x+5y}{3y-5}+\frac{1}{2} = \frac{20y}{3x+3y+40} = \frac{15x+5y}{3y-5}-\frac{3}{4}.$$

From which equations, Miss Living finds:—

$x=5$, $y=15$, and $\therefore$ the distance from A to $D=30$ miles.

VIII. Educational Intelligence.

TRINITY COLLEGE.—The annual convocation of Trinity College University was held in the Hall of the College at the usual time, the Chancellor of the University, the Hon. J. H. Cameron, Q.C., D.C.L., presiding.

The Provost having read prayers, the following degrees were conferred in the usual manner:—

B.A.—William Cartwright Allen, Rev. Robert Doherty, Frederick M. Morson and Alex. B. Chafee.

M.A.—Rev. Wm. Stephen Westney. M.B.—Egerton R. Griffiin. M.D.—Joseph Allright, Logan Murray Moore, Charles William Marlatt, Hugh Lang, Samuel Shakespere Stephenson, Geo. Steacy, Jas. McLaren Wallace, Archibald Sinclair Campbell.

D.C.—Salter J. Vankoughnet.

Admitted to the Divinity Class.—W. C. Allen, A. B. Chafee, J. H. Fletcher, W. E. Grahame, W. M. Tooke and W. Jupp.

The Chancellor then presented the following prizes, addressing a few congratulatory remarks to each recipient:—Ogden Pulteney Ford, B.A., the Hamilton Memorial Prize for 1872. Ogden P. Ford, B.A., the Bishop of Toronto's prize for Divinity. John Austin Worrell, the Prince of Wales' prize for 1st class in Classical Honours, 1871. Reginald Gourlay, prize poem for English subjects. W. C. Allen, the Prince of Wales' prize for 1st class in Classical Honours, 1872. W. C. Allen, Classical prize for third year. Chas. John Logan, Classical prize for second year. Clarendon L. Worrell, Mathematical prize for second year. Several students having matriculated, the Chancellor briefly addressed those assembled, expressing the pleasure he felt at seeing so many students matriculating and taking the degree of M.D. It showed a clear indication of the good work which was being done by the College. He referred in very appropriate terms to the munificent bequest to the College of $4,000 by the late Mr. T. C. Street, and concluded by expressing a hope that a new Convocation Hall would soon be provided. The Convocation was then adjourned.

IX. Departmental Notices.

TEACHERS' GOLD MEDAL FOR COMPETITION.

As already intimated in this Journal, we desire to state that William McCabe, Esq., LL.B. (a former successful teacher) has intimated to the department his intention to offer a gold medal, to the most successful candidate for a First Class Certificate of the highest grade, at the July examinations of this year. We hope that this generous offer will stimulate a large number of our teachers to endeavour to obtain the very highest place in their profession.

NEW SCHOOL MANUAL.

In answer to various inquiries on the subject of a new School Manual we would say, that as the School Law will likely be revised and consolidated at the next session of the Legislature in 1874, it is not thought desirable to publish a School Manual at present. Such a Manual should include in it the official regulations, but as they will not be revised until about the close of the present year (1874), or later, they cannot be embodied in the manual until then.

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