4. Put the following into English:—

Kua kino te waka i te paru. Kua pakaru to waka i te ngaru. Me wero e koe. Ehara koe i te rangatira noku. Rongo kau ahau i to karanga, ka haere mai ahau. Timata kau matou te mahi, ka timata hoki te ua. Ahakoa haere koe, ahakoa noho, he nui ano te mahi mau. I tu ia ki te tatau kia kaua ai tetahi e tomo ki roto ki te whare. I hoki rawa mai koe i hea?

5. Give examples in Maori, with translation, of the use of "*tino pai rawa*," "*kino whakaharahara*," "*tini whakaharahara*," and also of the particles *atu, mai, ai, ano*.

6. Write a letter as from Maoris, addressed to the Governor, welcoming him to New Zealand, and assuring him of their continued loyalty to the Queen. Give rendering of same in English.

Algebra.—Optional for Class D, and for Junior Civil Service. Time allowed: 3 hours.

1. If $a=5$ and $x=2$, find the numerical values of

$$\text{(i.)}\ \frac{a^2+2ax-x^2}{3a-2x}+\frac{3ax-a^2}{a+x};$$

$$\text{(ii.)}\ \frac{\sqrt{5a+4x+3}}{3\sqrt[3]{a+x+1}}.$$

2. Multiply together $5ax^3-7bx^2y+6cxy^2+3y^3$ and $4cx^2+2axy-3by^2$. Arrange your result in descending powers of x, collecting coëfficients of like powers in brackets.

3. Divide—

$$\text{(i.)}\ 3x^2-2y^2+12z^2-13xz-5yz+5xy \text{ by } 3x-y-4z.$$

$$\text{(ii.)}\ (2x-y)^3-6y(2x-y)^2+12y^2(2x-y)-8y^3 \text{ by } (2x-3y)^2.$$

4. Resolve into factors $(x-x^3y^2)^2$, $(2x-3y+z)^2-(x+2y-z)^2$, x^4+4y^4, $4x^2+9y^2+3y-2x-6xy$.

5. Simplify—

$$\text{(i.)}\ 2(x-a)\,(2x-b)-(2a-x)\,(2x-b)-x\,[a-x-(a+\overline{b-x})].$$

$$\text{(ii.)}\ 2x-\tfrac{1}{2}(3y-z)-\tfrac{1}{3}[2x-4y+(y-\tfrac{z}{2})]-\frac{3x+\frac{1}{2}(-y-3z)}{4}.$$

6. Find the value of $\frac{x+y}{x-y}-\frac{x-y}{x+y}$ in terms of a and b when $x=\frac{a}{a+b}$, $y=\frac{b}{a-b}$.

Simplify $2+\cfrac{3}{2-\cfrac{3}{1+\cfrac{1}{2-x}}}$.

7. Solve the equations—

$$\text{(i.)}\ \frac{3x+2}{5}+\frac{\frac{2x-1}{3}-\frac{2x+4}{5}}{\frac{3x+2}{2}-\frac{4x+7}{3}}=\frac{6x+9}{10};$$

$$\text{(ii.)}\ \frac{ax-b}{a+b}+\frac{bx-a}{b-a}=x.$$

8. A man travels for a hours at the rate of x miles an hour; he then rests for n hours, and then travels for b hours at the rate of y miles an hour. He returns the whole distance at the rate of z miles an hour, and finds that he has been absent altogether c hours. Write down the equation which expresses this fact.

9. The populations of two countries are in the ratio of m to n; after the population of the first has increased by a per cent., and that of the second by b per cent., the populations are in the ratio of p to q. Prove that $mq\,(100+a)=np\,(100+b)$.

Euclid.—Optional for Class D, aad for Junior Civil Service. Time allowed: 3 hours.

1. Name and define the different kinds of quadrilateral figures.

2. Explain the following geometrical terms: postulate, hypothesis, problem, corollary, indirect demonstration.

3. If two triangles have the three sides of the one respectively equal to the three sides of the other, the triangles shall be equal in every respect.

Prove that the opposite angles of a rhombus are equal, and that its diagonals bisect one another at right angles.

4. If one side of a triangle be produced, the exterior angle is greater than either of the interior opposite angles.

Hence show that any two exterior angles of a triangle are together greater than two right angles.

5. If two triangles have two sides of the one equal to two sides of the other, each to each, but the angle contained by the two sides of one of them greater than the angle contained by the two sides equal to them of the other, the base of that which has the greater angle shall be greater than the base of the other.

6. Parellelograms upon the same base and between the same parallels are equal to one another.

Explain how this proposition furnishes the means of calculating the area of a parallelogram or a triangle.

7. If a straight line be divided into any two parts, the squares of the whole line, and of one of the parts, are equal to twice the rectangle contained by the whole and that part, together with the square of the other part.

What is the algebraical equivalent of this proposition?