

3. Explain the use of the accusative and infinitive.

Express in Latin—

He confessed that he had done it.

He said that he was not the man to desert his friends in time of danger.

He promised to be present at Rome on the 10th of March.

To think that you should have been so foolish!

4. What are the most common interrogative particles, and how are they used (1) in direct, (2) in indirect questions?

Express in Latin—

Are you so foolish as to believe that all these things were made by chance?

He ordered them to make out (*speculari*) whether the enemy were going out of the camp.

It is difficult to say which of the two plans is the better.

5. Explain the use of *quominus* and *quin*, and of *ut* and *ne* after verbs of fearing.

Express in Latin—

I cannot help thinking that Socrates was the best of all men who have ever lived.

I am afraid we shall not be able to save our country.

He cannot refuse to hear you.

6. Translate—Sed quoniam res humanae fragiles caducaeque sunt, semper aliqui anquirendi sunt quos diligamus et a quibus diligamur. Caritate enim benevolentiaque sublata omnis est e vita sublata jucunditas. Mihi quidem Scipio, quamquam est subito ereptus, vivit tamen semperque vivet: virtutem enim amavi illius viri, quae exstincta non est. Nec mihi soli versatur ante oculos, qui illam semper in manibus habui, sed etiam posteris erit clara et insignis. Nemo umquam animo aut spe majora suscipiet qui sibi non illius memoriam atque imaginem proponendam putet.

[caducus=*fleeing*. anquiro=*I seek after*.]

CLASS D.—ALGEBRA (Optional).

Time allowed: Three hours.

1. The sum obtained by adding 5 times the number b to 7 times the number a is divided by the excess of 8 times the number a over 6 times the number b , and the quotient so obtained is multiplied by itself. From this result is subtracted the product obtained by multiplying the excess of 5 times the number a over 8 times the number b by the sum of 3 times the number a and 4 times the number b . Write down an expression for this final result, and calculate its value when $a=8$ and $b=5$.

2. Multiply $mx^2 + (n-b)x + q$ by $nx + q$, and express the answer in such a way that coefficients of like powers of x are collected in the same bracket.

3. Divide $24x^5 - 2y^5 - 2x^2y^2(17x + 4y) + xy(16x^3 + 13y^3)$ by $6x^2 - y^2 + 4xy$.

4. Simplify— $a - b + \left\{ -3b - [2c + 3(a - b + 2c) - 2(a + c)] + b \right\}$.
 $\frac{a+b}{2} - \left\{ \frac{1}{3}(b-c) + \frac{1}{2} \left[-\frac{a-b}{2} + c \right] - \frac{a}{3} \right\}$.

5. Resolve into factors $8x^3y^3 - 27a^3$; $35x^2 + 13xy - 66y^2$; and write down the product of $ax + by + c$ and $ax - by - c$.

6. Reduce to its lowest terms $\frac{2x^3 + x^2y - xy^2 + 3y^3}{3x^4 - x^3y - 3x^2y^2 + 6xy^3 - 4y^4}$,
 and simplify $\frac{x^2 + x + 1}{(1-2x)^3} - \frac{x+1}{(1-2x)^2} - \frac{1}{2x-1}$.

7. Solve the equations $\frac{5x-4}{9} + \frac{12x+2}{13x-16} = \frac{10x+17}{18}$.
 $\frac{1}{ab-ax} = \frac{1}{ac-ax} - \frac{1}{bc-bx}$.

8. A man walks for a hours at the rate of x miles an hour, and then rides for b hours at the rate of y miles an hour; he rides part of the way back in c hours at the rate of z miles an hour: how long will it take him to complete the return journey at the rate of v miles an hour?

9. At an election, three-fourths of the votes of a certain constituency are polled, and the numbers of votes polled by the three candidates (A, B, and C) for election are in the ratio of 2, 3, and 5. The sum of one-third of A's votes, one-fifth of B's, and one-sixth of C's is 252: find the number of voters on the roll of the constituency.

CLASS D.—EUCLID (Optional).

Time allowed: Three hours.

1. Give definitions of a *plane surface*, a *plane rectilineal angle*, *alternate angles*, a *rectangle*, and a *gnomon*.

What is a proposition? State in their order all the steps taken in establishing a proposition.

2. If two triangles have two sides of the one equal to two sides of the other, each to each, and have likewise the angles contained by those sides equal to one another, then their bases shall be equal, and the two triangles shall be equal, and their other angles shall be equal, each to each, namely, those to which the equal sides are opposite.

On what axiom is the method of proof by "superposition" founded? Mention any other case in which the method of superposition is employed by Euclid.

3. To draw a straight line perpendicular to a given straight line of an unlimited length, from a given point without it.

Show that the perpendicular may also be drawn by the following construction: With any two points in the given line as centres, describe circles passing through the given point, and join the given point with the other point of intersection of the circles.