

Classify (giving principal parts) the following verbs as *strong*, or *weak*; *berave*, *beat*, *bind*, *buy*, *flee*, *fly*, *eat*, *lay*, *learn*, *pen*, *seethe*, *stay*, *stick*, *shoe*, *shear*, *tear*, *work*.

3. Write notes on, (a) the history and derivation of the term *case*, (b) Impersonal verbs, (c) the different uses of *but*.

4. Discuss *order* as a principle of English syntax and state and illustrate the circumstances under which the subject follows the verb.

5. State the chief grammatical peculiarities which distinguish Anglo-Saxon from modern English.

6. Parse italicized portion of following extract:

"The thunder-clouds closed o'er it, *which, when rent*,
The earth is covered *thick* with other clay,
Which her own clay shall cover,—heaped and pent;
Rider and horse, friend, foe, in one red burial blent."

ANALYSIS.

1. What classes of verbs are followed by two subjects? When is the second object called the *objective complement*? Show the propriety of the term.

2. Discuss the force of the different relatives in introducing adjective clauses. Quote Bain's opinion.

3. Write brief complex sentences illustrating under four sub-clauses the adverbial clause of *cause*.

4. Analyze generally and in detail:—

"Eveline, entering into her betrothed husband's humor, was about to raise him from the ground, when she was interrupted by the arrival of a hasty messenger, who, coming into the room without ceremony, informed the Constable that his nephew was so extremely ill that if he hoped to see him alive it would be necessary that he should come to his lodgings instantly."

ARITHMETIC.

1. How may the relative magnitude of two or more fractions be compared? $\frac{3}{5}$ of $\frac{1}{9}$ of what number, diminished

by $\frac{\frac{1}{2} \text{ of } \frac{3}{10}}{\frac{2}{8} + \frac{1}{10}}$ leaves $\frac{(\frac{4}{3})^3 - 1}{(\frac{4}{3})^2 - 1}$?

2. Explain the terms, *stock*, *par*, *premium*, *consols*, U. S. 6's 5-20, U. S. 5's 10-40. If stock bought at 25 per cent. premium pays 7 1-5 per cent. on the investment, what per cent will it pay if bought at 4 per cent. discount?

3. A man having lent \$10,000 at 5 per cent. interest, payable half-yearly, wishes to receive his interest in equal proportions monthly, and in advance; how much ought he to receive every month?

4. If 6 men will dig a trench 15 yards long and 2 yards wide in 3 days of 12 hours each, how many days of 8 hours each will 8 men take to dig a trench 10 yards long and 8 yds. wide? (Solve by the unitary method.)

5. The sum of three fractions is $\frac{182}{2\sqrt{2}}$; and 22 times the first, 23 times the second, and 24 times the third give equal products. Find the fractions.

6. 1 lb. of tea and 3 lbs. of sugar cost 6 shillings. If the sugar were to rise 50 per cent, and the tea 10 per cent., the same would cost 7 shillings; what is the price of each?

GEOMETRY.

1. 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 must be greater than the base of the other.

2. Describe a rhombus, which shall be equal to a given triangle and have each of its sides equal to one side of the triangle.

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"—*Complete the enunciation and prove.*

4. If straight lines be drawn from each angle of a triangle to bisect the opposite sides, four times the sum of the squares on these lines is equal to three times the sum of the squares on the sides of the triangle.

5. If, from any point without a circle, two straight lines be drawn, one of which cuts the circle, and the other touches it; the rectangle contained by the whole line, which cuts the circle, and the part of it without the circle, must be equal to the square on the line which touches it.

6. Of all triangles having equal bases and equal vertical angles the isosceles triangle has the greatest area.

7. If an equilateral triangle be inscribed in a circle, and a straight line be drawn from the vertical angle through the base to meet the circumference, it will be equal to the sum of the straight lines drawn from the extremities of the base to the point where the line meets the circumference.

READING.

Once more, hoar mount: with thy sky-pointing peaks,
Off from whose feet the avalanche, unheard,
Shoots downward, glittering through the pure serene,
Into the depth of clouds that veil thy breast.
Thou too, again stupendous mountain; thou
That, as I raise my head, while bowed low
In adoration, upward from thy base
Slow travelling with dim eyes suffused with tears,
Solemnly seemest like a vapoury cloud
To rise before me—rise, oh, ever rise!
Rise like a cloud of incense from the Earth!
Thou kingly spirit throned among the hills,
Thou dread ambassador from Earth to Heaven,
Great hierarch! tell thou the silent sky,
And tell the stars, and tell yon rising sun,
Earth, with her thousand voices, praises God.

ALGEBRA.

1. Simplify

$$\frac{2x}{x^2 + 1} \text{ and } \frac{1}{(x-3)(x-4)} - \frac{2}{(x-2)(x-4)} - \frac{1}{(x-2)(x-3)}$$

$$\frac{1}{x^2}$$

2. Solve the simultaneous equations,

$$x + \frac{y}{2} - 3 = 0$$

$$\frac{x - 5}{6} + \frac{x - y}{4} + 1 = 0$$

3. Solve

$$x^2 + y^2 = 34$$

$$x^2 - y^2 + \sqrt{x^2 - y^2} = 20.$$

4. Extract the square root of $14 - 4\sqrt{6}$.

5. Find an arithmetical series of 3 terms, whose sum shall be 21, and the sum of the first and second terms equal to three-fourths of the sum of the second and third.

6. The intensities of two lights are as 4 to 9. At what distances from the stronger light are their illuminating powers equal, supposing them placed 12 feet apart. (The intensity of light varies inversely as the square of the distance.)

UNIVERSAL HISTORY.

1. Give a brief sketch of the commerce of the Ancients (1) the great routes of trade, (2) the leading articles of exchange.

2. Give the date of the final dismemberment of the Roman Empire, and briefly narrate preceding circumstances.

3. Write a note on Chivalry: its origin, duties imposed on various classes, its influence, and the cause of its decline.

4. Charles V—(1) To what dominions did he succeed by inheritance; (2) What is meant by the "imperial crown," and under what circumstances did he attain to it? (3) What were the chief events of his reign? (4) Describe his character.

5. State the substance of the *Edict of Nantes*. By whom was it promulgated, and by whom revoked?

6. Name in chronological order the Presidents of the United States with the dates of their election.

PRACTICAL MATHEMATICS.

1. Define *trigonometry*, *trigonometrical function*, *sine cosine*, *tangent*, *cotangent*, *secant*, *cosecant*.

2. State and demonstrate the theorem for the solution of oblique triangles when two sides and the contained angle are given.

3. The sides of a triangle are 13, 14 and 15; find the radius of the inscribed circle, and also the perpendicular from the opposite angle to the longest side.

4. What is meant by resolving a *traverse*? Describe in detail *Mercator's projection*.

5. Find the diameter of a sphere whose *surface* and *volume* are both expressed by the same number.

6. Define *dynamics*, *kinetics*, *momentum*. Describe each of the *mechanical powers*, and find the point of suspension when weights of 1, 2, 3, 4, and 5 lbs. respectively, are hung at equal distances along a rod whose length is 20 inches, and which is suspended at a single point so as to remain horizontal.