

8. A grocer mixed coffee at 28 cents a pound with some of a better kind at 42 cents a pound, and by selling the mixture at 35 cents a pound he gained 15% on the former and 20% on the latter; in what proportion did he mix them?

9. A vat 4 ft. long, 3 ft. wide, and 9 in. deep, contains pulp for making paper; a percentage of the pulp is lost in drying, and a sheet of paper 2700 yards long, 2 ft. 6 in. wide, and .004 of an inch thick, is obtained; what per cent. of the pulp was lost in drying?

10. Find the area of a trapezoid whose parallel sides are 27.5 and 38.5 chains respectively, and whose other sides are 12.5 and 15.5 chains respectively.

HISTORY.

1. State the principal grievances that led to the revolt of the peasantry in the reign of Richard II.

2. Between what parties was the Treaty of Troyes concluded? How far were its terms fulfilled?

3. State what you know about the introduction of Printing into England.

4. Write brief explanatory notes on the Convention Parliament, the Toleration Act, the Peninsular War.

5. Give the date of the Treaty of Utrecht, and state what events led to it.

6. Where are the following places, and with what important historical transactions are they connected:—Lewes, Naseby, Plassey, Yorktown, Amiens?

7. When did the Chartist agitation take place, and what objects had the agitators in view?

8. Give an account of the causes of Lord Durham's mission to Canada in 1838? What were its results?

9. Tell briefly what you know about the battle of Cannæ.

10. Contrast the character and political aims of Marius with those of Sulla.

ALGEBRA.

1. Multiply

$$4x^2 - \frac{3}{2}x + \frac{1}{2} \text{ by } 2x + \frac{1}{2}.$$

Prove that

$(\frac{1}{2}x - y)^2 - (x - \frac{1}{2}y)^2$ is exactly divisible by $x + y$.

2. Express in words the meaning of the formula

$$(x + a)(x + b) = x^2 + (a + b)x + ab.$$

Retaining the order of the terms, how will the right-hand member of this expression be affected by changing, in the left-hand member (1) the sign of b only, (2) the sign of a only, (3) the signs of both a and b ?

3. Simplify $(a + b)^4 + (a - b)^4 - 2(a^2 - b^2)^2$; and show that

$$(a + b + c)(b + c - a)(a + c - b)(a + b - c) = 4a^2b^2 \text{ when } a^2 + b^2 = c^2.$$

4. Prove that $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$.

Simplify

$$\left(\frac{a^2 + b^2}{2ab} + 1\right) \left(\frac{ab^2}{a^3 + b^3}\right) + \frac{4a(a + b)}{a^2 - ab + b^2}$$

5. I went from Toronto to Niagara, 35 miles, in the steamer "City of Toronto," and returned in the "Rothesay," making the round trip in 5 hours and 15 minutes; on another occasion I went in the "Rothesay" (whose speed on this occasion was 1 mile an hour less than usual), from Toronto to Lewiston, 42 miles, and returned in the "City of Toronto," making the round trip in 6 hours and 30 minutes; find the usual rates per hour which these steamers make.

6. Define a surd. What are similar surds? Simplify

$$\sqrt{12} + \sqrt{48} - 2\sqrt{3}; \sqrt{56} + \sqrt[3]{189}; (\sqrt{a} - \sqrt{b})(a + \sqrt{ab} + b); (x^2 + xy + y^2) \div (x + x^{\frac{1}{2}}y^{\frac{1}{2}} + y).$$

7. Solve

$$(1) \frac{3}{x} - \frac{2}{y} = \frac{1}{a}$$

$$\frac{2}{x} - \frac{1}{y} = \frac{2}{a}$$

$$(2) x^2 + 5x = 5\sqrt{x^2 + 5x + 28} - 4.$$