

Utah State University

DigitalCommons@USU

Reports of the Secretary to the President
Student Affairs President's Correspondence,
1900-1907

William J. Kerr

9-1-1903

State of Utah. Elementary Algebra. For State Certificates and Diplomas.

A. C. Nelson

Department of Public Instruction

Follow this and additional works at: https://digitalcommons.usu.edu/kerr_reports

Recommended Citation

William Kerr papers, University Archive, 03p01s04d02Bx002Fd18 (State Department of Public Institution, 1903-1907)

This State Department of Public Institution, 1903-1907 is brought to you for free and open access by the William J. Kerr at DigitalCommons@USU. It has been accepted for inclusion in Reports of the Secretary to the President Student Affairs President's Correspondence, 1900-1907 by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.



STATE OF UTAH.

Elementary Algebra.

FOR STATE CERTIFICATES AND DIPLOMAS.

TUESDAY, SEPTEMBER 1, 1903.

1. What is the essential difference between arithmetic and algebra?

2. Name four different kinds of algebraic symbols, and illustrate the use of each.

3. State four formulae for abridging algebraic operations in multiplication and division.

4. Factor the following:

(a) $1-3x-10x^2$ (b) $1-10ab+25a^2b^2$

(c) $x^3-y^3-3xy(x-y)$ (d) $1-8x^3$

5. Reduce to its lowest terms:

$$\frac{x^3-4x^2y+4xy^2-y^3}{x^3-2x^2y+4xy^2-3y^3}$$

6. Reduce to its simplest form:

$$\frac{(4x+y)^2-(x-2y)^2}{(3x-4y)^2-(2x+3y)^2}$$

7. Prove: That any term may be transposed from one side of an equation to the other by changing its sign.

(b) That the signs of all the terms of an equation may be changed without destroying the equality.

8. Solve:

$$\frac{x}{2} - 12 = \frac{y}{4} + 8$$
$$\frac{x+4}{5} - \frac{2y+x}{4} = 15$$

9. State the law observed in the expansion of the binomial $(a+x)^5$.

10. Find the value of:

$$(3a^3\sqrt{bx})^4 = (3a^3\sqrt[3]{bx})^4$$

ELEMENTARY ALGEBRA.

1. What is the essential difference between arithmetic and algebra?

2. Name four different kinds of algebraic symbols, and illustrate the use of each.

3. State four formulae for abridging algebraic operations in multiplication and division.

4. Factor the following:

$$(a) \ 1 - 3x - 10x^2 \quad (b) \ 1 - 10ab + 25a^2b^2$$

$$(c) \ x^3 - y^3 - 3xy(x - y) \quad (d) \ 1 - 8x^3$$

5. Reduce to its lowest terms:

$$\frac{x^3 - 4x^2y + 4xy^2 - y^3}{x^3 - 2x^2y + 4xy^2 - 3y^3}$$

6. Reduce to its simplest form:

$$\frac{(4x + y)^2 - (x - 3y)^2}{(3x - 4y)^2 - (2x + 3y)^2}$$

7. Prove: (a) That any term may be transposed from one side of an equation to the other by changing its sign.

(b) That the signs of all the terms of an equation may be changed without destroying the equality.

8. Solve:

$$\begin{cases} \frac{x}{2} - 12 = \frac{y}{4} + 8 \\ \frac{x + y}{5} - \frac{2y - x}{4} = 15 \end{cases}$$

9. State the laws observed in the expansion of the binomial $(a + x)^n$

10. Find the value of:

$$(3\sqrt[3]{bx})^4$$