

ELEMENTARY ALGEBRA

Tuesday, January 21, 1919—1.15 to 4.15 p. m., only

Write at top of first page of answer paper (a) name of school where you have studied, (b) number of weeks and recitations a week in elementary algebra. The minimum time requirement is five recitations a week for a school year.

Answer question 1 and five of the others. Credit will not be granted unless all operations (except mental ones) necessary to find results are given; simply indicating the operations is not sufficient. Each answer should be reduced to its simplest form.

1 a From the sum of $h-k+r-x$ and $2h-k+2r-x$ subtract $3h+2k+2r-3x$

b Multiply x^2-x-2 by $2x^2+3x+4$. Check.

c Divide $x^4+11x^3+23x^2-55x-140$ by x^2-5

d Factor m^2-m-12

$$9a^2-9a$$

$$4s^2-20st+25t^2$$

$$c^2-ck-cx+kx$$

e Reduce to lowest terms $\frac{n^2-7n+12}{n^2-2n-3}$

f Simplify $\frac{2a^2-13a+15}{4a^2-9} \times \frac{2a+1}{2a-1} + \frac{a-5}{2a-1}$

g Simplify $\frac{4}{x-1} - \frac{3}{x-3} + \frac{x-15}{x^2-4x+3}$

h Solve $5x-(2x+3)=12$. Check.

i Solve $10x^2+3ax-a^2=0$

j Multiply $3\sqrt{2}-2\sqrt{3}$ by $4\sqrt{2}+3\sqrt{3}$

2 a Evaluate the formula $\frac{1}{t} \left(\frac{T^2}{R^2} - 1 \right)$ when
 $T=8$ $R=2$ $t=10$

b Solve for M the formula $L = \frac{Mt - K}{t}$

3 a How many hours are there in d days?

b If p pounds of tea cost c dollars, how many cents did the tea cost a pound?

c If a man has x dollars and spends $\frac{1}{2}$ of that sum, how many dollars has he left?

d If x represents the number of feet in the length of a line, express $\frac{1}{2}$ of it increased by 5 inches.

4 The length of a room is 8 feet greater than its width; if each dimension is increased by 2 feet, the area will be increased by 60 square feet. Find the area of the floor.

5 A proper fraction is such that if its numerator is divided by 2 and its denominator is increased by 3, its value becomes $\frac{1}{2}$; if the fraction is multiplied by $\frac{1}{2}$, the difference of its terms is 53. Find the fraction.

6 Give an example of (a) a linear equation, (b) a radical expression, (c) a trinomial, (d) a quadratic equation, (e) simultaneous equations, (f) an exponent.

7 Solve $0.3x+0.2y=9.5$

$$0.2x+0.3y=10.5$$

8 Three quarts of gasoline are mixed with 5 quarts of kerosene; how many quarts of kerosene must be added to make the mixture three fourths kerosene?

9 The admission tickets for an entertainment were 25¢ each for adults and 10¢ each for children; the turnstile shows that 385 persons entered and the gate receipts were \$62.65. How many children entered?

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DIRECTIONS FOR RATING

The direction, "Less than 60% of the credit should be granted when an error in computation occurs," should be followed in rating all incorrect answers to questions which fall under the topics mentioned in "Suggestions on the Rating of Regents Examination Papers in Mathematics" under "Elem. Alg. 10." In rating all problems, see "Suggestion 12."

No credit should be allowed for checks unless made in original statements.

Except in schools where the "committee system" is used, teachers are urged to mark papers cumulatively, that is, to add the credits earned by each answer to the total credits earned by preceding answers so that the mark given to the last answer is the per cent to which the paper is entitled, e. g. consecutive answers earning 5, 7, 4 etc. respectively should be marked 5, 12, 16 etc.

1 50 credits

- a* 3 credits. Allow no partial credit.
- b* 7 credits. Allow 5 credits for correct multiplication and 2 credits for correct check. Allow no partial credit on either part.
- c* 5 credits. Allow no partial credit.
- d* 4 credits (1 each).
- e* 3 credits. Allow no partial credit.
- f* 5 credits. Allow 2 credits for correct factoring (1 each) and 3 credits for correct inversion, cancelation and writing of answer.
- g* 8 credits. Allow 3 credits for expressing the sum with the least common denominator and 5 credits for correctly combining the terms.
- h* 5 credits. Allow 3 credits for correct solution and 2 credits for correct check.
- i* 7 credits
- j* 3 credits. Allow no partial credit.

2 10 credits

- a* 5 credits. Allow 1 credit for correct substitution and 4 credits for correct evaluation.
- b* 5 credits. Allow no partial credit.

DIRECTIONS FOR RATING—concluded

3 10 credits

- a* 2 credits
- b* 2 credits
- c* 2 credits
- d* 4 credits

Allow no partial credit on *a*, *b*, *c* or *d*.

4 10 credits

- Allow 5 credits for correct equation.
- Allow 4 credits for correct dimensions.
- Allow 1 credit for correct area.

5 10 credits

- Allow 5 credits for correct equations.
- Allow 4 credits for correct terms.
- Allow 1 credit for correct fraction.

6 10 credits

- | | |
|--------------------|--------------------|
| <i>a</i> 2 credits | <i>d</i> 2 credits |
| <i>b</i> 2 credits | <i>e</i> 2 credits |
| <i>c</i> 1 credit | <i>f</i> 1 credit |

7 10 credits

- Allow 6 credits for first correct result.
- Allow 4 credits for second correct result.

8 10 credits

- Allow 6 credits for correct equation.
- Allow 4 credits for correct solution.

9 10 credits

- Allow 5 credits for correct equation.
- Allow 5 credits for correct solution.