

February 13, 1953

TO TEACHERS OF MATHEMATICS IN GRADES 8 to 12:

You will please find enclosed an examination given for Virginia State Teachers Certificate in 1900.

On two sheets I have "taken" the examination and am asking you to grade it, please. Use a value of 10 for each question and place your grade at the left and just under the number of the problem. Show total grade at end of problem 10 and also show the proper letter on our A B C D F system using plus or minus.

The purpose is to compare our standards and to check reliability or tolerance.

Please do not discuss this in any way with any other teacher of Mathematics until after concluding your grading. The results will be made known.

Very sincerely yours,

O. L. Emerick

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Division Superintendent

GIE:nsf

Enclosure

P.S. For additional recreation you might solve this problem for me.

"A man proposes to spend \$100.00 for 100 animals, buying rabbits at 50 cents, lambs at \$2.00 and pigs at \$5.00. How many of each would he buy?"

Examination for State Teacher's Certificate
Virginia 1900

1. $\frac{2\frac{1}{2}}{9} \times \frac{2}{3} + \frac{5\frac{1}{6} + 1\frac{1}{3}}{4} = ?$

2. $1200 \times 1 + (.06 \times \frac{75}{360}) = ?$

3. Find total cost of the following items:
8,125 bricks @ \$8 per M.; 40 rolls of tin, each 21 ft. long, 20 inches wide, @ \$.02 $\frac{1}{2}$ per sq. ft.; 60 pieces studding timber, each 20 ft. long, 3 inches wide, and 4 inches thick, @ \$16 per thousand feet.
4. One-tenth of a full cask of wine having leaked out, nine gallons were then sold, leaving eighteen twenty-fifths of original contents still in the cask. How many gallons did it hold?
5. A bank discounts a note at 8%, giving the maker \$641.60. The note being for \$720, how long did it have to run?
6. Paid \$80 for a carpet to cover a room 24 feet long. The carpet was 27 inches wide and cost \$1.25^v per yd. Find width of room.
7. A wagon body 12 ft. long and 5 ft. wide is 30 inches deep in shelled corn. Find value of the corn at \$.45 per bushel.
8. Bought 600 yds. of cloth @ \$1 per yd. and sold 400 yds. of it at a loss of 10%. At what rate of gain must remainder be sold in order to make 25% on total first cost?
9. At what rate will the interest on \$3,200 for 92 days, equal the interest on \$4,800 for 46 days at 6%?
10. A, B, and C received \$162 for digging a ditch. A dug 4 rods, B 3 rods, and C 2 rods. What should each receive?

State Teachers' Examination
1900

$$1. \frac{2\frac{1}{4}}{9} \times \frac{2}{3} + \frac{\frac{5}{6} + 1\frac{1}{3}}{4} = \frac{1}{4} \times \frac{2}{3} + \frac{\frac{5}{6} + \frac{8}{6}}{4} = \frac{2}{12} + \frac{13}{24} = \frac{15}{24}$$

$$2. 1200 \times 1 + (06 \times \frac{75}{360}) = 1200 + \frac{75}{6000} = 1200\frac{1}{80}$$

3. 8125 bricks @ \$8 per M = \$650.00 cost of bricks

$$\frac{10}{40} \times \frac{7}{2} \times \frac{20}{12} \times \$0.2\frac{1}{2} \text{ per lb} = 61.25 \text{ cost of tin}$$

$$60 \times 20 \times \frac{3}{12} \times 4 \times \$16. \text{ per M} = 19.20 \text{ cost of timber}$$

$$\underline{\$730.45} \text{ total cost}$$

4. Full cask less $\frac{18}{25} = \frac{1}{10} + 9$ gallons

$$\frac{7}{25} - \frac{1}{10} = 9 \text{ gallons}$$

$$\frac{9}{50} = 9 \text{ gallons}$$

$$\frac{1}{50} = 1 \text{ gallon}$$

$$\frac{18}{25} = \frac{36}{50} = 36 \text{ gallons.}$$

5. \$720 - \$641.60 = \$78.40 - Discount

$$\text{Time} = \frac{\text{discount}}{\text{Prin} \times \text{rate}}$$

$$\text{Time} = \frac{78.40}{720 \times .08} = \frac{78.40}{57.60} = 1\text{yr} + \frac{2080}{5760} \text{yr} = 1\frac{13}{16} \text{yr.}$$

6. Length of carpet = $\$80 \div 1.25 = 64$ yds
 $64 \text{ yds} \times 3 = 192$ feet
 $27 \text{ inches} = 2\frac{1}{4}$ feet - width of carpet
 $192 \times 2\frac{1}{4} = 432$ Sq. ft. Area of carpet and room
 $432 \div 24 = 18$ feet - width of room

7. $12 \text{ ft} \times 5 \text{ ft} \times 30 \text{ in} = 12 \times 5 \times 2\frac{1}{2} = 150$ cu ft,
 $150 \div 1\frac{1}{4} = 120$ bushels
 $120 \text{ bus} \times \$45 = \54 . Value of corn.

8. $600 \text{ yds} @ \$1 = \600 cost of cloth.

$\$600 \times 25\% = \150 gain

$\$600 + \$150 = \$750$ - selling price

$400 \text{ yds} \times \$1 = \400 cost of 400 yds.

$\$400$ less $10\% = \$400 - \$40 = \$360$ Selling price of 400 yds

$750 - \$360 = \390 - Selling price of 200 yds

$200 \text{ yds} @ \$1$. cost $\$200$

$\$390 - \$200 = \$190$ - gain on 200 yds.

$\$190 \div \$200 = 95\%$ - rate of gain on 200 yds.

9. $\$4800 \times \frac{6}{100} \times \frac{46}{360} = \36.80 interest

rate = $\frac{\text{interest}}{\text{prin.} \times \text{time}}$

rate = $\frac{\$36.80}{\$3200 \times \frac{92}{360}} = \frac{.40}{\frac{3200}{360}} = \frac{.09}{2} = 4\frac{1}{2}\%$

10. $4 + 3 + 2 = 9$ rods of ditch

$\$162 \div 9 = \18.00

$\$18 \times 4 = \70 . - A's share

$\$18 \times 3 = \54 . - B's share

$\$18 \times 2 = \36 . - C's share