after percentages or the mechanical accuracy which causes anguish to teachers and so much weariness, nowhere amongst teachers are there such traces of worry and anxiety. Demanding that all its children should be educated, the State in those countries encrusts them to the intelligence of teachers of the highest character, and best training it can secure, and for results it trusts neither to the accidental competency, or incompetency of an Inspector who comes into the school once a year for examination, but mainly to the honor and faithfulness of those whom it has chosen, and whom having chosen it supports and trusts. I think that however much is achieved by our system, which we ought most gratefully to acknowledge, there is much more that it might achieve, and achieve in a manner more satisfactory than at present. It might make the schools more beautiful and attractive at a very small expense, and so educate the neglected sense of art and beauty. It might provide play grounds, gymnasia, and baths for swimming, it might give direct training in trades by which a living could be earned, it should institute at least something of healthful military drill for our youths. It might correct the fatal error of turning our children loose at fourteen or fifteen, and doing no more for them at the most critical period of their lives. It might supply, by these means, relief to teachers and children, and mitigate many pressing hardships.

Prize Competition.

ARITHMETICAL PROBLEMS.

FOR CANADA SCHOOL JOURNAL COMPETITION PRIZES—THIRD CLASS QUESTIONS—BY NO. 700.

1. A farmer sold 300 bushels of wheat at $2 per bushel, corn and oats to the amount of $750; with the proceeds he bought 120 head of sheep, at $3 per head, one pair of oxen for $90, and 25 acres of land for the remainder. How much did the land cost him per acre?

$300 \times \$2 = \$600$. $600 \times 750 = \$1350$
$\$3 \times 120 = \$360$. $360 \times 90 = 450$
$\$\ 900$ $\$900 \div 25 = \$36$ Ans.

2. Divide $450 \times \overline{(24-12)} \times 5$ by $(90 \div 6) \times \overline{(3 \times 111 - 18}$
$450 + 12 \times 5 = 510$. $90 \div 6 = 15$. $3 \times 11 = 33$. $33 - 18 = 15$.
$510 \div 30 = 17$ Ans. $15 + 15 = 30$ Divisor.

3. Divide $648 \times (3^3 \times 2^3) \div 9 - (2910 \div 15)$ by $2863 \div \overline{(4375 \div 175) \times 4^2 \times 3^2}$

$648 \times \overline{(9 \times 8)} \div 9 = 648 \times 8 = 5184$
$2910 \div 15 = 194$. $5184 - 194 = 4990$ Dividend.
$2863 \div \overline{(4375 \div 175) \times 4^2 + 3^2} = 2863 \div \overline{(25 \times 8)} + 9 =$
$2863 \div 409 = 7$, divisor. $4990 \div 7 = 712\frac{6}{7}$ Ans.

4. A mechanic earns $60 a month, but his necessary expenses are $42 a month. How long will it take him to pay for a farm of 50 acres, worth $36 an acre?

$60 - 42 = 18$. $\frac{50 \times 36^2}{18} = 100$ months. Ans.

5. The product of 3 numbers is 107100, one of the numbers is 42, and another 34. What is the third number? Ans. 75,

6. What must be the number, which divided by 453, will give the quotient 307, and the remainder 109?

$453 \times 307 + 109 = 139180$ Ans.

1. A farmer bought a lot of sheep and hogs, of each an equal number, $1276. He gave $4 a head for the sheep, and $7 a head for the hogs. What was the whole number purchased, and how much was the difference in the total cost of each?

$1276 \div 11 = 116$. $116 \times 2 = 232$ purchase.
$116 \times 3 = \$348$ difference in cost.

2. A house and lot valued at $1200, and 6 horses at $95 each, were exchanged for 30 acres of land. At how much was the land valued per acre?

1200
$95 \times 6 =$ 570
1770 $1770 \div 30 = \$59$ per acre. Ans.

3. If 16 men can perform a job of work in 36 days. In how many days can they perform the same job with the assistance of 8 more men?

16 men do the work in 36. 1 man will do it in 16×36 days.
24 men " " $\frac{16 \times 36}{24} = 24$ days.

4. A coal dealer paid $965 for some coal. He sold 160 tons for $5 per ton, when the remainder stood him but $3 per ton. How many tons did he buy?

$160 \div 5 = 800$. $965 - 800 = 165$. $165 \div 3 = 55$. $160 + 55 =$ 215 tons. Ans.

5. A drover bought a certain number of cattle for $9800, and sold a certain number of them for $7680, at $64 per head, and gained on those he sold $960. How much did he gain a head, and how many did he buy at first?

$7680 \div 64 = 120$. $7680 - 960 = 6720$. $6720 \div 129 = 56$ cost price.
$64 - 56 = \$8$ gain per head. $9800 \div 56 = 175$ bought.
Ans. $8 gain, and 175 bought.

1. A dealer in horses gave $7,560 for a certain number, and sold a part of them for $3,825 at $85 each, and by so doing lost $5 a head; for how much must he sell the remainder per head to gain $945 on the whole? $3825 \div 85 = 45$ sold, $7560 \div 90 = 84$ bought,
$\$7,560 - \$3,825 = \$3,735$, $3.735 + 945 = \$4,680$,
$84 - 45 = 39$, $4,680 \div 39 = \$120$ Ans.

2. Bought a Western farm for $22,360, and after expending $1,742 in improvements, I sold one-half of it for $15,480—at $18 per acre; how many acres of land did I purchase and at what price per acre? $15,480 \div 18 = 860$ sold, $860 \times 2 = 1,720$ acres bought.
$22,360 = 1,720 = \$13$ per acre.
Ans. 1,720 acres bought at $13 per acre.

3. If A can build 14 rods of fence in a day, B 25 rods, C 8 rods, and D 20 rods; what is the least number of rods that will furnish a number of whole days' work to either one of the 4 men?

3)14, 25, 8, 20
2) 7, 25, 4, 10, $2 \times 2 + 5 \times 7 \times 5 \times 2 = 1,400$ Ans.
5) 7, 25, 2, 5
7, 5, 2, 1.

4. A can dig 4 rods of ditch in one day, B can dig 8 rods, and C can dig 6 rods; what must be the length of the shortest ditch that will furnish exact days' labor either for each working alone or for all working together? L, C, M of 4 8, 6 = 24 days' labor working alone 4 + 8 + 6 + = 18. L, C, M of 18 & 24 = 72 Ans.

5. What number must you add to the sum of $126\frac{1}{2}$, and $240\frac{3}{4}$ to make $560\frac{5}{8}$?

$126\frac{1}{2} = 126\frac{4}{8}$ $560\frac{5}{8} = 560\frac{5}{8}$
$240\frac{3}{4} = 240\frac{6}{8}$ $366\frac{5}{8} = 366\frac{5}{8}$
$366\frac{9}{8}$ $193\frac{1}{8}$—Ans.

1. Find the cost of a piece of land 2 miles long, 180 rods wide, at $30 per acre.

$\frac{2 \times 320 \times 180 \times 30}{4 \times 40} = 2 \times 20 \times 18 \times 30 = \$21,600$—Ans.

2. Bought a piece of land $1\frac{1}{2}$ miles long, and 120 rods wide for $9,600. Find price per acre.

$1\frac{1}{2}$ miles = 480 rods
$\frac{480 \times 120}{160} = (3 \times 120)$ acres, $\frac{9600}{360} = \$26\frac{2}{3}$ per acre—Ans.

3. John has 150 acres of land, James has $40\frac{1}{2}$ acres, ann Richard has $63\frac{1}{5}$ acres; how many more acres has John, than James and Richard together?
$63\frac{1}{5} = 63\frac{8}{15}$, $40\frac{1}{2} = 40\frac{5}{15}$, $63\frac{8}{15} + 40\frac{5}{15} = 103\frac{13}{15}$, $150 - 103\frac{13}{15} = 46\frac{2}{15}$ Ans.

4. Divide 150 acres 3 roods and 20 per. between A and B, giving A 20 acres 2 roods and 30 per. more than B.

ac.	ro.	per.		ac.	ro.	per.	
150	3	20		65	0	15	
20	2	30		20	2	30	
2)130	0	30	= twice B's	85	3	0	A's
65	0	15	= B's	65	0	15	B's

Ans.

5. Find the cost of painting the floor of a room 18 ft. wide and 25 long, at 8 cts. per sq. yard.

$\frac{18 \times 25}{9} = 50$ sq. yds. $50 \times 8 = \$4.00$ Ans.

6. The walls of the above room are 9 ft. high; find the cost of plastering the walls of the ceiling at 12 cts. per sq. yd.

$(18 + 25) \times 2 = 86$, $\frac{86 \times 9}{9} = 86$ sq. yds. in walls
$\frac{18 \times 25}{9} = 50$ " " ceiling
136 " " both
$136 \times 12 = \$16.32$ Ans.