

'012 ÷ '6. '012 is evidently a product of two factors—one, '6, we know, and the other unknown. By dividing by '6, we see that 2 is the other factor. But when we multiply '6 by 2 we get '12, not our dividend at all.

By applying the same method as we used in the vulgar or common-fraction, we solve the matter.

Thus '012 = $\frac{12}{100}$ and '6 = $\frac{6}{10}$, as above $\frac{12}{100} \div \frac{6}{10} = \frac{2}{10}$, which is 10 times too small. $\therefore \frac{2}{10} \times 10 = \frac{20}{100} = '02$, the correct quot. \therefore Divide as in whole numbers and point off as many figures, etc.

cts. No. bus. oats.
 $39.75 \times 48.6 = \frac{\$19,3185}{385 \times 13.5 \text{ (No. of bls.)} = 51,975} \left\{ \frac{\$71,2935}{\text{cts. } 375} = \right.$

190'116, the number of lbs. of butter received.

3. $25 \times 3\frac{1}{2} = 80$ miles the first train was ahead.

37 - 25 = 12 miles, distance gained per ho. by 2nd.

80 ÷ 12 = 6 $\frac{2}{3}$ ho. 4 ho. 12" + 6 ho. 40" = 10 ho. 52" when $37 \times 6\frac{2}{3} = 246\frac{2}{3}$ mls. from starting point.

4. $\frac{3}{4}$ of property = \$3093.75, $\frac{1}{4} = \$1031.25$, $\therefore 100\% = \$1031.25 \times 400 = \$412,500$.

5. $\$1.26 - \$1.05 = 21$. $21 - 11 = 10$.

Now as there was 11 cents more gain than loss, $\therefore 10$ cts. must be evenly divided, $\therefore \$1.26 - (11 + 5) = \1.10 , real value of cloth. The gain by ques. was therefore 30 cts. $30 \times 800 = \$240$, gain on 800 yds.

6. As the first row of shingles is double, each rafter will be 22' 4", two rafters are 44' 8" or 536 in.

54 ft. = 648 in. Surface of roof = $\frac{535 \times 648}{4 \times 6} = 11772$

Surface of a shingle = $\frac{11772}{4 \times 6} = 11772$

$\therefore 11,772$ the No. of shingles required to cover the roof.

7. Average daily pay, \$.92.

Boys get \$.65. Men get \$1.10.

$\therefore 18$ boys and 27 men will give 92 cts. as average daily wage for man or boy. But 18 should be 8 boys, and as 27 is $1\frac{1}{2}$ times 18 $\therefore 1\frac{1}{2}$ times 8 = 12, No. of men employed.

8. 2 ac. 2 ro. 32 per. = 432 per. As boundary sides are as 4:3, $\therefore \frac{2}{3}$ of 432 = 324, No. of rods in a square on the least side. $\sqrt{324} = 18$ rods.

18 = 3. $\therefore 4 = 24$. $18 \times 24 = 432$ per.

9. $\$9000 + 15\%$ of 9000 = \$10350, which is 80% of No. 2's capital.

$80\% = \$10350$
 $1\% = \frac{1}{80} (\$10350)$
 $100\% = \frac{100}{80} (\$10350) \times 100 = \$12937.50$

ENTRANCE ARITHMETIC.

By FRANK C. WHITELOCK, Richview.

1. Simplify $\frac{3}{8} + \frac{1}{4}$ of $\frac{7}{8} - \frac{1}{4}$, and find how often the result is continued in $\frac{1}{8} \div \frac{2}{8}$ ($\frac{1}{4} - \frac{1}{8} + \frac{3}{8}$).

2. How many acres in a road 60 miles long, and 60 feet wide?

3. A soldier takes 7920 steps in $3\frac{1}{2}$ miles. Find the length of his step?

4. Find value of a pile of brick 24 ft. long, 10 ft. wide and 8 ft. high, @ \$12.00 per thousand, each brick 8 in. long, 4 in. wide, and 2 in thick.

5. If 25 cts. will buy 6 apples, 8 oranges or 10 pears, how many oranges are worth as much as 2 doz. apples and 3 doz. pears?

6. If a man can run 132 yards in 12 seconds, how far would a steamboat go in $6\frac{1}{4}$ days, at that rate?

7. A can do a piece of work in 4 days. B and C together can do it in $3\frac{1}{2}$ days. A and B together can do it in 2 $\frac{1}{2}$ days. In what time will C alone do it?

8. What part of 40 is $\frac{3}{4}$ of 16 $\frac{2}{3}$ per ct. of 80?

9. If I gain 20 per ct. of the price of a farm by selling it for \$6000, what per ct. would I lose selling it for \$4500?

10. In what time will a sum of money amount to four times itself @ $8\frac{1}{3}$ per ct., Simple Interest?

11. A can do $\frac{1}{3}$ of a piece of work in 4 days. B $\frac{2}{3}$ of it in 6 days. C $\frac{1}{3}$ of it in 8 days. How long will it take A, B, and C together to do $\frac{1}{3}$ of it?

12. A bag of grain weighs one cwt., 42 $\frac{1}{2}$ lbs. How much less than a ton would 14 such bags weigh.

13. If 10 sq. yds. produce one sheaf of wheat and 24 sheaves one bushel, find the value of a ten acre field of wheat @ 80 cts. per bush.

14. What part of 4 miles is 2 rods, 3 yards, 1 $\frac{1}{2}$ feet?

15. Divide \$505 among A, B & C, giving B \$3 less than 5 times A, and C \$82 more than twice B.

16. A merchant buys a barrel (42 gals.) vinegar @ 40 cts. per gallon. The freight is \$2.40. He sells it at 8 cts. per pint. Find his profit?

17. 2 men, 3 women, or 4 boys can do a piece of work in 12 days; how long will it take 1 man, 1 woman, and 1 boy to do it?

18. 5 boys and 4 men do a work in 6 days. 3 boys do it in 20 days. How long will it take 3 men to do it?

19. Sell two farms for \$4000 each. Gain 20 per ct. on one and lose 20 per ct. on the other. Did I gain or lose, and how much?

20. What sum will amount to \$903 in 3 years @ 7 $\frac{1}{2}$ per ct.?

21. How much greater is $\frac{2}{3}$ of 75 4s. 8d. than $\frac{1}{4}$ of £3, 5s, 10d.?

22. Divide \$179 among A, B, C, giving B \$21 more than A, and \$11 less than C.

23. I buy goods for \$1150 cash, and sell them for \$1224 on a credit of 4 months. Do I gain or lose, and how much, money being worth 6 per ct.?

24. Find the product of the sum and difference of 15 and .15.

25. Difference between the Simple and Compound Interest on a sum of money for 3 years and 8 months is \$985.60. Find the sum.

26. A, B, and C rent a pasture. A puts in 10 cows for 3 months. B 4 horses for 5 months. C 32 sheep for 4 months. If a horse equals 2 cows or 4 sheep, and the rent is \$67, what should each pay?

27. If the quotient is 7 times the divisor and the latter 4 times the remainder, and the sum of the three 495, find the dividend.

English.

All communications intended for this column should be sent to W. E. Huston, M.A., care of THE EDUCATIONAL JOURNAL, Toronto, not later than the 5th of each month.

ENTRANCE COMPOSITION.

1. Write sentences containing each of the following words correctly used in such a way as to show you understand the differences in their meaning:—spade, shovel; stove, range, furnace; steps, stairs; wash, bathe; love, like; hear, listen; bad, wicked; cup, mug; spire, tower.

2. Enlarge the following, using a proper title, and paying attention to your punctuation:—A gentleman once stopped his gig at the door of a shop in Lyme. He went into the shop and left his dog on the seat of the gig. The horse took fright at something, and started off down the street, dragging the reins on the ground. The dog at once jumped down, and seized the reins in his teeth. Although he was dragged along for some distance, he held on until he succeeded in stopping the horse.

(2) A British sailor was captured by the French troops. The French troops were commanded by Napoleon. Napoleon was the Emperor of the French. Napoleon saw the sailor's grief. Napoleon ordered his men to allow the British sailor to go where he pleased.

(3) Coal contains the heat of the sun. The heat of the sun is stored up in the coal. The heat of the sun has passed gradually into the coal through the leaves. It has also passed through the roots. These leaves and roots belonged to trees. These trees have been covered over. They have slowly changed into coal.

3. Correct the faulty examples:—
 He does not know his father better than Uncle Thomas.
 He could not refrain crying out for joy.
 Neither the virtue nor necessity of the deed makes any difference to him.
 A blunder is when you make a great mistake.
 Try to show kindness to such persons as need kindness and will be discouraged without it.

4. Write a letter to a former school companion asking the pleasure of a visit from him during the Christmas vacation.
 5. Combine so as to make a well-arranged complex sentence:—(1) Winter brings with it cold and ice. Winter is the least enjoyable season of the year. Winter makes outdoor life disagreeable. Winter lasts from December to the end of February.

"BATTLE OF BANNOCKBURN," AND FROM "IVANHOE."

BY MONA.

Fourth Reader, pages 84 and 164.

SHOULD there be a teacher who has not read some, at least, of Scott's works, let him or her get them at once, and a treat is guaranteed. "The Tales of a Grandfather" is a history so plain and so simple that any child may understand (see Preface); so charming, fascinating, and instructive

that all may read with pleasure and profit. The selection being taken from chap. x., let the teacher read the omitted parts to class. By a little study the teacher may soon have a fund of anecdotes concerning the four principal characters, thus adding interest to the lesson and breaking the hum-drum monotony of the usual routine.

Of the fourteen paragraphs, each will be seen to depend on the preceding, thus having the thread of discourse unbroken. For reproduction the following may be of use:—I. The Two Armies. II. Preparations for Battle. III. The Battle. IV. The Result. But avoid getting into a rut; re-write it as Scott tells it, as Bruce would tell it, as an Englishman would tell it. See History, pages 34 and 36. Have pupils draw map of Scotland, marking places mentioned. As sufficient is given in the Reader on Scott's life, it is not necessary here. Have pupils point out on map the familiar scenes in Scott's life.

Ivanhoe, a story of Richard II.'s reign, is full of thrilling incidents, historic legends, and valuable information; asin the other, the thread of the narrative is continuous. Richard was away on the 3rd crusade. (For definition of crusade see "Tales of Grandfather," chap. xi., and History, page 20.) John is holding a tournament at Ashby. The selection in the Reader is taken from an account of the second day.

Teachers should all refer to chap. viii. "The stout, well-set, brown-faced, firm-voiced, and stern looking yeomen, dressed in Lincoln-green, twelve arrows in his belt, a baldric, silver badge and bow."

Chap. viii. Cause of John's spite against Locksley.

Chap. ix. The closing injunction of the first day.

Chap. xiii. From which the selection is taken.

Direct narration is plentiful here, and there need be no excuse for examples. Have the class select a suitable subject. Compare Scott with Hugo, who also wrote tales for children. Study Richard's reign carefully, and refer to the Battle of Hastings. Ask pupils for a map of England showing Ashby and other places mentioned. As the paragraphs are generally short, allow the class to divide the lesson into parts, for example:—I. The Archery Contest. II. The contest between Hubert and Locksley. III. The result.

Distinguish the characteristics of Prince John, Hubert, and Locksley.

"BATTLE OF BANNOCKBURN," PAGE 84.

I.—THE TWO ARMIES.

Par. 1.—"Dominions." Name these. See History, page 24.

"Nobles and Barons." Distinguish; explain Feudal System; History, page 17.

"The Bruce." Indicates he was the leader.

"Randolph and Douglas" were rivals for fame, note the noble action of D., par. 5.

Explanation of last three or four lines found in par. 6; page 37; P. S. History.

II.—"PREPARATIONS FOR BATTLE."

Par. 2.—"Address," outward show, tact, skill, ability.

"Stratagem," artifice, trick, deception, plot; from G., meaning to "out-general."

"Dug full of pits." What was done with earth?

"As—holes." Explain simile and note any others.

"Plain." Use this word in other senses.

"Burn," creek of Bannock.

"Stirling," ancient capital.

"Falkirk." Why was this an important place? Page 35, P. S. History.

"Beautiful and terrible." How could this be?

"Standards." The ensign or colors.

"Pennants." Flags of Knights or Barons.

"Banners." The sign of several Barons united.

"Christendom." Name the countries included under that name then and now.

Par. 3.—A skirmish.

"Rose—chaplet." Explain metaphor.

"Lances." They fought with the points. See par. 7.

"Handful." Note figure.

"Empty saddles." Why?

Pars. 4 and 5.—The noble action of Douglas.

Why?

Par. 6.—"Bravest knights." Why bravest?