draw another square; join the upper right hand angle of the top square with the lower left hand angle of the left square; similarly join all other opposite angles of outside squares; complete each as in the middle square. [10.]

3. (*a*) Print "The Ontario Readers" from he front cover of your readin,-book. [6.]

(*b*) Copy the shield and crown on the back cover of your reading book. [12.]

(*c*) Stand your book, open about two inches, on its end on the floor, with the front cover towards you and make a drawing of it. [15.]

4. Draw to a scale of one foot to an inch, a window sash $1\frac{1}{2}$ inches deep on top, on other sides 3 inches deep, containing two panes each 18 in. by 39 in. (No value for this unless drawn to the scale.) [12.]

Count 60 marks a full paper.

ARITHMETICAL PROBLEMS.

By Leo. B. Davidson, Head Master Public School, Ste. Marie.

1. Along a certain street 5 miles long there is placed a telegraph pole every 50 yards, and a telephone pole every 40 yards. How many of the telephone poles might serve as telegraph poles? *Ans.* 45.

2. John has 12.5 times as much money as Henry, and James has 9.25 times as much as Henry; John has $16.25 more than James. How much has Henry? *Ans.* $5.

3. In driving to town a farmer observes that the front wheel of his waggon makes 88 revolutions more than the hind wheel. The former is 10 feet in circumference, and the latter is 12 feet. How far does he drive?

Ans. 1 mile.

4. A house and lot cost $2,000. $\frac{3}{5}$ of the value of the house bears the same relation to $\frac{3}{4}$ of the value of the lot as 4 bears to 5. Find the difference in value between the house and the lot. *Ans.* $400.

5. A 30 gallon keg is $\frac{2}{3}$ full of wine $\frac{4}{5}$ pure. $\frac{1}{10}$ of the mixture is drawn off and its place supplied by water. What part of the mixture is now wine? *Ans.* $\frac{2}{3}\frac{5}{0}$.

6. A can do a work in 6 days and B in 7 days. After working $1\frac{1}{2}$ days they are assisted by a boy, and the work is thus completed in $1\frac{1}{3}\frac{3}{3}$ days. If $8.96 be paid for the work find what each should get.

Ans. A, $4.34; B, $3.72; Boy, 90 ct.

7. A man has 3 hours 20 minutes at his disposal for rowing on a stream that runs 2 miles an hour. Suppose he can row 5 miles an hour in still water find how far up the river he may pull in order that he may be able to return within the given time.

Ans. 7 miles.

8. If money be worth 8 per cent. simple interest, how long will it take 99.99\frac{1}{9}$ to amount to five times itse f? *Ans.* 50 yrs.

9. A building lot with 20 feet frontage is sold for $400. If land be worth $17,424 per acre find the depth of the lot. *Ans.* 50 ft.

10. A reservoir is 20 feet 8 inches long, by 10 feet wide. Find how many inches the water in the reservoir will sink if 1,291$\frac{2}{3}$ gallons be drawn off. 1 cubic foot water = 1,000 oz. 1 gallon water = 10 lbs.

Ans. 12 inches.

EDUCATION DEPARTMENT, ONTARIO.

MIDSUMMER EXAMINATIONS, 1886.

Second Class Teachers.

ARITHMETIC.

Examiner—J. C. Glashan.

Value—16 marks for each question.

1. The men employed in a certain factory numbered three less than twice the number of women employed in it. The men received $1.55 per day, the women 85 cents per day, and the total weekly wages amounted to $469 80. How many men were employed in the factory? *Ans.* 39.

2. *A* and *B* agree to share the profits of a certain transaction in the proportion of $11 to *A* for every $7 to *B*. In connection with the transaction, *A* has received $960 and paid out $470, and *B* has received $1,370 and paid out $330. How much must *B* pay to *A* to settle the accounts of the transaction? *Ans.* $445.

3. *M* and *N* starting at the same moment from the same place, and in the same direc-