642. How many gallons of water will a cistern hold which is 7 ft. long, 6 ft. wide, and 11 ft. deep?

643. A. can mow 2 acres in 3 days, and B. 5 acres in 6 days: in how many days can they together mow 9 acres?

644. A house valued at $3,240 is insured for \( \frac{3}{4} \) of its value, at \( \frac{4}{5} \) per cent. : what is the premium?

645. How many bricks will it require to build a wall 2 rd. long, 6 ft. high, and 18 in. thick, each brick being 8 in. long, 4 in. wide, and 2\( \frac{1}{2} \) in. thick?

646. If the wages of 24 men for 4 days are $192, what will be the wages of 36 men for 3 days?

(Solve by double proportion and cancellation.)

647. At what rate per cent. will $311.50 amount to $337.40 in 1 year, 4 mo.?

648. What will it cost to lay a pavement 36 ft. long, and 9 ft. 6 in. wide, at 40 cts. a sq. yd.?

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**Examination XXVIII. Nov. 4, 1875.**

649. Express in words the number: 42567000129301.

650. Multiply five hundred and forty thousand six hundred and nine, by seventeen hundred and fifty.

651. Give the rule for reduction ascending (i.e. from lower to higher denominations), and state how this process chiefly differs from reduction descending.

652. How many steps of two and one-half feet each, would a man take in walking five miles?

653. How is a whole number reduced to a fraction of the same value, having a given denominator?
654. What is the value of $\frac{1}{8}$ of $\frac{1}{3}$ of $\frac{1}{4}$ of $\frac{1}{2}$, when reduced to a simple fraction of the lowest terms?

655. Give the rule for reducing several fractions to equivalent fractions, having the least common denominator.

656. Add $3\frac{3}{4}$, $4\frac{2}{3}$, and 51.052. (Express the fractional part of the sum as a decimal of three places.)

657. Write in figures: two and six hundred-millionths.

658. Reduce $\frac{7}{8}$ to the equivalent decimal form.

659. Multiply seven thousand and five, by three-hundred-and-five-millionths.

660. Divide .5 of 1.75 by .25 of 17$\frac{1}{2}$.

661. If 27 T. 3 qr. 15 lb. of coal cost $217.83, what will 119 T. 1 qr. 10 lb. cost? (First reduce qrs. and lbs. to the decimal of a ton; and then solve by proportion.)

662. What is the square root of .0043046721?

663. The ratio of two numbers and the consequent being given, what is the process for finding the antecedent (considering it as standing in the same relation to the consequent, as a numerator to its denominator?)

664. Find the value of the omitted term in the following proportion: $\$4 : (?) :: 9 : 16$.

665. A note for $\$486$, dated Sept. 7, 1873, was endorsed as follows: Received. March 22, 1874, $\$125$, May 13, 1875, $\$120$. What balance remained due at time of last payment, the rate being 6 per cent?

666. What is the length of the side of a cubical box which contains 103823 solid inches?
667. What are the proceeds of the following note discounted at bank, and when will it become due?
$100.

Utica, October 11, 1875.

Ninety days from date, for value received, I promise to pay to the order of John Smith, One Hundred Dollars, at the Albany City Bank.  John Jay.

668. Involve \( \frac{3}{4} \) to the 5th power
669. Sold 9\( \frac{1}{6} \) cwt. sugar at $8\frac{1}{4} \) per cwt., and thereby lost 12 per cent: what was the first cost?

670. A person owned \( \frac{3}{4} \) of a mine, and sold \( \frac{3}{4} \) of his interest for $1710: what was the value of the entire mine?

671. When it is 2 h. 36' a. m. at the Cape of Good Hope, in longitude 18° 24' east, what is the time at Cape Horn, in longitude 67° 21' west?

672. What is the cost of 17 T. 18 cwt. 1 qr. 17 lb. of potash, at $53.80 per ton? (First reduce the lower denominations to the decimal of a ton.)

Examination XXIX. Feb. 24, 1876.

673. Two men are 450 miles apart; if they approach each other, one traveling 30 miles a day and the other 35 miles a day, how far apart will they be at the end of 6 days?

674. A. had $24, B. four times as much as A. less $16, and C. twice as much as A. and B. together plus $17: how much money had C.?

675. Give all the prime numbers below 20; and all the composite numbers between 20 and 40 inclusive.