MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

ENTRANCE EXAMINATION, 1869–70.

ARITHMETIC.

1. Find the sum, then the difference, and then the product of $3\frac{5}{8}$ and $1\frac{7}{24}$. Divide $3\frac{5}{8}$ by $1\frac{7}{24}$.

2. Multiply 73 thousandths by 19 hundredths.

3. Divide 2880 by .0036.

4. Find the value in decimals of $\frac{1}{5} + \frac{3}{4}$.

5. What part of the month of August is $\frac{7}{18}$ minutes?

6. How many degrees in .01 of a circumference?

7. By selling a house and lot for $5,790, the owner lost $3\frac{1}{2}$ per cent. What was their cost?

ALGEBRA.

1. If $e = 8$, find the numerical value of the following expression:

$$e - \{ \sqrt{(e+1)} + 2 \} + (e - \sqrt[3]{e}) \sqrt{(e-4)}.$$

2. Simplify the following expression by removing the brackets and collecting like terms:
$$3a - [b + (2a - b) - (a - b)].$$

3. Multiply $3a^2 + ab - b^2$ by $a^2 - 2ab - 3b^2$, and divide the product by $a + b$.

4. Reduce the following fraction to its lowest terms:

$$\frac{x^5 + a^3 x^3 y}{x^6 - a^4 y^2}.$$

5. Simplify $\left\{ \frac{a+b}{a-b} + \frac{a-b}{a+b} \right\} \div \left\{ \frac{a+b}{a-b} - \frac{a-b}{a+b} \right\}.$

6. Solve $\dfrac{3x-4}{2} - \dfrac{6x-5}{8} = \dfrac{3x-1}{16}.$

7. Solve $7x - 5y = 24$, $\quad 4x - 3y = 11$.

June 7, 1869.