

4th Kyu

Section 1: Calculation Test

数学検定

PROFICIENCY TEST IN PRACTICAL MATHEMATICS

Test Time : 50 minutes

Test Instructions

1. Make sure that you have the correct level (Kyu) test.
2. Do not open the booklet until you are told to do so.
3. Write your examinee number and name on this page.
4. Write your name, examinee number and other necessary information on the answer sheet.
5. Write only answers on the answer sheets provided.
6. If your answer contains a fraction, write the fraction in simplest form by reducing it to lowest terms.
7. You may not use a calculator, ruler or compass.
8. Turn off your cell phone and do not use it during the test.
9. Ask an examination supervisor if your problem sheets have inconsistent page numbering or missing pages.
10. It is prohibited to disclose the problems to the general public, such as on the Internet, without permission.

| | | | |
|-----------------|---|------|--|
| Examinee Number | — | Name | |
|-----------------|---|------|--|

※Your personal information will be handled appropriately according to the "Handling of Personal Information" agreement that was approved at the time of registration.



公益財団法人
日本数学検定協会
The Mathematics Certification Institute of Japan

[4th Kyu] Section 1: Calculation Test**1**

Simplify.

(1) $\frac{21}{32} \times \frac{40}{49}$

(2) $\frac{25}{33} \div \frac{10}{11}$

(3) $\frac{4}{9} \div \frac{2}{27} \times \frac{5}{8}$

(4) $\frac{3}{4} + 1\frac{1}{6} \div \frac{7}{9}$

(5) $2.6 \div \frac{14}{15} \times \frac{7}{13}$

(6) $4\frac{1}{5} - 1.8 \times \frac{5}{6}$

(7) $5 - (-7) + 3$

(8) $-2^2 \times (-1)^4$

(9) $15x - 8 - (9x + 3)$

(10) $0.9(3x + 2) - 0.4(8x - 7)$

(11) $3(2x - 5y) + 7(x + 4y)$

(12) $\frac{5x + 2y}{12} - \frac{4x - 5y}{8}$

(13) $-54x^4y^3 \div 9x^3y^2$

(14) $2x^3y^2 \div (-5x^2y^3) \times (-35xy^2)$

2

Write each of the following ratios in simplest form.

(15) $21:6$

(16) $\frac{2}{5} : \frac{3}{4}$

3Find the values of the following expressions when $x = -3$.

(17) $4x + 2$

(18) $-\frac{45}{x}$

4

Solve the following equations.

(19) $5x + 17 = 2x - 7$

(20) $x - \frac{1}{2} = \frac{2}{3}x + \frac{5}{6}$

5

Solve the following systems of equations.

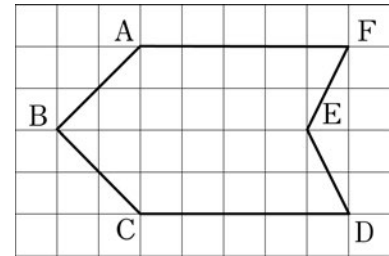
(21)
$$\begin{cases} 5x + 2y = -4 \\ -6x - 5y = 23 \end{cases}$$

(22)
$$\begin{cases} y = 2x - 4 \\ y = -3x + 21 \end{cases}$$

6

Answer the following.

- (23) The figure on the right has an axis of symmetry. Find the line of the axis of symmetry and express it using the letters A to F.



- (24) A coin is tossed two times successively. How many different outcomes are there?
- (25) y is inversely proportional to x and $y = -4$ when $x = 3$. Express y in terms of x .
- (26) Find the range of the following data.
1, 2, 4, 7, 7, 9

(27) Make x the subject of $3x - 4y + 7 = 0$.

(28) Find the value of a when the graph of the linear function $y = ax - 8$ passes through the point $(2, -14)$.

(29) Find the measure of each exterior angle of a regular dodecagon. A dodecagon is a 12-sided polygon.

(30) In the figure, find $\angle x$ when $\ell \parallel m$.

