

[3rd Kyu] Section 1: Calculation Test**1**

Simplify.

(1) $-5+2-8+4$

(2) $18-30\div(-6)$

(3) $(-5)^2-3^2\times 4$

(4) $-\frac{2}{3}\times\frac{5}{6}-\left(\frac{1}{3}\right)^2$

(5) $-\sqrt{2}(\sqrt{3}-2\sqrt{2})+\sqrt{24}$

(6) $(\sqrt{5}+1)^2-\frac{10}{\sqrt{5}}$

(7) $2(8x-5)+6(3x+2)$

(8) $0.8(0.6x-5)-0.5(0.9x-3)$

(9) $3(4x-8y)+7(2x-6y)$

(10) $\frac{3x+5y}{6}-\frac{4x-y}{9}$

(11) $-28xy^3\div 7xy^2$

(12) $\frac{5}{6}x^3y\div\left(\frac{5}{3}x^2y\right)^2\times\frac{4}{3}x$

2

Expand and simplify the following expressions.

(13) $(3x+4y)(3x-4y)$

(14) $(x-6)(4x+3)-(2x-5)^2$

3

Factor the following expressions.

(15) $x^2+4x-12$

(16) $(x+y)^2-12(x+y)+36$

4Solve for x in the following equations.

(17) $7x-4=4x-10$

(18) $\frac{x+5}{4}-\frac{3x-7}{2}=1$

(19) $5x^2-40=0$

(20) $x^2-8x-4=0$

5

Solve the following systems of equations.

(21)
$$\begin{cases} 2x+5y=2 \\ x-3y=12 \end{cases}$$

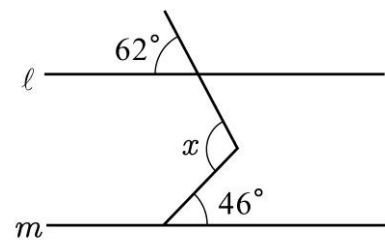
(22)
$$\begin{cases} 0.3x+0.4y=-0.1 \\ \frac{6}{5}x+\frac{4}{3}y=-\frac{7}{15} \end{cases}$$

6

Answer the following.

- (23) Find the value of $2ab - b^2$ when $a = 4$ and $b = -2$.
- (24) Two dice, A and B, are both numbered 1 to 6. When they are rolled, find the probability that the sum of the numbers on the top faces is 4.
- (25) Solve for y in the equation $5x + 2y = 3$.
- (26) y is inversely proportional to x and $y = 9$ when $x = 4$. Find the value of y when $x = -6$.
- (27) y is directly proportional to the square of x and $y = 8$ when $x = 4$. Express y in terms of x .
- (28) Find the sum of the measure of interior angles of a dodecagon. A dodecagon is a 12-sided polygon.

- (29) In the diagram on the right, find $\angle x$ when $l \parallel m$.



- (30) In the diagram on the right, four points A, B, C and D lie on the circumference of circle O. find $\angle x$ when $AB = AC$ and $\angle ADB = 64^\circ$.

