1. 두 유리수 a, b 에 대하여 $a \triangle b = a \div b + 1$ 로 정의할 때, $34 \triangle \left(\frac{2}{3} \triangle 5 \right)$ 를 계산하여라.

▶ 답:

▷ 정답: 31 또는 +31

해설

$\frac{2}{3} \triangle 5 = \frac{2}{3} \div 5 + 1 = \frac{2}{15} + 1 = \frac{17}{15}$

$34 \triangle \frac{17}{15} = 34 \div \frac{17}{15} + 1 = 30 + 1 = 31$ 이다.

2. $3-\left\{\frac{1}{2}-2-\left(-\frac{2}{5}\right)\div 2\right\}\times 5-\frac{3}{2}$ 을 계산하면?

① 8 ② 13 ③ $-\frac{13}{10}$ ④ $\frac{19}{2}$ ⑤ $-\frac{13}{5}$

해설

$$3-\left\{\frac{1}{2}-2-\left(-\frac{2}{5}\right)\div 2\right\}\times 5-\frac{3}{2}$$

$$=3-\left\{\frac{1}{2}-2-\left(-\frac{2}{5}\right)\times\frac{1}{2}\right\}\times 5-\frac{3}{2}$$

$$=3-\left(\frac{1}{2}-2+\frac{1}{5}\right)\times 5-\frac{3}{2}$$

$$=3-\left(-\frac{13}{10}\right)\times 5-\frac{3}{2}$$

$$=3+\frac{13}{2}-\frac{3}{2}=3+5=8$$

3. $\frac{1}{3}\times\{-2+3\times(-1)^3\}+\frac{3}{2}$ 을 계산하면?

① $-\frac{1}{6}$ ② $-\frac{1}{2}$ ③ $\frac{5}{6}$ ④ $\frac{3}{2}$ ⑤ $-\frac{5}{3}$

해설

$$
\begin{aligned}
(\text{준식}) &= \frac{1}{3}\times\{-2+3\times(-1)\}+\frac{3}{2} \\
&= \frac{1}{3}\times(-2-3)+\frac{3}{2} \\
&= -\frac{5}{3}+\frac{3}{2} \\
&= \frac{-10+9}{6} \\
&= -\frac{1}{6}
\end{aligned}
$$

4. 다음을 계산하면?

$$3 \div \left\{ \left(\frac{1}{2} - 3 \right) \times 0.2 - (-2)^2 \right\}$$

① -3 ② $-\frac{2}{3}$ ③ 0 ④ 4 ⑤ $\frac{16}{3}$

해설

$$3 \div \left\{ \left(\frac{1}{2} - 3 \right) \times 0.2 - (-2)^2 \right\}$$
$$= 3 \div \left\{ \left(-\frac{5}{2} \right) \times \frac{1}{5} - (+4) \right\}$$
$$= 3 \div \left\{ \left(-\frac{1}{2} \right) + (-4) \right\}$$
$$= 3 \div \left(-\frac{9}{2} \right)$$
$$= 3 \times \left(-\frac{2}{9} \right)$$
$$= -\frac{2}{3}$$

5. 다음 중 계산 결과가 가장 큰 것은?

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

③ $2\div\left\{1-\left(\frac{2}{7}-\frac{1}{14}\right)\right\}$ ④ $11+\left(-\frac{1}{2}\right)\times\left(\frac{1}{3}+\frac{1}{6}\right)$

⑤ $(-3)^2\div\frac{1}{18}+(5-3)$

해설

① $5-\left(-3+\frac{1}{3}\right)\times 6=5-\left(-\frac{8}{3}\right)\times 6=5-(-16)=21$

② $\left(\frac{9}{12}-\frac{10}{12}\right)\times\frac{3}{2}+1=\left(-\frac{1}{12}\right)\times\frac{3}{2}+1$

$=\left(-\frac{1}{8}\right)+\frac{8}{8}$

$=\frac{7}{8}$

③ $2\div\left\{1-\left(\frac{4}{14}-\frac{1}{14}\right)\right\}=2\div\left(1-\frac{3}{14}\right)$

$=2\times\frac{14}{11}$

$=\frac{28}{11}$

④ $11+\left(-\frac{1}{2}\right)\times\left(\frac{2}{6}+\frac{1}{6}\right)=11+\left(-\frac{1}{2}\right)\times\frac{1}{2}$

$=11-\frac{1}{4}$

$=\frac{43}{4}$

⑤ $(-3)^2\div\frac{1}{18}+(5-3)=9\times 18+2=162+2=164$

6. 다음을 계산하여라.

$$\left(\frac{4}{3}\right)^2 - 12 \times \left\{-\frac{8}{9} \div \left(-\frac{8}{3}\right) - \frac{1}{4}\right\}$$

▶ 답 :

▷ 정답 : $\frac{7}{9}$

해설

$$\begin{aligned}
(\text{준식}) &= \frac{16}{9} - 12 \times \left\{-\frac{8}{9} \times \left(-\frac{3}{8}\right) - \frac{1}{4}\right\} \\
&= \frac{16}{9} - 12 \times \left(\frac{1}{3} - \frac{1}{4}\right) \\
&= \frac{16}{9} - 12 \times \frac{1}{12} \\
&= \frac{16}{9} - 1 \\
&= \frac{7}{9}
\end{aligned}$$

7. 다음을 계산하여라.

$$3-\left\{\left(-\frac{3}{4}\right)\times(-2)^2\div 5\right\}\div\left(-\frac{2}{7}\right)$$

▶ 답:

▷ 정답: $\frac{9}{10}$

해설

(준식) $=3-\left\{\left(-\frac{3}{4}\right)\times 4\times\frac{1}{5}\right\}\times\left(-\frac{7}{2}\right)$

$=3-\left(-\frac{3}{5}\right)\times\left(-\frac{7}{2}\right)$

$=3-\left(+\frac{21}{10}\right)$

$=3-\frac{21}{10}=\frac{9}{10}$

8. 다음 식을 계산하여라.

$(-12)\times\left[\frac{1}{3}-\left\{\frac{3}{4}\div\left(-\frac{9}{16}\right)+2\right\}\right]$

▶ 답:

▷ 정답: 4 또는 +4

해설

$(-12)\times\left[\frac{1}{3}-\left\{\frac{3}{4}\div\left(-\frac{9}{16}\right)+2\right\}\right]$

$=(-12)\times\left[\frac{1}{3}-\left\{\frac{3}{4}\times\left(-\frac{16}{9}\right)+2\right\}\right]$

$=(-12)\times\left\{\frac{1}{3}-\left(-\frac{4}{3}+2\right)\right\}$

$=(-12)\times\left(\frac{1}{3}-\frac{2}{3}\right)=(-12)\times\left(-\frac{1}{3}\right)=4$

9. $A = 3^2 - \left(-\frac{1}{2}\right)^3 \times 16 + (-5^2)$, $B = -5 - 6^2 \div \frac{12}{7} \div 21 - (-5)$ 일 때, $A + B$ 의 값을 구하라.

▶ 답:

▷ 정답: -15

해설

$$\begin{aligned} A &= 3^2 - \left(-\frac{1}{2}\right)^3 \times 16 + (-5^2) \\ &= 9 - \left(-\frac{1}{8}\right) \times 16 - 25 \\ &= 9 + 2 - 25 = -14 \end{aligned}$$

$$\begin{aligned} B &= -5 - 6^2 \div \frac{12}{7} \div 21 - (-5) \\ &= -5 - 36 \times \frac{7}{12} \times \frac{1}{21} + (+5) \\ &= -5 - 1 + 5 = -1 \end{aligned}$$

$\therefore A + B = (-14) + (-1) = -15$

10. $(-3)^2 \times (-2^2) \div \{(-2) \times (-4) + 1\} + 6$ 을 계산하면?

① 10　② −20　③ −10　④ −2　⑤ 2

해설

$$\begin{aligned}(\text{준식}) &= 9 \times (-4) \div (8 + 1) + 6 \\ &= (-36) \div 9 + 6 \\ &= -4 + 6 = 2\end{aligned}$$

11. 다음 식의 계산 순서를 차례대로 써라.

$$\frac{1}{2}\times\{7-(6+2)\div(-2)\}-2$$

(ㄱ) (ㄴ) (ㄷ) (ㄹ) (ㅁ)

▶ 답 :

▶ 답 :

▶ 답 :

▶ 답 :

▶ 답 :

▷ 정답 : ㉣

▷ 정답 : ㉢

▷ 정답 : ㉡

▷ 정답 : ㉠

▷ 정답 : ㉤

해설

소괄호 → 중괄호 → 대괄호 순서로 계산하고 나눗셈과 곱셈을 먼저 계산해야 하므로
㉣, ㉢, ㉡, ㉠, ㉤

12. $(-1)^{100}+(2)^3\div\frac{1}{8}\times(-1)^{101}$ 의 값은?

① -64 ② -63 ③ 0 ④ 63 ⑤ 64

해설

$$(-1)^{100}+(2)^3\div\frac{1}{8}\times(-1)^{101}$$
$$=1+(8)\times8\times(-1)$$
$$=1+(-64)=-63$$

13. 다음 식의 $\square$ 안에 알맞은 수를 써넣어라.

$$\left\{2-\left(-\frac{1}{2}\right)\times\square\right\}\div\frac{1}{6}=6$$

▶ 답:

▷ 정답: -2

해설

$$\left\{2-\left(-\frac{1}{2}\right)\times\square\right\}\div\frac{1}{6}=6$$

$$\left\{2-\left(-\frac{1}{2}\right)\times\square\right\}\times 6=6$$

$$\left(2+\frac{\square}{2}\right)\times 6=6$$

$$2+\frac{\square}{2}=1$$

$$\frac{\square}{2}=-1$$

$$\square=-2$$

14. $A=-3\times8\div(-2)^2$, $B=5\times\{2+(12-5)\div7\}$ 일 때, $A-B$ 의 값을 구하여라.

▶ 답:

▷ 정답: -21

해설

$A=-3\times8\div(-2)^2=-3\times8\div4=-6$

$B=5\times\{2+(12-5)\div7\}$

$=5\times\left(2+7\times\frac{1}{7}\right)$

$=5\times3=15$

$\therefore\ A-B=-6-15=-21$

15. $a = 3 - \left\{\left(-\frac{3}{4}\right) \times (-2)^2 \div 5\right\} \div \left(-\frac{2}{7}\right)$ 일 때, a 보다 작은 정수가 아닌 것은?

① -3 ② -2 ③ -1 ④ 0 ⑤ 1

해설

$$a = 3 - \left\{\left(-\frac{3}{4}\right) \times (-2)^2 \div 5\right\} \div \left(-\frac{2}{7}\right)$$
$$= 3 - \left\{\left(-\frac{3}{4}\right) \times 4 \times \frac{1}{5}\right\} \times \left(-\frac{7}{2}\right)$$
$$= 3 - \left(-\frac{3}{5}\right) \times \left(-\frac{7}{2}\right)$$
$$= 3 - \frac{21}{10} = \frac{9}{10}$$

따라서 a 보다 작은 정수가 아닌 것은 ⑤1 이다.

16. 다음 식을 계산하여라.

$9-[-2^2-(+6)\times\{-4+(-1)^2\}\div 3]$

▶ 답:

▷ 정답: 7

해설

$$\begin{aligned}(\text{준식}) &= 9-[-4-(+6)\times\{-4+1\}\div 3] \\ &= 9-\{-4-(+6)\times(-3)\div 3\} \\ &= 9-\{(-4)-(-6)\}=9-2=7\end{aligned}$$

17. $(-3)^2 \times 4 - 15 \div (2+3)$ 을 구하여라.

▶ 답:

▷ 정답: 33

해설

(준식) $= 9 \times 4 - 15 \div 5$
$= 36 - 3$
$= 33$

18. 다음 식을 계산하여라.

$-3^2 + \{(-2)^3 + (-4) \times (-7)\}$

▶ 답 :

▷ 정답 : 11 또는 +11

해설

$$\begin{aligned}(\text{준식}) &= -9 + \{-8 + (-4) \times (-7)\} \\ &= -9 + (-8 + 28) \\ &= -9 + 20 = 11\end{aligned}$$

19. $4 \div \left\{3 - 2 \times \left(-\frac{1}{4}\right)\right\} - \frac{3}{5}$ 을 계산하여라.

▶ 답:

▷ 정답: $\frac{19}{35}$

해설

$$4 \div \left\{3 - 2 \times \left(-\frac{1}{4}\right)\right\} - \frac{3}{5} = 4 \div \left(3 + \frac{1}{2}\right) - \frac{3}{5}$$
$$= 4 \times \frac{2}{7} - \frac{3}{5} = \frac{8}{7} - \frac{3}{5}$$
$$= \frac{8 \times 5 - 3 \times 7}{35} = \frac{19}{35}$$

20. 다음을 계산하면?

$$2-\left[\left\{\left(-\frac{3}{2}\right)^2-8\div\frac{4}{3}\right\}-(-5)\right]$$

① $\frac{1}{4}$ ② $\frac{1}{2}$ ③ $\frac{3}{4}$ ④ 1 ⑤ $\frac{5}{4}$

해설

$$\begin{aligned}
&2-\left[\left\{\left(-\frac{3}{2}\right)^2-8\div\frac{4}{3}\right\}-(-5)\right]\\
&=2-\left[\left\{\left(+\frac{9}{4}\right)-8\div\frac{4}{3}\right\}-(-5)\right]\\
&=2-\left[\left\{\left(+\frac{9}{4}\right)-8\times\frac{3}{4}\right\}-(-5)\right]\\
&=2-\left[\left\{\left(+\frac{9}{4}\right)-6\right\}-(-5)\right]\\
&=2-\left\{\left(-\frac{15}{4}\right)+(+5)\right\}\\
&=2-\frac{5}{4}\\
&=\frac{3}{4}
\end{aligned}$$

21. 다음을 계산하시오.

$$\left[\frac{2}{3}-\left\{\left(-\frac{2}{3}\right)\div\left(-\frac{4}{7}\right)-1\right\}\times 2\right]\times(-7)$$

▶ 답 :

▷ 정답 : $-\frac{7}{3}$

해설

$$\left[\frac{2}{3}-\left\{\left(-\frac{2}{3}\right)\div\left(-\frac{4}{7}\right)-1\right\}\times 2\right]\times(-7)$$

$$=\left[\frac{2}{3}-\left\{\left(-\frac{2}{3}\right)\times\left(-\frac{7}{4}\right)-1\right\}\times 2\right]\times(-7)$$

$$=\left\{\frac{2}{3}-\left(\frac{7}{6}-1\right)\times 2\right\}\times(-7)$$

$$=\left(\frac{2}{3}-\frac{1}{3}\right)\times(-7)$$

$$=\frac{1}{3}\times(-7)=-\frac{7}{3}$$