계산시 참고사항

1. 혼합계산 순서

(1) 거듭제곱이 있으면 거듭제곱을 가장 먼저 계산한다.
(2) 괄호가 있으면 괄호 안을 먼저 계산한다.
이때 소괄호 ( ), 중괄호 { }, 대괄호 [ ] 순서로 계산한다.
(3) 곱셈과 나눗셈을 계산한다.
(4) 덧셈과 뺄셈을 계산한다.

거듭제곱 ⬇ 괄호풀기 ⬇ ×, ÷ ⬇ +, −

2. 새로운 계산 기호

(1) 주어진 연산의 규칙을 잘 이해하는 것이 중요하다.
(2) 문자의 순서에 주의하여 계산한다.

3. 유리수의 부호

두 유리수 a, b에 대하여
(1) $a\times b>0$, $a\div b>0$이면 a, b는 서로 같은 부호
(2) $a\times b<0$, $a\div b<0$이면 a, b는 서로 다른 부호

혼합계산

◪ 다음 혼합계산의 순서대로 기호를 나열하여라.

1. $-\frac{1}{3}-\left\{-1+\frac{5}{2}\times\left(-\frac{3}{5}\right)^2\right\}\times 2$
㉠ ㉡ ㉢ ㉣ ㉤

2. $2-(-3)\times[\{(+4)-(-1)\}\div 5]$
㉠ ㉡ ㉢ ㉣

3. $(-3)\times\{(+8)\div(-3)^2+(-2)\}-7$
㉠ ㉡ ㉢ ㉣ ㉤

4. $-3\div\{2+9\div(-2)^4\}+7$
㉠ ㉡ ㉢ ㉣ ㉤

5. $(+12)-[27\div\{(-3)^2+(+10)\}]+(-2)$
㉠ ㉡ ㉢ ㉣ ㉤

6. $(-6)-\frac{1}{4}\div\left\{\left(7-\frac{2}{3}\right)\times\frac{5}{9}\right\}$
㉠ ㉡ ㉢ ㉣

7. $15+\frac{1}{4}\div\left\{\left(-\frac{2}{3}+\frac{1}{5}\right)\times\frac{1}{2}\right\}$
㉠ ㉡ ㉢ ㉣

8. $25+\underset{㉠}{\frac{4}{3}}\times\left[\left\{-\frac{5}{9}-\underset{㉢}{\left(+\frac{7}{8}\right)}\right\}\div\underset{㉣}{\frac{15}{4}}\right]$
㉠ ㉡

◪ 다음 식의 계산 순서를 나열하고, 식의 값을 구하여라.

9. $4\times\left[\left\{\frac{3}{2}+(-3)^2\div\frac{6}{5}\right\}-2\right]$
㉠ ㉡ ㉢ ㉣ ㉤

10. $[-1-\{(3-4)\times4-5\}]\div4$
㉠ ㉡ ㉢ ㉣ ㉤

11. $(-2)\times[3-\{4+2\times(-3)\}\div2]$
㉠ ㉡ ㉢ ㉣ ㉤

12. $8-\left\{(-2)^2\times\frac{3}{16}+\frac{3}{4}\right\}\div\frac{3}{10}$
㉠ ㉡ ㉢ ㉣ ㉤

13. $3-\left\{(-3)^3+15\div\frac{5}{3}\right\}\times\frac{5}{9}$
㉠ ㉡ ㉢ ㉣ ㉤

◪ 다음을 계산하여라.

14. $(-3)-(+6)\div(-2)$

15. $\frac{3}{4}-\left(-\frac{3}{2}\right)^3\div\frac{9}{4}$

16. $5\times(-1)^{202}\div\left(4-\frac{1}{4}\right)$

17. $-4\times(1-4)\div\left(-\frac{2}{3}\right)$

18. $\frac{2}{3}-\left(-\frac{5}{3}\right)\div\frac{5}{2}$

19. $\frac{2}{3}+\left(-\frac{1}{3}\right)^2\times\frac{3}{4}$

20. $(-3)^2-18\div\left(-\frac{3}{2}\right)^2$

21. $10-20\div4+3\times2$

22. $6\times\{12-(5+1)\}$

23. $24\div\{(7-4)\times2\}$

24. $2-2\times\{6\div(-4+7)\}$

25. $6+\{4\times(15\div5)-7\}-2$

26. $4\times6-12+15\div5$

27. $4^2+3\times(-12)\div6-5$

28. $18\div(-3)^2\times6+15-9$

29. $13-6\times\left\{1+\left(\frac{1}{2}-\frac{2}{3}\right)\right\}$

30. $\frac{4}{5}\times\left\{\left(+\frac{3}{4}\right)-(-3)\right\}-\frac{5}{2}$

31. $-2-\{1-(14-5)\}$

32. $-11-[-2+\{5-(2+3)\}]$

33. $-\frac{1}{5}+\left\{1-\left(\frac{3}{5}-\frac{2}{5}\right)\right\}$

34. $-\frac{2}{3}-\left\{-\frac{1}{6}+\left(-\frac{1}{3}+\frac{2}{3}\right)\right\}$

35. $36\div9+\{2+(-4)\times3\}$

36. $21-\{4+(-3)^2\times4-11\}$

37. $-2+[-3+\{(-3)\times2-1\}]$

38. $\left(-\frac{1}{2}\right)^2\times\{(-2)^2\times3+(-4)\}\div(-1)^3$

39. $-1.5+\{0.5+(-0.7+0.3)\}$

40. $-\{2.3+(-0.3+0.5)\}-0.9$

41. $-2^2+(-3)^2-18\times\left(-\frac{2}{3}\right)$

42. $-\frac{5}{2}-[-2+\{2.5-(1.5-0.5)\}]$

43. $\left\{(8-3)\div\frac{10}{3}\right\}-3^2\times(-2)$

44. $5-\{(-2)^3-(1-3)\}\div4$

45. $\left|-\frac{3}{4}\right|\times\left\{\left(-\frac{3}{4}\right)\div\left|\frac{1}{12}\right|+3\right\}$

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

47. $24\times\left\{\frac{3}{4}+(-2)^2\times\frac{1}{16}-\frac{1}{2}\right\}-12$

48. $\frac{4}{11}\times\left(-\frac{33}{28}\right)+(-2)^3\div\left(-\frac{14}{5}\right)$

49. $5-\left[\frac{2}{3}+(-1)^3\times\left\{3^2\div\left(-\frac{3}{4}\right)+8\right\}\right]$

50. $-4^2-(-2)\div\left[\left\{(-2)^5\times\left(\frac{5}{2}-2\right)\times\frac{3}{4}\right\}\right]$

51. $-4^2\times\left[-3\div6+\frac{5}{3}\times\{-2-(-2)^2\}\right]$

52. $5-\left(-\frac{2^2}{3}\right)-\left[\left\{(-3)^2+\left(-\frac{11}{2}\right)\right\}\times5\right]\div\frac{5}{4}$

53. $\left(-\frac{1}{3}\right)^2\times27-\left\{8\div\left(\frac{2}{5}+\frac{2}{15}\right)\right\}$

54. $\frac{2}{3}-\left\{-8-\frac{1}{7}\div\left(-\frac{2}{7}\right)\right\}\times\frac{1}{3}$

55. $(-1)^3-\left\{-2+\frac{3}{4}\times\left(1-\frac{1}{3}\right)\right\}\div\frac{1}{2}$

56. $3-\left[\frac{1}{2}+(-1)^3\div\left\{4\times\left(-\frac{1}{2}\right)+8\right\}\right]\times2$

57. $-3^2-\left[\frac{2}{3}+(-1)^3\times\left\{2^2\div\left(-\frac{2}{5}\right)+8\right\}\right]$

58. $-\frac{9}{8}-\left[\left(-\frac{1}{2}\right)^2-\left\{(-3)-\frac{5}{9}\div\left(-\frac{2}{3}\right)\right\}\times\frac{3}{4}\right]$

59. $6+3\times\left[\{(-2)^4-10\}\div\frac{4}{3}+\frac{7}{2}\right]\div12$

60. $9-\left[(-4)^2\div2\times\left\{\frac{2}{5}+(-5)^2\div\frac{125}{8}\right\}-4\right]$

61. $\left[\left\{-4\times\left(\frac{3}{4}-\frac{1}{3}\right)\right\}\div2+\left(-\frac{2}{3}\right)\right]-(-1.5)$

◪ 다음 빈칸에 알맞은 수를 구하여라.

62. $\left(-\frac{3}{2}\right)^3 \div \square \times \frac{7}{12} = \frac{7}{8}$

63. $5 \div \left(-\frac{2}{7}\right) \div \square = \frac{3}{4}$

64. $-12 \div \square \div \left(-\frac{1}{2}\right)^2 = -6$

65. $\frac{3}{7} \div \square \times \left(-\frac{5}{2}\right)^2 = -\frac{15}{14}$

66. $\left(\frac{5}{3} - \frac{1}{6}\right)^2 \div \square + 2 = \frac{43}{8}$

67. $\left(-\frac{1}{4}\right) \div \left(-\frac{1}{2}\right)^3 - \square \times \left\{\frac{4}{3} + (-2)\right\} = -2$

68. $16 - \left[\square - 2^2 \div \left\{5 \times (-2) - 3 \div \left(-\frac{1}{2}\right)\right\}\right] = 8$

69. $\left(-\frac{1}{3}\right)^3 \div \left(-\frac{1}{6}\right)^2 - \square \times \left\{(-2^2) \div \frac{4}{3} + (-3)^2 \times \left(\frac{5}{3}\right)^2\right\} = \frac{17}{3}$

새로운 계산기호

◪ 두 유리수 a, b에 대하여 $a \☆ b = a + b + 2$일 때, 다음을 계산하여라.

70. $5 \☆ 3$

71. $4 \☆ (-5)$

72. $2 \☆ 2$

73. $3 \☆ 7$

74. $(-2) \☆ (-7)$

◪ 두 유리수 a, b에 대하여 $a \★ b = b - a + 5$일 때, 다음을 계산하여라.

75. $2 \★ 5$

76. $4 \★ 25$

77. $8 \★ 3$

78. $11 \★ 36$

79. $13 \★ 9$

◪ 두 유리수 $a,\ b$에 대하여 $a◓b=a\div b+1$라 할 때, 다음을 계산하여라.

80. $5◓\frac{5}{2}$

81. $\left(-\frac{1}{3}\right)◓\left(+\frac{3}{2}\right)$

82. $\frac{2}{3}◓(-5)$

◪ 두 유리수 a,b에 대하여 $a◉b=3\div(b-a)$라 할 때, 다음을 계산하여라.

83. $2◉5$

84. $\frac{1}{2}◉\left(-\frac{3}{4}\right)$

85. $\frac{2}{5}◉4$

86. $(-4)◉\left(-\frac{9}{2}\right)$

87. $\left(-\frac{3}{5}\right)◉\left(-\frac{3}{2}\right)$

◪ 두 유리수 a,b에 대하여 $a◎b=a\times b-1$라 할 때, 다음을 계산하여라.

88. $3◎(-2)$

89. $4◎\frac{3}{2}$

90. $5◎\frac{7}{10}$

91. $(-2)◎\left(-\frac{1}{2}\right)$

◪ 두 유리수 a,b에 대하여 $a◆b=a\div b+2$라 할 때, 다음을 계산하여라.

92. $9◆(-3)$

93. $6◆\frac{3}{2}$

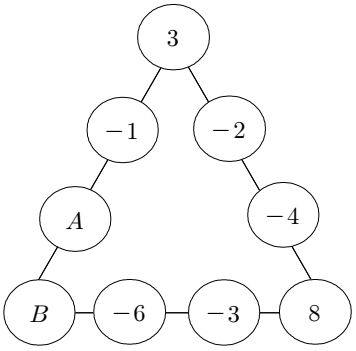
94. $5◆\frac{10}{3}$

95. $4◆\frac{2}{7}$

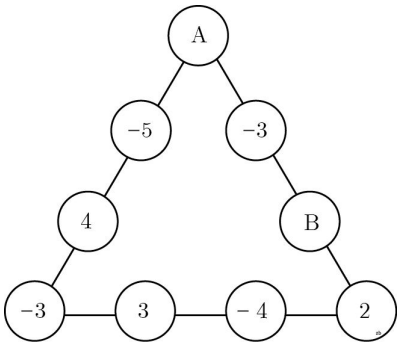
96. $(-10)◆(-5)$

◪ 다음 그림의 삼각형의 각 변에 놓인 모든 네 수의 합이 같을 때, A+B의 값을 구하여라.

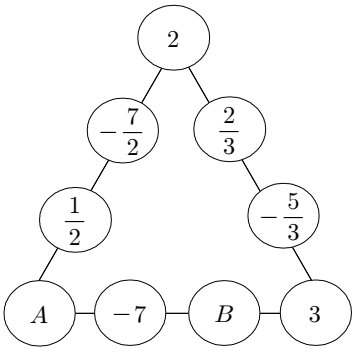
97.



98.



99.



◪ 다음 표에서 가로, 세로 및 대각선의 수의 합이 모두 같도록 빈칸을 채워보아라.

100.

−1	4	
	0	2
3		1

101.

4		0
−3		
2		

102.

−1	1	3
		2

103.

		−1
		−11
−5		3

104.

	2		3
5		0	
	−3	1	−8
−6	−1		6

유리수의 부호 구하기

◪ 주어진 조건에 따라 0이 아닌 두 유리수 a, b의 부호를 나타내어라.

105. $a\times b>0$, $a+b<0$일 때

106. $a\times b>0$, $a+b>0$일 때

107. $a\div b>0$, $a+b>0$일 때

108. $a\div b<0$, $a+b<0$일 때

109. $a\times b<0$, $a-b>0$일 때

110. $a\times b<0$, $a-b<0$일 때

◪ 주어진 조건에 따라 0이 아닌 유리수 a, b, c의 부호를 나타내어라.

111. $a\times b>0$, $b\times c<0$, $b>c$일 때

112. $a\times b<0$, $a>b$, $b\div c>0$일 때

113. $a\times b\div c>0$, $\frac{(-a)}{(-c)}<0$, $a-c<0$일 때

114. $a\div c<0$, $a\times b\times c>0$, $a>c$일 때

115. $a<c$, $a\times b<0$, $b\div c>0$일 때

116. $a\times b<0$, $b\div c>0$, $a-b<0$일 때

117. $a\times b>0$, $\frac{b}{c}<0$, $c-b<0$일 때

정답 및 해설

1) ㉣→㉢→㉡→㉤→㉠

2) ㉢→㉣→㉡→㉠

3) ㉢→㉡→㉣→㉠→㉤

4) ㉣→㉢→㉡→㉠→㉤

5) ㉢→㉣→㉡→㉠→㉤

6) ㉢→㉣→㉡→㉠

7) ㉢→㉣→㉡→㉠

8) ㉢→㉣→㉡→㉠

9) ㉢→㉣→㉡→㉤→㉠, 28

⇨ 계산순서: ㉢→㉣→㉡→㉤→㉠

$$4\times\left[\left\{\frac{3}{2}+(-3)^2\div\frac{6}{5}\right\}-2\right]=4\times\left\{\left(\frac{3}{2}+9\times\frac{5}{6}\right)-2\right\}$$
$$=4\times\left(\frac{3}{2}+\frac{15}{2}-2\right)=4\times7=28$$

10) ㉡→㉢→㉣→㉠→㉤, 2

⇨ 계산순서: ㉡→㉢→㉣→㉠→㉤

$$[-1-\{(3-4)\times4-5\}]\div4$$
$$=[-1-\{(-1)\times4-5\}]\div4$$
$$=\{-1-(-4-5)\}\div4$$
$$=(-1+9)\div4=8\div4=2$$

11) ㉣→㉢→㉤→㉡→㉠, −8

⇨ 계산순서: ㉣→㉢→㉤→㉡→㉠

$$(-2)\times[3-\{4+2\times(-3)\}\div2]$$
$$=(-2)\times\{3-(4-6)\div2\}$$
$$=(-2)\times\{3-(-2)\div2\}=(-2)\times(3+1)$$
$$=(-2)\times4=-8$$

12) ㉡→㉢→㉣→㉤→㉠, 3

⇨ 계산순서: ㉡→㉢→㉣→㉤→㉠

$$8-\left\{(-2)^2\times\frac{3}{16}+\frac{3}{4}\right\}\div\frac{3}{10}=8-\left(4\times\frac{3}{16}+\frac{3}{4}\right)\div\frac{3}{10}$$
$$=8-\left(\frac{3}{4}+\frac{3}{4}\right)\div\frac{3}{10}=8-\frac{3}{2}\times\frac{10}{3}=8-5=3$$

13) ㉡→㉣→㉢→㉤→㉠, 13

⇨ 계산순서: ㉡→㉣→㉢→㉤→㉠

$$3-\left\{(-3)^3+15\div\frac{5}{3}\right\}\times\frac{5}{9}=3-\left\{(-27)+15\times\frac{3}{5}\right\}\times\frac{5}{9}$$
$$=3-(-27+9)\times\frac{5}{9}=3-(-18)\times\frac{5}{9}=3+10=13$$

14) 0

⇨ (주어진 식) $=(-3)-(-3)=(-3)+(+3)=0$

15) $\frac{9}{4}$

⇨ (주어진 식) $=\frac{3}{4}-\left(-\frac{27}{8}\right)\times\frac{4}{9}=\frac{3}{4}-\left(-\frac{3}{2}\right)=\frac{3}{4}+\frac{3}{2}=\frac{9}{4}$

16) $+\frac{4}{3}$

⇨ $5\times(-1)^{202}\div\left(+\frac{15}{4}\right)=5\times(+1)\div\left(+\frac{15}{4}\right)$
$=+\left(5\times1\times\frac{4}{15}\right)=+\frac{4}{3}$

17) −18

⇨ $-4\times(1-4)\div\left(-\frac{2}{3}\right)=-4\times(-3)\div\left(-\frac{2}{3}\right)$
$=-\left(4\times3\times\frac{3}{2}\right)=-18$

18) $+\frac{4}{3}$

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

19) $+\frac{3}{4}$

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

20) +1

⇨ $(-3)^2-18\div\left(-\frac{3}{2}\right)^2=(+9)-18\div\left(+\frac{9}{4}\right)$
$=(+9)-18\times\left(+\frac{4}{9}\right)$
$=(+9)-(+8)=+1$

21) 11

⇨ $10-20\div4+3\times2=10-5+6=11$

22) 36

⇨ $6\times\{12-(5+1)\}=6\times(12-6)=6\times6=36$

23) 4

⇨ $24\div\{(7-4)\times2\}=24\div(3\times2)=24\div6=4$

24) −2

⇨ $2-2\times\{6\div(-4+7)\}=2-2\times(6\div3)$
$=2-2\times2=2-4=-2$

25) 9

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⇨ $6+\{4\times(15\div5)-7\}-2=6+(4\times3-7)-2$
$=6+(12-7)-2=6+5-2=9$

26) 15
⇨ $4\times6-12+15\div5=24-12+3=15$

27) 5
⇨ $4^2+3\times(-12)\div6-5=16-36\div6-5=16-6-5=5$

28) 18
⇨ $18\div(-3)^2\times6+15-9=18\div9\times6+15-9$
$=2\times6+15-9=12+15-9=18$

29) +8
⇨ $13-6\times\left\{1+\left(\frac{1}{2}-\frac{2}{3}\right)\right\}$
$=13-6\times\left\{1+\left(\frac{3}{6}-\frac{4}{6}\right)\right\}=13-6\times\left(1-\frac{1}{6}\right)$
$=13-6\times\left(+\frac{5}{6}\right)=13-(+5)=+8$

30) $\frac{1}{2}$
⇨ $\frac{4}{5}\times\left\{\left(+\frac{3}{4}\right)-(-3)\right\}-\frac{5}{2}$
$=\frac{4}{5}\times\left\{\left(+\frac{3}{4}\right)+\left(+\frac{12}{4}\right)\right\}-\frac{5}{2}$
$=\frac{4}{5}\times\frac{15}{4}-\frac{5}{2}=3-\frac{5}{2}=\frac{6}{2}-\frac{5}{2}=\frac{1}{2}$

31) 6
⇨ $-2-\{1-(14-5)\}$
$=-2-(1-9)=-2-(-8)$
$=-2+8=6$

32) −9
⇨ $-11-[-2+\{5-(2+3)\}]$
$=-11-\{-2+(5-5)\}$
$=-11-(-2)$
$=-11+2=-9$

33) $\frac{3}{5}$
⇨ $-\frac{1}{5}+\left\{1-\left(\frac{3}{5}-\frac{2}{5}\right)\right\}$
$=-\frac{1}{5}+\left(1-\frac{1}{5}\right)$
$=-\frac{1}{5}+\frac{4}{5}=\frac{3}{5}$

34) $-\frac{5}{6}$
⇨ $-\frac{2}{3}-\left\{-\frac{1}{6}+\left(-\frac{1}{3}+\frac{2}{3}\right)\right\}$
$=-\frac{2}{3}-\left(-\frac{1}{6}+\frac{1}{3}\right)=-\frac{4}{6}-\left(-\frac{1}{6}+\frac{2}{6}\right)$
$=-\frac{4}{6}-\frac{1}{6}=-\frac{5}{6}$

35) −6
⇨ $36\div9+\{2+(-4)\times3\}$
$=36\div9+\{2+(-12)\}$
$=36\div9+(-10)$
$=4+(-10)=-6$

36) −8
⇨ $21-\{4+(-3)^2\times4-11\}$
$=21-\{4+(+9)\times4-11\}$
$=21-\{4+(+36)-11\}$
$=21-(+29)=-8$

37) −12
⇨ (주어진 식)$=-2+\{-3+(-7)\}=-2+(-10)=-12$

38) −2
⇨ (주어진 식)$=\frac{1}{4}\times\{4\times3+(-4)\}\times(-1)$
$=\frac{1}{4}\times8\times(-1)=-2$

39) −1.4
⇨ $-1.5+\{0.5+(-0.7+0.3)\}$
$=-1.5+(0.5-0.4)$
$=-1.5+0.1=-1.4$

40) −3.4
⇨ $-\{2.3+(-0.3+0.5)\}-0.9$
$=-(2.3+0.2)-0.9$
$=-2.5-0.9=-3.4$

41) 17
⇨ $-4+(+9)-18\times(-\frac{2}{3})$
$=(+5)+12$
$=17$

42) −2
⇨ $-\frac{5}{2}-[-2+\{2.5-(1.5-0.5)\}]$
$=-\frac{5}{2}-\{-2+(2.5-1)\}$
$=-\frac{5}{2}-(-0.5)$
$=-\frac{25}{10}+\frac{5}{10}=-\frac{20}{10}=-2$

43) $\frac{39}{2}$
⇨ 주어진 식은
$\left\{(+5)\times\frac{3}{10}\right\}-9\times(-2)$
$=\left(+\frac{3}{2}\right)-(-18)$
$=\frac{3}{2}+\frac{36}{2}$

$=\frac{39}{2}$

44) $\frac{13}{2}$

⇨ 주어진 식은

$5-\{(-8)-(-2)\}\times\frac{1}{4}$

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

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

$=\frac{10+3}{2}$

$=\frac{13}{2}$

45) $-\frac{9}{2}$

⇨ 주어진 식은

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

$=\left(+\frac{3}{4}\right)\times\{(-9)+3\}$

$=\left(+\frac{3}{4}\right)\times(-6)$

$=-\frac{9}{2}$

46) 1

⇨ 주어진 식은

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

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

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

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

$=1$

47) 0

⇨ $24\times\left\{\frac{3}{4}+(-2)^2\times\frac{1}{16}-\frac{1}{2}\right\}-12$

$=24\times\left\{\frac{3}{4}+4\times\frac{1}{16}-\frac{1}{2}\right\}-12$

$=24\times\left(\frac{3}{4}+\frac{1}{4}-\frac{1}{2}\right)-12$

$=24\times\frac{1}{2}-12=0$

48) $+\frac{17}{7}$

⇨ $\frac{4}{11}\times\left(-\frac{33}{28}\right)+(-2)^3\div\left(-\frac{14}{5}\right)$

$=\left(-\frac{3}{7}\right)+(-8)\div\left(-\frac{14}{5}\right)$

$=\left(-\frac{3}{7}\right)+(-8)\times\left(-\frac{5}{14}\right)$

$=\left(-\frac{3}{7}\right)+\left(+\frac{20}{7}\right)=+\frac{17}{7}$

49) $\frac{1}{3}$

⇨ $5-\left[\frac{2}{3}+(-1)\times\left\{9\times\left(-\frac{4}{3}\right)+8\right\}\right]$

$=5-\left[\frac{2}{3}+(-1)\times\{(-12)+8)\}\right]$

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

$=5-\left(\frac{2}{3}+4\right)$

$=1-\frac{2}{3}$

$=\frac{1}{3}$

50) $-\frac{97}{6}$

⇨ $-16-(-2)\div\left\{(-32)\times(+\frac{1}{2})\times\frac{3}{4}\right\}$

$=-16-(-2)\div\left\{(-16)\times\frac{3}{4}\right\}$

$=-16-(-2)\div(-12)$

$=-16-\left(+\frac{1}{6}\right)$

$=-\frac{97}{6}$

51) 168

⇨ $-16\times\left\{-\frac{1}{2}+\frac{5}{3}\times(-2-4)\right\}$

$=-16\times\left\{-\frac{1}{2}+\frac{5}{3}\times(-6)\right\}$

$=-16\times\left\{-\frac{1}{2}+(-10)\right\}$

$=-16\times(-\frac{21}{2})$

$=168$

52) $-\frac{23}{3}$

⇨ $5-\left(-\frac{4}{3}\right)-\left[\left\{(+9)+\left(-\frac{11}{2}\right)\times 5\right\}\right]\times\frac{4}{5}$

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

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

$=\frac{19}{3}-14$

$=-\frac{23}{3}$

53) -12

⇨ $\left(-\frac{1}{3}\right)^2\times 27-\left\{8\div\left(\frac{2}{5}+\frac{2}{15}\right)\right\}$

$=\left(-\frac{1}{3}\right)^2\times 27-\left\{8\div\left(\frac{6}{15}+\frac{2}{15}\right)\right\}$

$=\left(-\frac{1}{3}\right)^2\times 27-\left(8\div\frac{8}{15}\right)$

$=\left(-\frac{1}{3}\right)^2\times 27-\left(8\times\frac{15}{8}\right)$

$=\frac{1}{9}\times 27-15=3-15=-12$

54) $\frac{19}{6}$

⇨ $\frac{2}{3}-\left\{-8-\frac{1}{7}\div\left(-\frac{2}{7}\right)\right\}\times\frac{1}{3}=\frac{2}{3}-\left(-8+\frac{1}{2}\right)\times\frac{1}{3}$

$=\frac{2}{3}-\left(-\frac{15}{2}\right)\times\frac{1}{3}=\frac{2}{3}+\frac{5}{2}=\frac{4}{6}+\frac{15}{6}=\frac{19}{6}$

55) 2

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

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

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

56) $\frac{7}{3}$

⇨ $3-\left[\frac{1}{2}+(-1)\div\{(-2)+8\}\right]\times 2$

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

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

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

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

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

$=\frac{7}{3}$

57) $-\frac{35}{3}$

⇨ $-9-\left[\frac{2}{3}+(-1)\times\left\{4\times\left(-\frac{5}{2}\right)+8\right\}\right]$

$=-9-\left[\frac{2}{3}+(-1)\times\{(-10)+8\}\right]$

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

$=-9-\left(\frac{2}{3}+2\right)$

$=-9-\frac{2}{3}-2$

$=-11-\frac{2}{3}$

$=-\frac{35}{3}$

58) -3

⇨ 주어진 식은

$-\frac{9}{8}-\left[\left(+\frac{1}{4}\right)-\left\{(-3)-\frac{5}{9}\times\left(-\frac{3}{2}\right)\right\}\times\frac{3}{4}\right]$

$=-\frac{9}{8}-\left[\left(+\frac{1}{4}\right)-\left\{(-3)-\left(-\frac{5}{6}\right)\right\}\times\frac{3}{4}\right]$

$=-\frac{9}{8}-\left\{\left(+\frac{1}{4}\right)-\left(-\frac{13}{6}\right)\times\frac{3}{4}\right\}$

$=-\frac{9}{8}-\left\{\left(+\frac{1}{4}\right)-\left(-\frac{13}{8}\right)\right\}$

$=-\frac{9}{8}-\left(+\frac{15}{8}\right)$

$=-3$

59) 8

⇨ $6+3\times\left[\{(-2)^4-10\}\div\frac{4}{3}+\frac{7}{2}\right]\div 12$

$=6+3\times\left\{(16-10)\div\frac{4}{3}+\frac{7}{2}\right\}\div 12$

$=6+3\times\left(6\times\frac{3}{4}+\frac{7}{2}\right)\div 12$

$=6+3\times 8\times\frac{1}{12}=6+2=8$

60) -3

⇨ $9-\left[(-4)^2\div 2\times\left\{\frac{2}{5}+(-5)^2\div\frac{125}{8}\right\}-4\right]$

$=9-\left\{16\div 2\times\left(\frac{2}{5}+25\times\frac{8}{125}\right)-4\right\}$

$=9-\left\{16\div 2\times\left(\frac{2}{5}+\frac{8}{5}\right)-4\right\}$

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

61) 0

⇨ 주어진 식은

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

$=\left\{(-2)\times\left(+\frac{5}{12}\right)+\left(-\frac{2}{3}\right)\right\}+\frac{3}{2}$

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

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

$=0$

62) $-\frac{9}{4}$

⇨ $\left(-\frac{27}{8}\right)\times\frac{1}{\square}\times\frac{7}{12}=\frac{7}{8}$

$\frac{1}{\square}=\frac{7}{8}\div\left(-\frac{27}{8}\right)\div\left(\frac{7}{12}\right)$

$\frac{1}{\square}=\frac{7}{8}\times\left(-\frac{8}{27}\right)\times\left(\frac{12}{7}\right)=-\frac{4}{9}$

$\therefore\square=-\frac{9}{4}$

63) $-\frac{70}{3}$

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

$-\frac{35}{2}\times\frac{1}{\square}=\frac{3}{4}$

$\frac{1}{\square}=\frac{3}{4}\div\left(-\frac{35}{2}\right)=\frac{3}{4}\times\left(-\frac{2}{35}\right)=-\frac{3}{70}$

$\therefore\square=-\frac{70}{3}$

64) 8

⇨ $-12\times\frac{1}{\square}\times(+4)=-6$ 에서

$\frac{1}{\square}\times(-48)=-6$

$\frac{1}{\square}=(-6)\div(-48)=\frac{1}{8}$ 이므로 $\square=8$

65) $-\frac{5}{2}$

⇨ $\frac{3}{7}\times\frac{1}{\square}\times\left(+\frac{25}{4}\right)=-\frac{15}{14}$

$\frac{1}{\square}\times\frac{75}{28}=-\frac{15}{14}$

$\frac{1}{\square}=\left(-\frac{15}{14}\right)\times\frac{28}{75}=-\frac{2}{5}$ 에서 $\square=-\frac{5}{2}$

66) $\frac{2}{3}$

⇨ $\left(\frac{5}{3}-\frac{1}{6}\right)^2=\left(\frac{10}{6}-\frac{1}{6}\right)^2=\left(\frac{3}{2}\right)^2=\frac{9}{4}$ 이다.

따라서 $\frac{9}{4}\div\square+2=\frac{43}{8}$

$\frac{9}{4}\div\square=\frac{43}{8}-2$

$\frac{9}{4}\div\square=\frac{27}{8}$

$\frac{9}{4}\div\frac{27}{8}=\square$

$\square=\frac{9}{4}\times\frac{8}{27}=\frac{2}{3}$

67) -6

⇨ $\left(-\frac{1}{4}\right)\div\left(-\frac{1}{8}\right)-\square\times\left(-\frac{2}{3}\right)=-2$

$\left(-\frac{1}{4}\right)\times(-8)-\square\times\left(-\frac{2}{3}\right)=-2$

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

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

$4\times\left(-\frac{3}{2}\right)=-6=\square$

68) 7

⇨ 주어진 식은

$16-[\square-4\div\{(-10)-3\times(-2)\}]=8$

$16-[\square-4\div\{(-10)-(-6)\}]=8$

$16-\{\square-4\div(-4)\}=8$

$16-(\square+1)=8$

$\square+1=8$

$\square=7$

69) $-\frac{7}{22}$

⇨ $\left(-\frac{1}{27}\right)\times(+36)-\square\times\left\{(-4)\times\frac{3}{4}+(+9)\times\left(\frac{25}{9}\right)\right\}=\frac{17}{3}$

$\left(-\frac{4}{3}\right)-\square\times\{(-3)+(+25)\}=\frac{17}{3}$

$\left(-\frac{4}{3}\right)-\square\times(+22)=\frac{17}{3}$

$\left(-\frac{4}{3}\right)-\frac{17}{3}=\square\times22$

$-7=\square\times22$

$\square=-\frac{7}{22}$

70) 10

⇨ $5\☆3=5+3+2=10$

71) 1

⇨ $4\☆(-5)=4+(-5)+2=1$

72) 6

⇨ $2\☆2=2+2+2=6$

73) 12

⇨ $3\☆7=3+7+2=12$

74) -7

⇨ $(-2)\☆(-7)=(-2)+(-7)+2=-7$

75) 8

⇨ $2\★5=5-2+5=3+5=8$

76) 26

⇨ $4 \bigstar 25 = 25 - 4 + 5 = 26$

77) 0

⇨ $8 \bigstar 3 = 3 - 8 + 5 = (-5) + 5 = 0$

78) 30

⇨ $11 \bigstar 36 = 36 - 11 + 5 = 30$

79) 1

⇨ $13 \bigstar 9 = 9 - 13 + 5 = (-4) + 5 = 1$

80) 3

⇨ $5 \blacklozenge \frac{5}{2} = 5 \div \frac{5}{2} + 1 = 5 \times \frac{2}{5} + 1 = 2 + 1 = 3$

81) $\frac{7}{9}$

⇨ $\left(-\frac{1}{3}\right) \blacklozenge \left(+\frac{3}{2}\right) = \left(-\frac{1}{3}\right) \div \left(+\frac{3}{2}\right) + 1$

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

$= -\frac{2}{9} + 1 = \frac{7}{9}$

82) $\frac{13}{15}$

⇨ $\frac{2}{3} \blacklozenge (-5) = \frac{2}{3} \div (-5) + 1$

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

$= \left(-\frac{2}{15}\right) + 1 = \frac{13}{15}$

83) 2

⇨ $2 \circledcirc 5 = 3 \div (5 - 2) = 3 \div 3 = 1$

84) $-\frac{12}{5}$

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

$= 3 \div \left(-\frac{3}{4} - \frac{2}{4}\right) = 3 \div \left(-\frac{5}{4}\right)$

$= 3 \times \left(-\frac{4}{5}\right) = -\frac{12}{5}$

85) $\frac{5}{6}$

⇨ $\frac{2}{5} \circledcirc 4 = 3 \div \left(4 - \frac{2}{5}\right) = 3 \div \left(\frac{18}{5}\right) = 3 \times \frac{5}{18} = \frac{5}{6}$

86) -6

⇨ $(-4) \circledcirc \left(-\frac{9}{2}\right) = 3 \div \left\{\left(-\frac{9}{2}\right) - (-4)\right\}$

$= 3 \div \left(-\frac{9}{2} + \frac{8}{2}\right) = 3 \div \left(-\frac{1}{2}\right)$

$= 3 \times (-2) = -6$

87) $-\frac{10}{3}$

⇨ $\left(-\frac{3}{5}\right) \circledcirc \left(-\frac{3}{2}\right) = 3 \div \left\{\left(-\frac{3}{2}\right) - \left(-\frac{3}{5}\right)\right\}$

$= 3 \div \left(-\frac{3}{2} + \frac{3}{5}\right) = 3 \div \left(-\frac{15}{10} + \frac{6}{10}\right)$

$= 3 \div \left(-\frac{9}{10}\right) = 3 \times \left(-\frac{10}{9}\right) = -\frac{10}{3}$

88) -7

⇨ $3 \circledcirc (-2) = -6 - 1 = -7$

89) 5

⇨ $4 \circledcirc \frac{3}{2} = 4 \times \frac{3}{2} - 1 = 6 - 1 = 5$

90) $\frac{5}{2}$

⇨ $5 \circledcirc \frac{7}{10} = 5 \times \frac{7}{10} - 1 = \frac{7}{2} - 1 = \frac{5}{2}$

91) 0

⇨ $(-2) \circledcirc \left(-\frac{1}{2}\right) = (-2) \times \left(-\frac{1}{2}\right) - 1 = 1 - 1 = 0$

92) -1

⇨ $9 \blacklozenge (-3) = 9 \div (-3) + 2 = (-3) + 2 = -1$

93) 6

⇨ $6 \blacklozenge \frac{3}{2} = 6 \div \left(\frac{3}{2}\right) + 2 = 6 \times \frac{2}{3} + 2 = 4 + 2 = 6$

94) $\frac{7}{2}$

⇨ $5 \blacklozenge \frac{10}{3} = 5 \div \left(\frac{10}{3}\right) + 2 = 5 \times \frac{3}{10} + 2 = \frac{3}{2} + 2 = \frac{7}{2}$

95) 16

⇨ $4 \blacklozenge \frac{2}{7} = 4 \div \left(\frac{2}{7}\right) + 2 = 4 \times \frac{7}{2} + 2 = 14 + 2 = 16$

96) 4

97) 3

⇨ 각 변에 놓인 수의 합은

$3 + (-2) + (-4) + 8 = 5$

따라서 $A = -3$, $B = 6$이므로 $A + B = 3$

98) -1

⇨ 각 변에 놓인 수의 합은

$(-3) + 3 + (-4) + 2 = -2$

따라서 $A=2,\ B=-3$이므로 $A+B=-1$

99) 8

⇨ 각 변에 놓인 수의 합은

$2+\frac{2}{3}+\left(-\frac{5}{3}\right)+3=4$

$A+(-7)+B+3=4 \qquad \therefore\ A+B=8$

100)

−1	4	−3
−2	0	2
3	−4	1

101)

4	−1	0
−3	1	5
2	3	−2

102)

0	5	−2
−1	1	3
4	−3	2

103)

−9	1	−1
5	−3	−11
−5	−7	3

104)

−9	2	−2	3
5	−4	0	−7
4	−3	1	−8
−6	−1	−5	6

105) $a<0,\ b<0$

106) $a>0,\ b>0$

107) $a>0,\ b>0$

108) $a<0,\ b<0$

109) $a>0,\ b<0$

110) $a<0,\ b>0$

111) $a>0,\ b>0, c<0$

⇨ $a\times b>0$이므로 $a,\ b$의 부호는 같고

$b\times c<0$이므로 $b,\ c$의 부호는 다르다.

이때 $b>c$이므로 $b>0,\ c<0$이고 $a>0$이다.

112) $a>0,\ b<0,\ c<0$

⇨ $a\times b<0$에서 $a,\ b$의 부호가 다르고

$a>b$이므로 $a>0,\ b<0$이다.

또한 $b\div c>0$에서 $b,\ c$의 부호가 같으므로 $c<0$

113) $a<0,\ b<0,\ c>0$

⇨ $\frac{-a}{-c}<0$이므로 $\frac{a}{c}<0$이고 $a-c<0$에서

$a<c$이므로 $a<0,\ c>0$이다.

이때 $a\times b\div c>0$에서 $\frac{ab}{c}>0$이므로 $b<0$이다.

114) $a>0,\ b<0, c<0$

⇨ $a\div c<0,\ a>c$ 이므로 $a>0,\ c<0$

이때 $a\times b\times c>0$ 이므로 $b<0$

115) $a<0,\ b>0,\ c>0$

116) $a<0,\ b>0,\quad c>0$

⇨ $a\times b<0$이므로 $a,\ b$의 부호는 다르고

$a-b<0$에서 $a<b$이므로 $a<0, b>0$

$b\div c>0$이므로 $b,\ c$의 부호는 같기 때문에 $c>0$

117) $a>0,\ b>0,\ c<0$

⇨ $\frac{b}{c}<0$이므로 $b,\ c$의 부호는 다르고

$c-b<0$에서 $c<b$이므로 $b>0,\ c<0$이다.

또한 $a\times b>0$이므로 $a>0$이다.