



◇ 「콘텐츠산업 진흥법 시행령」 제33조에 의한 표시

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3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇ 「콘텐츠산업 진흥법」 외에도 「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

## 계산시 참고사항

## 1. 단항식과 다항식의 곱셈

: 분배법칙을 이용하여 단항식을 다항식의 각 항에 곱하여 간단히 한다.

$$A(B + C) = \underbrace{AB}_{\text{①}} + \underbrace{AC}_{\text{②}}$$

전개

전개식

## 2. 다항식과 단항식의 나눗셈

$$(\text{방법1}) (A+B) \div C = \frac{A+B}{C} = \frac{A}{C} + \frac{B}{C}$$

→ 분수꼴로 나타낸 다항식의 각 항을 단항식으로 나누어 계산한다.

$$(\text{방법2}) (A+B) \div C = (A+B) \times \frac{1}{C} = \frac{A}{C} + \frac{B}{C}$$

→ 나눗셈을 곱셈으로 바꾼 후 분배법칙을 이용하여 계산한다.

## 3. 덧셈, 뺄셈, 곱셈, 나눗셈이 혼합된 식의 계산 순서

(1) 지수법칙을 이용하여 거듭제곱을 먼저 정리한다.

(2) 괄호가 있으면 괄호 안을 먼저 계산한다. 이때 괄호는 소괄호( ), 중괄호{ }, 대괄호[ ]순으로 계산한다.

(3) 분배법칙을 이용하여 곱셈, 나눗셈을 계산한다.

(4) 동류항끼리 덧셈, 뺄셈을 계산한다.

## 전개와 전개식

● 전개 : 단항식과 다항식의 곱을 하나의 다항식으로 나타내는 것

● 전개식 : 전개하여 얻은 다항식



## 단항식과 다항식의 곱셈

▣ 다음 식을 간단히 하여라.

1.  $-4x(5x-4)$

2.  $5x(3x+2)$

3.  $2a(5b-3)$

4.  $(3a+4)a$

5.  $-3y(-2x+1)$

6.  $(2x+3) \times (-2x)$

7.  $(-x+y) \times (-3x)$

8.  $(3x+2y) \times 2x$

9.  $(-4a+5) \times 3a$

10.  $2x^2(3xy-4y)$

11.  $(x^2 + 3x - 5) \times 4x$

12.  $(12a^2 + 4a - 8) \times \frac{1}{4}a$

13.  $\frac{3}{2}a(-6a^2b - 12ab + 18b^3)$

14.  $(-3x + 2y + 1) \times 2x$

15.  $5x(-x + 2y - 6)$

16.  $(8x - 4y + 12) \times \left(-\frac{x}{2}\right)$

17.  $(4a + 2b - 8) \times \left(-\frac{a}{2}\right)$

18.  $(-x - 4y + 3) \times (-3y)$

19.  $(8a^2 - 5b + 3) \times 2ab$

20.  $(6x^2 - 4xy + 10y^2) \times 3xy$

21.  $2x(3x - 5y + 2)$

22.  $-3x(x - 5y + 1)$

23.  $-3a(a - 4b + 1)$

24.  $2a(5a - b + 7)$

25.  $\frac{1}{2}a(4a - 6b + 10)$

26.  $-\frac{1}{3}b(2a - 6b + 9)$

27.  $2x(4x - 3y + 2)$

28.  $6x(-x + 2y - 3)$

29.  $-5a(-3a + 2b - 3)$

30.  $(3a - 4b + 2) \times 2a$

31.  $(-a + 3b - 4) \times (-3a)$

32.  $(-12x + 4y - 8) \times \frac{1}{4}x$



## 다항식과 단항식의 나눗셈

■ 다음 식을 간단히 하여라.

33.  $(8x^2 - 12x) \div 4x$

34.  $(5ab - 3a) \div a$

35.  $(16xy - 4y) \div 2y$

36.  $(12x^2 - 24xy) \div 3x$

37.  $(x^2y - 2xy^2) \div xy$

38.  $(7x^2 - 2xy) \div (-x)$

39.  $(15xy - 6y) \div (-3y)$

40.  $(9a^3b - 6a^2) \div (-3a)$

41.  $(8x^2y + 20xy^2) \div (-4x)$

42.  $(15x^2y - 9xy^2) \div \frac{3}{2}xy$

43.  $(x^2 + 2x) \div \frac{1}{4}x$

44.  $(4x^2 - 3xy) \div \frac{1}{2}x$

45.  $\frac{12x^2 - 24xy + 9x}{-3x}$

46.  $(6ab + 2a) \div 2a$

47.  $(12xy - 9x) \div 3x$

48.  $(12xy - 6x) \div 3x$

49.  $(8a^2 - 16a) \div (-4a)$

50.  $(-4x^2 + 16x) \div 4x$

51.  $(35ab^3 + 14a^2b^2) \div (-7ab^2)$

52.  $(5x^3y^2 - 8x^2y^2) \div (-3xy)$

53.  $(6x^2 + 8x) \div (-2x)$

54.  $(18x^2y - 24x) \div 6x$

55.  $(12x^2y - 8xy^2) \div (-4xy)$

56.  $(8x^2y^2 + 20x) \div 2x$

57.  $(5y^2 + 4y) \div \left(-\frac{y}{2}\right)$

58.  $(9a^3b - 6ab^2 + 12a^2b) \div 2ab$

59.  $(-10x^3y^2 - 6x^2y) \div 2x^2y$

60.  $(15a^3b^2 - 6a^2b - 3ab) \div 3ab$

61.  $(10a^3b^4 - 8a^2b^2 + 14ab^2) \div 4ab^2$

62.  $(8a^2b^2 - 6a^2b - 10ab^2) \div (-4ab)$

63.  $(-14a^3b + 21a^2b - 7ab^2) \div (-7ab)$

64.  $(6x^3y^3 - 15x^2y^3 + 9x^2y^2) \div (-3xy^2)$

$$65. (a^2b + 9ab^2 - 2ab^3) \div \frac{3}{2}ab$$

$$66. (6x^2 + 9xy - 15x) \div 3x$$

$$67. (14a^2b - 21a^3b^2) \div (-7a^2b)$$

$$68. (10x^2y - 6xy^2) \div \frac{2}{3}xy$$

$$69. (9ab^2 + 12a^2 - 15a^2b) \div \frac{3}{4}a$$

$$70. (8a^2b - 4ab^2 - ab) \div \frac{4}{11}a$$

$$71. \left(\frac{1}{4}x^2 - \frac{1}{8}xy + 2x\right) \div \frac{3}{4}x$$

$$72. \left(5x^2y^2 + \frac{2}{5}x^2y + xy^2\right) \div \frac{2}{5}xy$$

$$73. (12a^2b + 8ab) \div \left(-\frac{4}{5}ab\right)$$

$$74. (14x^2 - 21xy^2) \div \left(-\frac{7}{2}x\right)$$

$$75. (-6ab^2 + 9ab) \div \left(-\frac{3}{4}b\right)$$

$$76. (2x^3y^3 - 3x^2y + xy^2) \div \left(-\frac{1}{3}xy\right)$$

$$77. \left(\frac{4}{9}x^3 + 6x^2 + 8x\right) \div \left(-\frac{2}{3}x\right)$$

$$78. \left(\frac{1}{3}x^2y - \frac{1}{6}xy^2 - \frac{1}{9}xy\right) \div \left(-\frac{1}{12}xy\right)$$

$$79. (9x^4y^3 - 3x^3y^2 - 12xy^5) \div \left(-\frac{3}{4}xy\right)$$



### 다항식의 혼합계산

■ 다음 식을 간단히 하여라.

$$80. a(3a - b) - 2a(a + 3b)$$

$$81. 6a(-2a + 3) - 7(a^2 + a - 2)$$

$$82. 4x(-x + 2) + 3x(x - 3)$$

$$83. x(x - y) + y(x + 2y)$$

$$84. 2b(3a - b + 2) - b(6a + 1)$$

$$85. 2x(3x + y) + 4y(2x - 5y)$$

86.  $ab(4a+b) - (3ab-b^2) \times a$

87.  $-3a(a-2b+5) + a(-a+4b+6)$

88.  $2a(7a+4) - (3a+2) \times (-2a)$

89.  $4xy(-x+3y-2) + (2x-1) \times 2xy$

90.  $3(a-2b) - (12a^2-15ab) \div 3a$

91.  $-2a(b-5) - (-3ab+4a)$

92.  $-3x(x-2y) + (x+5y) \times (-2x)$

93.  $(6x^3y-8x^2y^2) \div (-2xy) - 4x(x-3y)$

94.  $(2xy-6y^2) \div (-2y) + (-3x+y)$

95.  $(18x^4y^2-9x^2y) \div 3xy$

96.  $2(5x+4y) + (8x^2-6xy) \div 2x$

97.  $(6x^2+4x) \div (-2x) + (3x-5) \times 3x$

98.  $-6a(a+4) - (15a^2-9a) \div (-3a)$

99.  $a(a+4) + (a^3b-4a^2b) \div ab$

100.  $(16x^2y-8xy^2) \div (-4xy) - (15x^2-6x) \div 3x$

101.  $2x(1-4y) + (8x^2y-4x^2) \div 2x$

102.  $-a(2a+5) + (a^2-2ab) \div \frac{a}{4}$

103.  $(9a^2b-12ab^2) \div 3a - (16a^2b+8ab^2) \div 4a$

104.  $(10a^2-6a) \div 2a - (4a^2-7a^2b) \div a$

105.  $(-6x^2y+4xy^2) \div (-2xy)^3 \times 4x^2y^3$

106.  $x^2y - \{(2xy)^2 - 6x^2y^2\} \div y$

107.  $2x(4x-8y) - (8x^2y^2-4x^3y) \div 2xy$

$$108. (-6x^2 + 4x) \div \frac{1}{3}x + (-2x^3 - 5x) \div \left(-\frac{1}{2}x\right)$$

$$109. \frac{15x^3y^2 + 10x^2y^3}{5xy} - 2xy(x - y)$$

$$110. \frac{9a - 15a^2}{3a} + \frac{4b^2 + 16b}{4b}$$

$$111. -3x(x - 4) - (8x^2y + 12xy - 4y) \div \frac{4}{3}y$$

$$112. \{2ab(a - 3b) - (-3a^2b)^2 \div a^2b\} \times 4ab^2$$

$$113. a(4a - b + 5) + \left(\frac{1}{3}a + 2b - 1\right) \times 3a$$

$$114. -2a(6a - b + 3) - (a^2 + a) \times (-8)$$

$$115. (6x^2y^2 - 18xy^2) \div 3x - (4y - 8xy) \times 2y$$

$$116. 2a(3ab - b + 2) - (9a^3b^2 + 12a^2b) \div 3ab$$

$$117. (2x^2y - 8xy^2) \div \frac{2}{3}xy - (9x^2y - 6xy^2) \div \frac{3}{4}xy$$

$$118. (9x^3y - 3xy^2) \div \frac{3}{2}xy + 3x(x - 5y)$$

$$119. -3x(x - 5) + (6x^2y - 8xy) \div \frac{2}{3}y$$

$$120. (8a^2b - 6ab^2 + 2b) \div (-2b) + (2a^3b^2 - 3a^2b^3) \div \frac{1}{2}ab^2$$

## 정답 및 해설



1)  $-20x^2 + 16x$

2)  $15x^2 + 10x$

3)  $10ab - 6a$

4)  $3a^2 + 4a$

5)  $6xy - 3y$

6)  $-4x^2 - 6x$

$$\begin{aligned} \Rightarrow (2x+3) \times (-2x) \\ = 2x \times (-2x) + 3 \times (-2x) \\ = -4x^2 - 6x \end{aligned}$$

7)  $3x^2 - 3xy$

$$\begin{aligned} \Rightarrow (-x+y) \times (-3x) \\ = (-x) \times (-3x) + y \times (-3x) \\ = 3x^2 - 3xy \end{aligned}$$

8)  $6x^2 + 4xy$

9)  $-12a^2 + 15a$

10)  $6x^3y - 8x^2y$

11)  $4x^3 + 12x^2 - 20x$

12)  $3a^3 + a^2 - 2a$

13)  $-9a^3b - 18a^2b + 27ab^3$

14)  $-6x^2 + 4xy + 2x$

15)  $-5x^2 + 10xy - 30x$

16)  $-4x^2 + 2xy - 6x$

17)  $-2a^2 - ab + 4a$

18)  $3xy + 12y^2 - 9y$

19)  $16a^3b - 10ab^2 + 6ab$

20)  $18x^3y - 12x^2y^2 + 30xy^3$

21)  $6x^2 - 10xy + 4x$

22)  $-3x^2 + 15xy - 3x$

23)  $-3a^2 + 12ab - 3a$

24)  $10a^2 - 2ab + 14a$

25)  $2a^2 - 3ab + 5a$

26)  $-\frac{2}{3}ab + 2b^2 - 3b$

27)  $8x^2 - 6xy + 4x$

28)  $-6x^2 + 12xy - 18x$

29)  $15a^2 - 10ab + 15a$

30)  $-6a^2 - 8ab + 4a$

31)  $3a^2 - 9ab + 12a$

$$\begin{aligned} \Rightarrow (-a+3b-4) \times (-3a) \\ = (-a) \times (-3a) + 3b \times (-3a) + (-4) \times (-3a) \\ = 3a^2 - 9ab + 12a \end{aligned}$$

32)  $-3x^2 + xy - 2x$

33)  $2x - 3$

$$\Rightarrow (\text{주어진 식}) = \frac{8x^2 - 12x}{4x} = 2x - 3$$

34)  $5b - 3$

35)  $8x - 2$

36)  $4x - 8y$

37)  $x - 2y$

$$\Rightarrow (\text{주어진 식}) = \frac{x^2y - 2xy^2}{xy} = x - 2y$$

38)  $-7x + 2y$

39)  $-5x + 2$

40)  $-3a^2b + 2a$

41)  $-2xy - 5y^2$

42)  $10x - 6y$

$$\Rightarrow (\text{주어진 식}) = (15x^2y - 9xy^2) \times \frac{2}{3xy} = 10x - 6y$$

43)  $4x + 8$

$$\Rightarrow (x^2 + 2x) \div \frac{1}{4}x = (x^2 + 2x) \times \frac{4}{x} = 4x + 8$$

44)  $8x - 6y$

$$\Rightarrow (4x^2 - 3xy) \div \frac{1}{2}x = (4x^2 - 3xy) \times \frac{2}{x} = 8x - 6y$$

45)  $-4x+8y-3$

46)  $3b+1$

47)  $4y-3$

48)  $4y-2$

$$\Rightarrow (12xy-6x) \div 3x = \frac{12xy}{3x} - \frac{6x}{3x} = 4y-2$$

49)  $-2a+4$

$$\Rightarrow (8a^2-16a) \div (-4a) = \frac{8a^2}{-4a} + \frac{-16a}{-4a} = -2a+4$$

50)  $-x+4$

51)  $-5b-2a$

52)  $-\frac{5}{3}x^2y + \frac{8}{3}xy$

53)  $-3x-4$

$$\begin{aligned} \Rightarrow (6x^2+8x) \div (-2x) \\ = 6x^2 \times \left(-\frac{1}{2x}\right) + 8x \times \left(-\frac{1}{2x}\right) \\ = -3x-4 \end{aligned}$$

54)  $3xy-4$

55)  $-3x+2y$

$$\begin{aligned} \Rightarrow (12x^2y-8xy^2) \div (-4xy) \\ = 12x^2y \times \left(-\frac{1}{4xy}\right) + (-8xy^2) \times \left(-\frac{1}{4xy}\right) = -3x+2y \end{aligned}$$

56)  $4xy^2+10$

57)  $-10y-8$

$$\begin{aligned} \Rightarrow (5y^2+4y) \div \left(-\frac{y}{2}\right) \\ = (5y^2+4y) \times \left(-\frac{2}{y}\right) \\ = 5y^2 \times \left(-\frac{2}{y}\right) + 4y \times \left(-\frac{2}{y}\right) \\ = -10y-8 \end{aligned}$$

58)  $\frac{9}{2}a^2-3b+6a$

59)  $-5xy-3$

60)  $5a^2b-2a-1$

61)  $\frac{5}{2}a^2b^2-2a+\frac{7}{2}$

62)  $-2ab+\frac{3}{2}a+\frac{5}{2}b$

63)  $2a^2-3a+b$

64)  $-2x^2y+5xy-3x$

65)  $\frac{2}{3}a+6b-\frac{4}{3}b^2$

$$\begin{aligned} \Rightarrow (a^2b+9ab^2-2ab^3) \div \frac{3}{2}ab \\ = (a^2b+9ab^2-2ab^3) \times \frac{2}{3ab} \\ = \frac{2}{3}a+6b-\frac{4}{3}b^2 \end{aligned}$$

66)  $2x+3y-5$

67)  $-2+3ab$

68)  $15x-9y$

69)  $12b^2+16a-20ab$

$$\begin{aligned} \Rightarrow (9ab^2+12a^2-15a^2b) \div \frac{3}{4}a \\ = (9ab^2+12a^2-15a^2b) \times \frac{4}{3a} \\ = \frac{36ab^2}{3a} + \frac{48a^2}{3a} - \frac{60a^2b}{3a} \\ = 12b^2+16a-20ab \end{aligned}$$

70)  $22ab-11b^2-\frac{11}{4}b$

$$\begin{aligned} \Rightarrow (8a^2b-4ab^2-ab) \div \frac{4}{11}a \\ = (8a^2b-4ab^2-ab) \times \frac{11}{4a} \\ = 22ab-11b^2-\frac{11}{4}b \end{aligned}$$

71)  $\frac{1}{3}x-\frac{1}{6}y+\frac{8}{3}$

$$\begin{aligned} \Rightarrow \left(\frac{1}{4}x^2-\frac{1}{8}xy+2x\right) \div \frac{3}{4}x \\ = \left(\frac{1}{4}x^2-\frac{1}{8}xy+2x\right) \times \frac{4}{3x} = \frac{1}{3}x-\frac{1}{6}y+\frac{8}{3} \end{aligned}$$

72)  $\frac{25}{2}xy+x+\frac{5}{2}y$

$$\begin{aligned} \Rightarrow \left(5x^2y^2+\frac{2}{5}x^2y+xy^2\right) \div \frac{2}{5}xy \\ = \left(5x^2y^2+\frac{2}{5}x^2y+xy^2\right) \times \frac{5}{2xy} = \frac{25}{2}xy+x+\frac{5}{2}y \end{aligned}$$

73)  $-15a-10$

$$\begin{aligned} \Rightarrow (12a^2b+8ab) \div \left(-\frac{4}{5}ab\right) \\ = (12a^2b+8ab) \times \left(-\frac{5}{4ab}\right) = -15a-10 \end{aligned}$$



74)  $-4x+6y^2$

$$\Rightarrow (14x^2-21xy^2) \div \left(-\frac{7}{2}x\right) = (14x^2-21xy^2) \times \left(-\frac{2}{7x}\right) \\ = -4x+6y^2$$

75)  $8ab-12a$

$$\Rightarrow (-6ab^2+9ab) \div \left(-\frac{3}{4}b\right) \\ = (-6ab^2+9ab) \times \left(-\frac{4}{3b}\right) = 8ab-12a$$

76)  $-6x^2y^2+9x-3y$

$$\Rightarrow (2x^3y^3-3x^2y+xy^2) \div \left(-\frac{1}{3}xy\right) \\ = (2x^3y^3-3x^2y+xy^2) \times \left(-\frac{3}{xy}\right) \\ = -6x^2y^2+9x-3y$$

77)  $-\frac{2}{3}x^2-9x-12$

$$\Rightarrow \left(\frac{4}{9}x^3+6x^2+8x\right) \div \left(-\frac{2}{3}x\right) \\ = \left(\frac{4}{9}x^3+6x^2+8x\right) \times \left(-\frac{3}{2x}\right) \\ = -\frac{2}{3}x^2-9x-12$$

78)  $-4x+2y+\frac{4}{3}$

$$\Rightarrow \left(\frac{1}{3}x^2y-\frac{1}{6}xy^2-\frac{1}{9}xy\right) \div \left(-\frac{1}{12}xy\right) \\ = \left(\frac{1}{3}x^2y-\frac{1}{6}xy^2-\frac{1}{9}xy\right) \times \left(-\frac{12}{xy}\right) \\ = -4x+2y+\frac{4}{3}$$

79)  $-12x^3y^2+4x^2y+16y^4$

$$\Rightarrow (9x^4y^3-3x^3y^2-12xy^5) \div \left(-\frac{3}{4}xy\right) \\ = (9x^4y^3-3x^3y^2-12xy^5) \times \left(-\frac{4}{3xy}\right) \\ = 9x^4y^3 \times \left(-\frac{4}{3xy}\right) + (-3x^3y^2) \times \left(-\frac{4}{3xy}\right) \\ + (-12xy^5) \times \left(-\frac{4}{3xy}\right) \\ = -12x^3y^2+4x^2y+16y^4$$

80)  $a^2-7ab$

$$\Rightarrow (\text{주어진 식}) = 3a^2-ab-2a^2-6ab = a^2-7ab$$

81)  $-19a^2+11a+14$

$$\Rightarrow (\text{주어진 식}) = -12a^2+18a-7a^2-7a+14 \\ = -19a^2+11a+14$$

82)  $-x^2-x$

83)  $x^2+2y^2$

$$\Rightarrow (\text{주어진 식}) = x^2-xy+xy+2y^2 = x^2+2y^2$$

84)  $-2b^2+3b$

$$\Rightarrow (\text{주어진 식}) = 6ab-2b^2+4b-6ab-b = -2b^2+3b$$

85)  $6x^2+10xy-20y^2$

$$\Rightarrow (\text{주어진 식}) = 6x^2+2xy+8xy-20y^2 \\ = 6x^2+10xy-20y^2$$

86)  $a^2b+2ab^2$

87)  $-4a^2+10ab-9a$

$$\Rightarrow (\text{주어진 식}) = -3a^2+6ab-15a-a^2+4ab+6a \\ = -4a^2+10ab-9a$$

88)  $20a^2+12a$

$$\Rightarrow (\text{주어진 식}) = 14a^2+8a+6a^2+4a = 20a^2+12a$$

89)  $12xy^2-10xy$

$$\Rightarrow (\text{주어진 식}) = -4x^2y+12xy^2-8xy+4x^2y-2xy \\ = 12xy^2-10xy$$

90)  $-a-b$

$$\Rightarrow (\text{주어진 식}) = 3a-6b-(4a-5b) \\ = 3a-6b-4a+5b = -a-b$$

91)  $6a+ab$

$$\Rightarrow -2a(b-5)-(-3ab+4a) \\ = -2ab+10a+3ab-4a \\ = 6a+ab$$

92)  $-5x^2-4xy$

93)  $-7x^2+16xy$

$$\Rightarrow (\text{주어진 식}) = -3x^2+4xy-4x^2+12xy = -7x^2+16xy$$

94)  $-4x+4y$

95)  $6x^3y-3x$

$$\Rightarrow (18x^4y^2-9x^2y) \div 3xy = 18x^4y^2 \div 3xy - 9x^2y \div 3xy \\ = 6x^3y-3x$$

96)  $14x+5y$

97)  $9x^2-18x-2$

$$\Rightarrow (6x^2+4x) \div (-2x) + (3x-5) \times 3x \\ = \frac{6x^2+4x}{-2x} + 9x^2 - 15x \\ = -3x-2+9x^2-15x \\ = 9x^2-18x-2$$

98)  $-6a^2-19a-3$

$$\begin{aligned} &\Rightarrow -6a(a+4) - (15a^2 - 9a) \div (-3a) \\ &= -6x^2 - 24a - (-5a + 3) \\ &= -6a^2 - 24a + 5a - 3 \\ &= -6a^2 - 19a - 3 \end{aligned}$$

$$99) 2a^2$$

$$100) -9x + 2y + 2$$

$$101) -4xy$$

$$102) -2a^2 - a - 8b$$

$$103) -ab - 6b^2$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= \frac{9a^2b - 12ab^2}{3a} - \frac{16a^2b + 8ab^2}{4a} \\ &= 3ab - 4b^2 - 4ab - 2b^2 = -ab - 6b^2 \end{aligned}$$

$$104) a + 7ab - 3$$

$$105) 3xy - 2y^2$$

$$\begin{aligned} 106) 3x^2y \\ \Rightarrow x^2y - \{(2xy)^2 - 6x^2y^2\} \div y \\ &= x^2y - (4x^2y^2 - 6x^2y^2) \div y \\ &= x^2y - (-2x^2y^2) \div y \\ &= x^2y + 2x^2y \\ &= 3x^2y \end{aligned}$$

$$107) 10x^2 - 20xy$$

$$\begin{aligned} \Rightarrow 2x(4x - 8y) - (8x^2y^2 - 4x^3y) \div 2xy \\ &= 8x^2 - 16xy - 4xy + 2x^2 = 10x^2 - 20xy \end{aligned}$$

$$108) 4x^2 - 18x + 22$$

$$\begin{aligned} \Rightarrow (-6x^2 + 4x) \div \frac{1}{3}x + (-2x^3 - 5x) \div \left(-\frac{1}{2}x\right) \\ &= (-6x^2 + 4x) \times \frac{3}{x} + (-2x^3 - 5x) \times \left(-\frac{2}{x}\right) \\ &= -18x + 12 + 4x^2 + 10 \\ &= 4x^2 - 18x + 22 \end{aligned}$$

$$109) x^2y + 4xy^2$$

$$\Rightarrow (\text{주어진 식}) = 3x^2y + 2xy^2 - 2x^2y + 2xy^2 = x^2y + 4xy^2$$

$$110) -5a + b + 7$$

$$\Rightarrow (\text{주어진 식}) = 3 - 5a + b + 4 = -5a + b + 7$$

$$111) -9x^2 + 3x + 3$$

$$\begin{aligned} \Rightarrow -3x(x-4) - (8x^2y + 12xy - 4y) \div \frac{4}{3}y \\ &= -3x^2 + 12x - (8x^2y + 12xy - 4y) \times \frac{3}{4y} \\ &= -3x^2 + 12x - 6x^2 - 9x + 3 \end{aligned}$$

$$= -9x^2 + 3x + 3$$

$$112) -28a^3b^3 - 24a^2b^4$$

$$\begin{aligned} \Rightarrow \{2ab(a-3b) - (-3a^2b)^2 \div a^2b\} \times 4ab^2 \\ &= \left\{2a^2b - 6ab^2 - 9a^4b^2 \times \frac{1}{a^2b}\right\} \times 4ab^2 \\ &= (2a^2b - 6ab^2 - 9a^2b) \times 4ab^2 \\ &= (-7a^2b - 6ab^2) \times 4ab^2 \\ &= -28a^3b^3 - 24a^2b^4 \end{aligned}$$

$$113) 5a^2 + 5ab + 2a$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 4a^2 - ab + 5a + a^2 + 6ab - 3a \\ &= 5a^2 + 5ab + 2a \end{aligned}$$

$$114) -4a^2 + 2ab + 2a$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= -12a^2 + 2ab - 6a + 8a^2 + 8a \\ &= -4a^2 + 2ab + 2a \end{aligned}$$

$$115) 18xy^2 - 14y^2$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 2xy^2 - 6y^2 - (8y^2 - 16xy^2) \\ &= 2xy^2 - 6y^2 - 8y^2 + 16xy^2 \\ &= 18xy^2 - 14y^2 \end{aligned}$$

$$116) 3a^2b - 2ab$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= 6a^2b - 2ab + 4a - (3a^2b + 4a) \\ &= 6a^2b - 2ab + 4a - 3a^2b - 4a \\ &= 3a^2b - 2ab \end{aligned}$$

$$117) -9x - 4y$$

$$\begin{aligned} \Rightarrow (\text{주어진 식}) &= (2x^2y - 8xy^2) \times \frac{3}{2xy} - (9x^2y - 6xy^2) \times \frac{4}{3xy} \\ &= 3x - 12y - (12x - 8y) = -9x - 4y \end{aligned}$$

$$118) 9x^2 - 15xy - 2y$$

$$119) 6x^2 + 3x$$

$$\begin{aligned} \Rightarrow -3x(x-5) + (6x^2y - 8xy) \div \frac{2}{3}y \\ &= -3x^2 + 15x + (6x^2y - 8xy) \times \frac{3}{2y} \\ &= -3x^2 + 15x + 6x^2y \times \frac{3}{2y} - 8xy \times \frac{3}{2y} \\ &= -3x^2 + 15x + 9x^2 - 12x \\ &= 6x^2 + 3x \end{aligned}$$

$$120) -3ab - 1$$