

すきプリ 中学数学

## 多項式の計算【乗除】

## 目次

単項式と多項式の計算【乗法】

単項式と多項式の計算【除法】

単項式と多項式の計算【乗除】

## 問題

単項式と多項式の乗法を計算してみましょう。

$$-\frac{1}{8}x(9x - 9z + 1)$$

$$2x(10y + 4)$$

$$z(-9x - 8y + 11z)$$

$$-\frac{1}{10}b(14a - 15)$$

$$(3a - 3) \times \frac{1}{2}b$$

$$\begin{aligned} & -\frac{1}{8}x(9x - 9z + 1) \\ &= -\frac{1}{8}x \times 9x - \frac{1}{8}x \times (-9z) - \frac{1}{8}x \times 1 \\ &= -\frac{9}{8}x^2 + \frac{9}{8}xz - \frac{1}{8}x \end{aligned}$$

$$\begin{aligned} & 2x(10y + 4) \\ &= 2x \times 10y + 2x \times 4 \\ &= 20xy + 8x \end{aligned}$$

$$\begin{aligned} & z(-9x - 8y + 11z) \\ &= z \times (-9x) + z \times (-8y) + z \times 11z \\ &= -9xz - 8yz + 11z^2 \end{aligned}$$

$$\begin{aligned} & -\frac{1}{10}b(14a - 15) \\ &= -\frac{1}{10}b \times 14a - \frac{1}{10}b \times (-15) \\ &= -\frac{7}{5}ab + \frac{3}{2}b \end{aligned}$$

$$\begin{aligned} & (3a - 3) \times \frac{1}{2}b \\ &= 3a \times \frac{1}{2}b - 3 \times \frac{1}{2}b \\ &= \frac{3}{2}ab - \frac{3}{2}b \end{aligned}$$

$$\frac{1}{8}a(-2b + 3c - 5)$$

$$(-5x + 4y - 14z) \times \left(-\frac{1}{10}x\right)$$

$$(3x + 1) \times \frac{1}{4}y$$

$$y(-8x + 3y)$$

$$(-3y + 9) \times \frac{1}{2}y$$

$$\begin{aligned} & \frac{1}{8}a(-2b + 3c - 5) \\ &= \frac{1}{8}a \times (-2b) + \frac{1}{8}a \times 3c + \frac{1}{8}a \times (-5) \\ &= -\frac{1}{4}ab + \frac{3}{8}ac - \frac{5}{8}a \end{aligned}$$

$$\begin{aligned} & (-5x + 4y - 14z) \times \left(-\frac{1}{10}x\right) \\ &= -5x \times \left(-\frac{1}{10}x\right) + 4y \times \left(-\frac{1}{10}x\right) - 14z \times \left(-\frac{1}{10}x\right) \\ &= \frac{1}{2}x^2 - \frac{2}{5}xy + \frac{7}{5}xz \end{aligned}$$

$$\begin{aligned} & (3x + 1) \times \frac{1}{4}y \\ &= 3x \times \frac{1}{4}y + 1 \times \frac{1}{4}y \\ &= \frac{3}{4}xy + \frac{1}{4}y \end{aligned}$$

$$\begin{aligned} & y(-8x + 3y) \\ &= y \times (-8x) + y \times 3y \\ &= -8xy + 3y^2 \end{aligned}$$

$$\begin{aligned} & (-3y + 9) \times \frac{1}{2}y \\ &= -3y \times \frac{1}{2}y + 9 \times \frac{1}{2}y \\ &= -\frac{3}{2}y^2 + \frac{9}{2}y \end{aligned}$$

$$-\frac{1}{8}y(6x + 9y)$$

$$\frac{1}{10}x(-15y - 6z + 15)$$

$$(-8y - 3) \times \left(-\frac{1}{6}x\right)$$

$$(9y + 5z - 14) \times \left(-\frac{1}{4}z\right)$$

$$(4b + 1) \times (-4a)$$



$$\begin{aligned}& -\frac{1}{8}y(6x + 9y) \\&= -\frac{1}{8}y \times 6x - \frac{1}{8}y \times 9y \\&= -\frac{3}{4}xy - \frac{9}{8}y^2\end{aligned}$$

$$\begin{aligned}& \frac{1}{10}x(-15y - 6z + 15) \\&= \frac{1}{10}x \times (-15y) + \frac{1}{10}x \times (-6z) + \frac{1}{10}x \times 15 \\&= -\frac{3}{2}xy - \frac{3}{5}xz + \frac{3}{2}x\end{aligned}$$

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

$$\begin{aligned}& (9y + 5z - 14) \times \left(-\frac{1}{4}z\right) \\&= 9y \times \left(-\frac{1}{4}z\right) + 5z \times \left(-\frac{1}{4}z\right) - 14 \times \left(-\frac{1}{4}z\right) \\&= -\frac{9}{4}yz - \frac{5}{4}z^2 + \frac{7}{2}z\end{aligned}$$

$$\begin{aligned}& (4b + 1) \times (-4a) \\&= 4b \times (-4a) + 1 \times (-4a) \\&= -16ab - 4a\end{aligned}$$

$$\frac{1}{5}x(9y + 3z + 6)$$

$$(-3x - 4z + 4) \times \frac{2}{5}z$$

$$-\frac{1}{6}b(3a - 5)$$

$$(2x + 13) \times y$$

$$\frac{2}{5}y(3x - 4y)$$

$$\begin{aligned} & \frac{1}{5}x(9y + 3z + 6) \\ &= \frac{1}{5}x \times 9y + \frac{1}{5}x \times 3z + \frac{1}{5}x \times 6 \\ &= \frac{9}{5}xy + \frac{3}{5}xz + \frac{6}{5}x \end{aligned}$$

$$\begin{aligned} & (-3x - 4z + 4) \times \frac{2}{5}z \\ &= -3x \times \frac{2}{5}z - 4z \times \frac{2}{5}z + 4 \times \frac{2}{5}z \\ &= -\frac{6}{5}xz - \frac{8}{5}z^2 + \frac{8}{5}z \end{aligned}$$

$$\begin{aligned} & -\frac{1}{6}b(3a - 5) \\ &= -\frac{1}{6}b \times 3a - \frac{1}{6}b \times (-5) \\ &= -\frac{1}{2}ab + \frac{5}{6}b \end{aligned}$$

$$\begin{aligned} & (2x + 13) \times y \\ &= 2x \times y + 13 \times y \\ &= 2xy + 13y \end{aligned}$$

$$\begin{aligned} & \frac{2}{5}y(3x - 4y) \\ &= \frac{2}{5}y \times 3x + \frac{2}{5}y \times (-4y) \\ &= \frac{6}{5}xy - \frac{8}{5}y^2 \end{aligned}$$

$$-\frac{4}{5}a(2b + c - 2)$$

$$\frac{1}{8}b(-4b - 12)$$

$$(a + 8) \times a$$

$$(3x - 3) \times \frac{2}{7}y$$

$$\frac{1}{8}y(-10x + 10y + 5z)$$

$$\begin{aligned} & -\frac{4}{5}a(2b + c - 2) \\ &= -\frac{4}{5}a \times 2b - \frac{4}{5}a \times c - \frac{4}{5}a \times (-2) \\ &= -\frac{8}{5}ab - \frac{4}{5}ac + \frac{8}{5}a \end{aligned}$$

$$\begin{aligned} & \frac{1}{8}b(-4b - 12) \\ &= \frac{1}{8}b \times (-4b) + \frac{1}{8}b \times (-12) \\ &= -\frac{1}{2}b^2 - \frac{3}{2}b \end{aligned}$$

$$\begin{aligned} & (a + 8) \times a \\ &= a \times a + 8 \times a \\ &= a^2 + 8a \end{aligned}$$

$$\begin{aligned} & (3x - 3) \times \frac{2}{7}y \\ &= 3x \times \frac{2}{7}y - 3 \times \frac{2}{7}y \\ &= \frac{6}{7}xy - \frac{6}{7}y \end{aligned}$$

$$\begin{aligned} & \frac{1}{8}y(-10x + 10y + 5z) \\ &= \frac{1}{8}y \times (-10x) + \frac{1}{8}y \times 10y + \frac{1}{8}y \times 5z \\ &= -\frac{5}{4}xy + \frac{5}{4}y^2 + \frac{5}{8}yz \end{aligned}$$

$$-\frac{1}{10}z(15y - 15z - 2)$$

$$2a(7a + 4c - 4)$$

$$(7y + 7) \times y$$

$$-a(-2a - 6b - c)$$

$$a(5a + 4c + 4)$$

$$\begin{aligned} & -\frac{1}{10}z(15y - 15z - 2) \\ &= -\frac{1}{10}z \times 15y - \frac{1}{10}z \times (-15z) - \frac{1}{10}z \times (-2) \\ &= -\frac{3}{2}yz + \frac{3}{2}z^2 + \frac{1}{5}z \end{aligned}$$

$$\begin{aligned} & 2a(7a + 4c - 4) \\ &= 2a \times 7a + 2a \times 4c + 2a \times (-4) \\ &= 14a^2 + 8ac - 8a \end{aligned}$$

$$\begin{aligned} & (7y + 7) \times y \\ &= 7y \times y + 7 \times y \\ &= 7y^2 + 7y \end{aligned}$$

$$\begin{aligned} & -a(-2a - 6b - c) \\ &= -a \times (-2a) - a \times (-6b) - a \times (-c) \\ &= 2a^2 + 6ab + ac \end{aligned}$$

$$\begin{aligned} & a(5a + 4c + 4) \\ &= a \times 5a + a \times 4c + a \times 4 \\ &= 5a^2 + 4ac + 4a \end{aligned}$$

$$(-4x + 2y + 4) \times \frac{2}{7}x$$

$$-\frac{1}{6}x(4y - 3)$$

$$-2x(10y + 2z + 10)$$

$$\frac{4}{9}x(-6x + 3y - 2)$$

$$(-2y + 3z + 8) \times (-y)$$



$$\begin{aligned} & (-4x + 2y + 4) \times \frac{2}{7}x \\ &= -4x \times \frac{2}{7}x + 2y \times \frac{2}{7}x + 4 \times \frac{2}{7}x \\ &= -\frac{8}{7}x^2 + \frac{4}{7}xy + \frac{8}{7}x \end{aligned}$$

$$\begin{aligned} & -\frac{1}{6}x(4y - 3) \\ &= -\frac{1}{6}x \times 4y - \frac{1}{6}x \times (-3) \\ &= -\frac{2}{3}xy + \frac{1}{2}x \end{aligned}$$

$$\begin{aligned} & -2x(10y + 2z + 10) \\ &= -2x \times 10y - 2x \times 2z - 2x \times 10 \\ &= -20xy - 4xz - 20x \end{aligned}$$

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

$$\begin{aligned} & (-2y + 3z + 8) \times (-y) \\ &= -2y \times (-y) + 3z \times (-y) + 8 \times (-y) \\ &= 2y^2 - 3yz - 8y \end{aligned}$$

$$z(-8x - y + 11z)$$

$$(5a - 14b) \times \left(-\frac{1}{6}a\right)$$

$$-3x(2x + 3y)$$

$$x(7x - 2y)$$

$$z(4x + 3z - 6)$$

$$\begin{aligned} & z(-8x - y + 11z) \\ &= z \times (-8x) + z \times (-y) + z \times 11z \\ &= -8xz - yz + 11z^2 \end{aligned}$$

$$\begin{aligned} & (5a - 14b) \times \left(-\frac{1}{6}a\right) \\ &= 5a \times \left(-\frac{1}{6}a\right) - 14b \times \left(-\frac{1}{6}a\right) \\ &= -\frac{5}{6}a^2 + \frac{7}{3}ab \end{aligned}$$

$$\begin{aligned} & -3x(2x + 3y) \\ &= -3x \times 2x - 3x \times 3y \\ &= -6x^2 - 9xy \end{aligned}$$

$$\begin{aligned} & x(7x - 2y) \\ &= x \times 7x + x \times (-2y) \\ &= 7x^2 - 2xy \end{aligned}$$

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

$$-x(4x + 6y + 7z)$$

$$\frac{3}{8}y(12x + 6)$$

$$b(-8a + 14c - 10)$$

$$b(12b - 10c - 14)$$

$$(9a + 5c - 1) \times \frac{1}{6}b$$

$$\begin{aligned} & -x(4x + 6y + 7z) \\ &= -x \times 4x - x \times 6y - x \times 7z \\ &= -4x^2 - 6xy - 7xz \end{aligned}$$

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

$$\begin{aligned} & b(-8a + 14c - 10) \\ &= b \times (-8a) + b \times 14c + b \times (-10) \\ &= -8ab + 14bc - 10b \end{aligned}$$

$$\begin{aligned} & b(12b - 10c - 14) \\ &= b \times 12b + b \times (-10c) + b \times (-14) \\ &= 12b^2 - 10bc - 14b \end{aligned}$$

$$\begin{aligned} & (9a + 5c - 1) \times \frac{1}{6}b \\ &= 9a \times \frac{1}{6}b + 5c \times \frac{1}{6}b - 1 \times \frac{1}{6}b \\ &= \frac{3}{2}ab + \frac{5}{6}bc - \frac{1}{6}b \end{aligned}$$

$$-x(-5x - 8y - z)$$

$$-b(-10a + b + 9)$$

$$-2a(4b + 7c + 9)$$

$$(-3x + 9y) \times \left(-\frac{1}{5}y\right)$$

$$\frac{1}{5}x(9x + y + 7z)$$

$$\begin{aligned} & -x(-5x - 8y - z) \\ &= -x \times (-5x) - x \times (-8y) - x \times (-z) \\ &= 5x^2 + 8xy + xz \end{aligned}$$

$$\begin{aligned} & -b(-10a + b + 9) \\ &= -b \times (-10a) - b \times b - b \times 9 \\ &= 10ab - b^2 - 9b \end{aligned}$$

$$\begin{aligned} & -2a(4b + 7c + 9) \\ &= -2a \times 4b - 2a \times 7c - 2a \times 9 \\ &= -8ab - 14ac - 18a \end{aligned}$$

$$\begin{aligned} & (-3x + 9y) \times \left(-\frac{1}{5}y\right) \\ &= -3x \times \left(-\frac{1}{5}y\right) + 9y \times \left(-\frac{1}{5}y\right) \\ &= \frac{3}{5}xy - \frac{9}{5}y^2 \end{aligned}$$

$$\begin{aligned} & \frac{1}{5}x(9x + y + 7z) \\ &= \frac{1}{5}x \times 9x + \frac{1}{5}x \times y + \frac{1}{5}x \times 7z \\ &= \frac{9}{5}x^2 + \frac{1}{5}xy + \frac{7}{5}xz \end{aligned}$$

## 問題

単項式と多項式の除法を計算してみましょう。



$$(-9z^3 - 8z^2 + 3z) \div (-7z)$$

$$(15xy - 10y^2 - 12yz) \div 2y$$

$$(8a^2 - 7ab - 3ac) \div (-15a)$$

$$(-x^2 - 15x) \div (-14x)$$

$$(-10ab + 15b^2) \div (-7b)$$

$$\begin{aligned} & (-9z^3 - 8z^2 + 3z) \div (-7z) \\ &= (-9z^3 - 8z^2 + 3z) \times \left(-\frac{1}{7z}\right) \\ &= -9z^3 \times \left(-\frac{1}{7z}\right) - 8z^2 \times \left(-\frac{1}{7z}\right) + 3z \times \left(-\frac{1}{7z}\right) \\ &= \frac{9}{7}z^2 + \frac{8}{7}z - \frac{3}{7} \end{aligned}$$

$$\begin{aligned} & (15xy - 10y^2 - 12yz) \div 2y \\ &= (15xy - 10y^2 - 12yz) \times \frac{1}{2y} \\ &= 15xy \times \frac{1}{2y} - 10y^2 \times \frac{1}{2y} - 12yz \times \frac{1}{2y} \\ &= \frac{15}{2}x - 5y - 6z \end{aligned}$$

$$\begin{aligned} & (8a^2 - 7ab - 3ac) \div (-15a) \\ &= (8a^2 - 7ab - 3ac) \times \left(-\frac{1}{15a}\right) \\ &= 8a^2 \times \left(-\frac{1}{15a}\right) - 7ab \times \left(-\frac{1}{15a}\right) - 3ac \times \left(-\frac{1}{15a}\right) \\ &= -\frac{8}{15}a + \frac{7}{15}b + \frac{1}{5}c \end{aligned}$$

$$\begin{aligned} & (-x^2 - 15x) \div (-14x) \\ &= (-x^2 - 15x) \times \left(-\frac{1}{14x}\right) \\ &= -x^2 \times \left(-\frac{1}{14x}\right) - 15x \times \left(-\frac{1}{14x}\right) \\ &= \frac{1}{14}x + \frac{15}{14} \end{aligned}$$

$$\begin{aligned} & (-10ab + 15b^2) \div (-7b) \\ &= (-10ab + 15b^2) \times \left(-\frac{1}{7b}\right) \\ &= -10ab \times \left(-\frac{1}{7b}\right) + 15b^2 \times \left(-\frac{1}{7b}\right) \\ &= \frac{10}{7}a - \frac{15}{7}b \end{aligned}$$

$$(2ac - 13c^2 - 3c) \div (-5c)$$

$$(-2b^3 - 4b^2 - 6b) \div 4b$$

$$(2c^3 - 15c^2 + 7c) \div (-15c)$$

$$(-14b^3 - 9b^2 - 11b) \div (-8b)$$

$$(-9x^2 - 5x) \div \frac{1}{2}x$$

$$\begin{aligned}
& (2ac - 13c^2 - 3c) \div (-5c) \\
&= (2ac - 13c^2 - 3c) \times \left(-\frac{1}{5c}\right) \\
&= 2ac \times \left(-\frac{1}{5c}\right) - 13c^2 \times \left(-\frac{1}{5c}\right) - 3c \times \left(-\frac{1}{5c}\right) \\
&= -\frac{2}{5}a + \frac{13}{5}c + \frac{3}{5}
\end{aligned}$$

$$\begin{aligned}
& (-2b^3 - 4b^2 - 6b) \div 4b \\
&= (-2b^3 - 4b^2 - 6b) \times \frac{1}{4b} \\
&= -2b^3 \times \frac{1}{4b} - 4b^2 \times \frac{1}{4b} - 6b \times \frac{1}{4b} \\
&= -\frac{1}{2}b^2 - b - \frac{3}{2}
\end{aligned}$$

$$\begin{aligned}
& (2c^3 - 15c^2 + 7c) \div (-15c) \\
&= (2c^3 - 15c^2 + 7c) \times \left(-\frac{1}{15c}\right) \\
&= 2c^3 \times \left(-\frac{1}{15c}\right) - 15c^2 \times \left(-\frac{1}{15c}\right) + 7c \times \left(-\frac{1}{15c}\right) \\
&= -\frac{2}{15}c^2 + c - \frac{7}{15}
\end{aligned}$$

$$\begin{aligned}
& (-14b^3 - 9b^2 - 11b) \div (-8b) \\
&= (-14b^3 - 9b^2 - 11b) \times \left(-\frac{1}{8b}\right) \\
&= -14b^3 \times \left(-\frac{1}{8b}\right) - 9b^2 \times \left(-\frac{1}{8b}\right) - 11b \times \left(-\frac{1}{8b}\right) \\
&= \frac{7}{4}b^2 + \frac{9}{8}b + \frac{11}{8}
\end{aligned}$$

$$\begin{aligned}
& (-9x^2 - 5x) \div \frac{1}{2}x \\
&= (-9x^2 - 5x) \times \frac{2}{x} \\
&= -9x^2 \times \frac{2}{x} - 5x \times \frac{2}{x} \\
&= -18x - 10
\end{aligned}$$

$$(-6ab - 4b^2 - 7b) \div (-11b)$$

$$(15ab + 2b) \div 11b$$

$$(5xz + 9z^2 + z) \div \left(-\frac{1}{8}z\right)$$

$$(-3ab + 2b) \div \frac{7}{6}b$$

$$(10x^2 + 3x) \div 13x$$

$$\begin{aligned}
& (-6ab - 4b^2 - 7b) \div (-11b) \\
&= (-6ab - 4b^2 - 7b) \times \left(-\frac{1}{11b}\right) \\
&= -6ab \times \left(-\frac{1}{11b}\right) - 4b^2 \times \left(-\frac{1}{11b}\right) - 7b \times \left(-\frac{1}{11b}\right) \\
&= \frac{6}{11}a + \frac{4}{11}b + \frac{7}{11}
\end{aligned}$$

$$\begin{aligned}
& (15ab + 2b) \div 11b \\
&= (15ab + 2b) \times \frac{1}{11b} \\
&= 15ab \times \frac{1}{11b} + 2b \times \frac{1}{11b} \\
&= \frac{15}{11}a + \frac{2}{11}
\end{aligned}$$

$$\begin{aligned}
& (5xz + 9z^2 + z) \div \left(-\frac{1}{8}z\right) \\
&= (5xz + 9z^2 + z) \times \left(-\frac{8}{z}\right) \\
&= 5xz \times \left(-\frac{8}{z}\right) + 9z^2 \times \left(-\frac{8}{z}\right) + z \times \left(-\frac{8}{z}\right) \\
&= -40x - 72z - 8
\end{aligned}$$

$$\begin{aligned}
& (-3ab + 2b) \div \frac{7}{6}b \\
&= (-3ab + 2b) \times \frac{6}{7b} \\
&= -3ab \times \frac{6}{7b} + 2b \times \frac{6}{7b} \\
&= -\frac{18}{7}a + \frac{12}{7}
\end{aligned}$$

$$\begin{aligned}
& (10x^2 + 3x) \div 13x \\
&= (10x^2 + 3x) \times \frac{1}{13x} \\
&= 10x^2 \times \frac{1}{13x} + 3x \times \frac{1}{13x} \\
&= \frac{10}{13}x + \frac{3}{13}
\end{aligned}$$

$$(7ab - 15a) \div (-14a)$$

$$(2x^2 - 12x) \div (-x)$$

$$(11c^3 - 3c^2 - 7c) \div 7c$$

$$(-15b^2 + 2bc + 15b) \div (-3b)$$

$$(-15x^2 - 4xy) \div 6x$$

$$\begin{aligned} & (7ab - 15a) \div (-14a) \\ &= (7ab - 15a) \times \left(-\frac{1}{14a}\right) \\ &= 7ab \times \left(-\frac{1}{14a}\right) - 15a \times \left(-\frac{1}{14a}\right) \\ &= -\frac{1}{2}b + \frac{15}{14} \end{aligned}$$

$$\begin{aligned} & (2x^2 - 12x) \div (-x) \\ &= (2x^2 - 12x) \times \left(-\frac{1}{x}\right) \\ &= 2x^2 \times \left(-\frac{1}{x}\right) - 12x \times \left(-\frac{1}{x}\right) \\ &= -2x + 12 \end{aligned}$$

$$\begin{aligned} & (11c^3 - 3c^2 - 7c) \div 7c \\ &= (11c^3 - 3c^2 - 7c) \times \frac{1}{7c} \\ &= 11c^3 \times \frac{1}{7c} - 3c^2 \times \frac{1}{7c} - 7c \times \frac{1}{7c} \\ &= \frac{11}{7}c^2 - \frac{3}{7}c - 1 \end{aligned}$$

$$\begin{aligned} & (-15b^2 + 2bc + 15b) \div (-3b) \\ &= (-15b^2 + 2bc + 15b) \times \left(-\frac{1}{3b}\right) \\ &= -15b^2 \times \left(-\frac{1}{3b}\right) + 2bc \times \left(-\frac{1}{3b}\right) + 15b \times \left(-\frac{1}{3b}\right) \\ &= 5b - \frac{2}{3}c - 5 \end{aligned}$$

$$\begin{aligned} & (-15x^2 - 4xy) \div 6x \\ &= (-15x^2 - 4xy) \times \frac{1}{6x} \\ &= -15x^2 \times \frac{1}{6x} - 4xy \times \frac{1}{6x} \\ &= -\frac{5}{2}x - \frac{2}{3}y \end{aligned}$$



$$(ab + b) \div (-b)$$

$$(2xz + z^2 - 7z) \div z$$

$$(8bc - 10c^2 - 9c) \div 2c$$

$$(-5y^2 - 15yz + 2y) \div \left(-\frac{1}{9}y\right)$$

$$(-2a^2 + 14ab) \div (-3a)$$

$$\begin{aligned}
& (ab + b) \div (-b) \\
&= (ab + b) \times \left(-\frac{1}{b}\right) \\
&= ab \times \left(-\frac{1}{b}\right) + b \times \left(-\frac{1}{b}\right) \\
&= -a - 1
\end{aligned}$$

$$\begin{aligned}
& (2xz + z^2 - 7z) \div z \\
&= (2xz + z^2 - 7z) \times \frac{1}{z} \\
&= 2xz \times \frac{1}{z} + z^2 \times \frac{1}{z} - 7z \times \frac{1}{z} \\
&= 2x + z - 7
\end{aligned}$$

$$\begin{aligned}
& (8bc - 10c^2 - 9c) \div 2c \\
&= (8bc - 10c^2 - 9c) \times \frac{1}{2c} \\
&= 8bc \times \frac{1}{2c} - 10c^2 \times \frac{1}{2c} - 9c \times \frac{1}{2c} \\
&= 4b - 5c - \frac{9}{2}
\end{aligned}$$

$$\begin{aligned}
& (-5y^2 - 15yz + 2y) \div \left(-\frac{1}{9}y\right) \\
&= (-5y^2 - 15yz + 2y) \times \left(-\frac{9}{y}\right) \\
&= -5y^2 \times \left(-\frac{9}{y}\right) - 15yz \times \left(-\frac{9}{y}\right) + 2y \times \left(-\frac{9}{y}\right) \\
&= 45y + 135z - 18
\end{aligned}$$

$$\begin{aligned}
& (-2a^2 + 14ab) \div (-3a) \\
&= (-2a^2 + 14ab) \times \left(-\frac{1}{3a}\right) \\
&= -2a^2 \times \left(-\frac{1}{3a}\right) + 14ab \times \left(-\frac{1}{3a}\right) \\
&= \frac{2}{3}a - \frac{14}{3}b
\end{aligned}$$

$$(6x^2 - 6xy + 2xz) \div \left(-\frac{1}{7}x\right)$$

$$(-4ab + 2a) \div (-4a)$$

$$(9y^3 - 6y^2 - 7y) \div 7y$$

$$(-3a^2 + 10a) \div (-13a)$$

$$(8xy + 3xz + 15x) \div \left(-\frac{1}{9}x\right)$$

$$\begin{aligned}
& (6x^2 - 6xy + 2xz) \div \left(-\frac{1}{7}x\right) \\
&= (6x^2 - 6xy + 2xz) \times \left(-\frac{7}{x}\right) \\
&= 6x^2 \times \left(-\frac{7}{x}\right) - 6xy \times \left(-\frac{7}{x}\right) + 2xz \times \left(-\frac{7}{x}\right) \\
&= -42x + 42y - 14z
\end{aligned}$$

$$\begin{aligned}
& (-4ab + 2a) \div (-4a) \\
&= (-4ab + 2a) \times \left(-\frac{1}{4a}\right) \\
&= -4ab \times \left(-\frac{1}{4a}\right) + 2a \times \left(-\frac{1}{4a}\right) \\
&= b - \frac{1}{2}
\end{aligned}$$

$$\begin{aligned}
& (9y^3 - 6y^2 - 7y) \div 7y \\
&= (9y^3 - 6y^2 - 7y) \times \frac{1}{7y} \\
&= 9y^3 \times \frac{1}{7y} - 6y^2 \times \frac{1}{7y} - 7y \times \frac{1}{7y} \\
&= \frac{9}{7}y^2 - \frac{6}{7}y - 1
\end{aligned}$$

$$\begin{aligned}
& (-3a^2 + 10a) \div (-13a) \\
&= (-3a^2 + 10a) \times \left(-\frac{1}{13a}\right) \\
&= -3a^2 \times \left(-\frac{1}{13a}\right) + 10a \times \left(-\frac{1}{13a}\right) \\
&= \frac{3}{13}a - \frac{10}{13}
\end{aligned}$$

$$\begin{aligned}
& (8xy + 3xz + 15x) \div \left(-\frac{1}{9}x\right) \\
&= (8xy + 3xz + 15x) \times \left(-\frac{9}{x}\right) \\
&= 8xy \times \left(-\frac{9}{x}\right) + 3xz \times \left(-\frac{9}{x}\right) + 15x \times \left(-\frac{9}{x}\right) \\
&= -72y - 27z - 135
\end{aligned}$$

$$(5a^3 - 11a^2 - 4a) \div (-9a)$$

$$(5x^2 + 3x) \div (-11x)$$

$$(14b^2 - 7b) \div 9b$$

$$(-xy - 12y^2) \div 2y$$

$$(14z^3 + 2z^2 + 9z) \div (-11z)$$

$$\begin{aligned} & (5a^3 - 11a^2 - 4a) \div (-9a) \\ &= (5a^3 - 11a^2 - 4a) \times \left(-\frac{1}{9a}\right) \\ &= 5a^3 \times \left(-\frac{1}{9a}\right) - 11a^2 \times \left(-\frac{1}{9a}\right) - 4a \times \left(-\frac{1}{9a}\right) \\ &= -\frac{5}{9}a^2 + \frac{11}{9}a + \frac{4}{9} \end{aligned}$$

$$\begin{aligned} & (5x^2 + 3x) \div (-11x) \\ &= (5x^2 + 3x) \times \left(-\frac{1}{11x}\right) \\ &= 5x^2 \times \left(-\frac{1}{11x}\right) + 3x \times \left(-\frac{1}{11x}\right) \\ &= -\frac{5}{11}x - \frac{3}{11} \end{aligned}$$

$$\begin{aligned} & (14b^2 - 7b) \div 9b \\ &= (14b^2 - 7b) \times \frac{1}{9b} \\ &= 14b^2 \times \frac{1}{9b} - 7b \times \frac{1}{9b} \\ &= \frac{14}{9}b - \frac{7}{9} \end{aligned}$$

$$\begin{aligned} & (-xy - 12y^2) \div 2y \\ &= (-xy - 12y^2) \times \frac{1}{2y} \\ &= -xy \times \frac{1}{2y} - 12y^2 \times \frac{1}{2y} \\ &= -\frac{1}{2}x - 6y \end{aligned}$$

$$\begin{aligned} & (14z^3 + 2z^2 + 9z) \div (-11z) \\ &= (14z^3 + 2z^2 + 9z) \times \left(-\frac{1}{11z}\right) \\ &= 14z^3 \times \left(-\frac{1}{11z}\right) + 2z^2 \times \left(-\frac{1}{11z}\right) + 9z \times \left(-\frac{1}{11z}\right) \\ &= -\frac{14}{11}z^2 - \frac{2}{11}z - \frac{9}{11} \end{aligned}$$

$$(-10b^2 - 9b) \div 2b$$

$$(-9xz - 14yz + 6z^2) \div z$$

$$(13y^2 + 3yz - 8y) \div 7y$$

$$(3a^2 - 14ab) \div 2a$$

$$(2xz - yz + 12z) \div (-z)$$

$$\begin{aligned} & (-10b^2 - 9b) \div 2b \\ &= (-10b^2 - 9b) \times \frac{1}{2b} \\ &= -10b^2 \times \frac{1}{2b} - 9b \times \frac{1}{2b} \\ &= -5b - \frac{9}{2} \end{aligned}$$

$$\begin{aligned} & (-9xz - 14yz + 6z^2) \div z \\ &= (-9xz - 14yz + 6z^2) \times \frac{1}{z} \\ &= -9xz \times \frac{1}{z} - 14yz \times \frac{1}{z} + 6z^2 \times \frac{1}{z} \\ &= -9x - 14y + 6z \end{aligned}$$

$$\begin{aligned} & (13y^2 + 3yz - 8y) \div 7y \\ &= (13y^2 + 3yz - 8y) \times \frac{1}{7y} \\ &= 13y^2 \times \frac{1}{7y} + 3yz \times \frac{1}{7y} - 8y \times \frac{1}{7y} \\ &= \frac{13}{7}y + \frac{3}{7}z - \frac{8}{7} \end{aligned}$$

$$\begin{aligned} & (3a^2 - 14ab) \div 2a \\ &= (3a^2 - 14ab) \times \frac{1}{2a} \\ &= 3a^2 \times \frac{1}{2a} - 14ab \times \frac{1}{2a} \\ &= \frac{3}{2}a - 7b \end{aligned}$$

$$\begin{aligned} & (2xz - yz + 12z) \div (-z) \\ &= (2xz - yz + 12z) \times \left(-\frac{1}{z}\right) \\ &= 2xz \times \left(-\frac{1}{z}\right) - yz \times \left(-\frac{1}{z}\right) + 12z \times \left(-\frac{1}{z}\right) \\ &= -2x + y - 12 \end{aligned}$$



$$(-13ab + 3b^2) \div 5b$$

$$(-7xy + 4x) \div (-7x)$$

$$(-14a^2 - 6ab) \div 5a$$

$$(2a^2 + 2ac - 15a) \div \frac{1}{9}a$$

$$(-15b^2 - 15b) \div (-6b)$$

$$\begin{aligned} & (-13ab + 3b^2) \div 5b \\ &= (-13ab + 3b^2) \times \frac{1}{5b} \\ &= -13ab \times \frac{1}{5b} + 3b^2 \times \frac{1}{5b} \\ &= -\frac{13}{5}a + \frac{3}{5}b \end{aligned}$$

$$\begin{aligned} & (-7xy + 4x) \div (-7x) \\ &= (-7xy + 4x) \times \left(-\frac{1}{7x}\right) \\ &= -7xy \times \left(-\frac{1}{7x}\right) + 4x \times \left(-\frac{1}{7x}\right) \\ &= y - \frac{4}{7} \end{aligned}$$

$$\begin{aligned} & (-14a^2 - 6ab) \div 5a \\ &= (-14a^2 - 6ab) \times \frac{1}{5a} \\ &= -14a^2 \times \frac{1}{5a} - 6ab \times \frac{1}{5a} \\ &= -\frac{14}{5}a - \frac{6}{5}b \end{aligned}$$

$$\begin{aligned} & (2a^2 + 2ac - 15a) \div \frac{1}{9}a \\ &= (2a^2 + 2ac - 15a) \times \frac{9}{a} \\ &= 2a^2 \times \frac{9}{a} + 2ac \times \frac{9}{a} - 15a \times \frac{9}{a} \\ &= 18a + 18c - 135 \end{aligned}$$

$$\begin{aligned} & (-15b^2 - 15b) \div (-6b) \\ &= (-15b^2 - 15b) \times \left(-\frac{1}{6b}\right) \\ &= -15b^2 \times \left(-\frac{1}{6b}\right) - 15b \times \left(-\frac{1}{6b}\right) \\ &= \frac{5}{2}b + \frac{5}{2} \end{aligned}$$

$$(8ab - 8b^2) \div (-3b)$$

$$(-7a^2 - 3ab) \div \frac{1}{4}a$$

$$(-8xy + x) \div 5x$$

$$(8b^2 - 2b) \div 5b$$

$$(9ab - 2bc - 5b) \div 4b$$

$$\begin{aligned} & (8ab - 8b^2) \div (-3b) \\ &= (8ab - 8b^2) \times \left(-\frac{1}{3b}\right) \\ &= 8ab \times \left(-\frac{1}{3b}\right) - 8b^2 \times \left(-\frac{1}{3b}\right) \\ &= -\frac{8}{3}a + \frac{8}{3}b \end{aligned}$$

$$\begin{aligned} & (-7a^2 - 3ab) \div \frac{1}{4}a \\ &= (-7a^2 - 3ab) \times \frac{4}{a} \\ &= -7a^2 \times \frac{4}{a} - 3ab \times \frac{4}{a} \\ &= -28a - 12b \end{aligned}$$

$$\begin{aligned} & (-8xy + x) \div 5x \\ &= (-8xy + x) \times \frac{1}{5x} \\ &= -8xy \times \frac{1}{5x} + x \times \frac{1}{5x} \\ &= -\frac{8}{5}y + \frac{1}{5} \end{aligned}$$

$$\begin{aligned} & (8b^2 - 2b) \div 5b \\ &= (8b^2 - 2b) \times \frac{1}{5b} \\ &= 8b^2 \times \frac{1}{5b} - 2b \times \frac{1}{5b} \\ &= \frac{8}{5}b - \frac{2}{5} \end{aligned}$$

$$\begin{aligned} & (9ab - 2bc - 5b) \div 4b \\ &= (9ab - 2bc - 5b) \times \frac{1}{4b} \\ &= 9ab \times \frac{1}{4b} - 2bc \times \frac{1}{4b} - 5b \times \frac{1}{4b} \\ &= \frac{9}{4}a - \frac{1}{2}c - \frac{5}{4} \end{aligned}$$

## 問題

単項式と多項式の乗除を計算してみましょう。

$$(-6x + 6) \times (-y)$$

$$(-6ab - a) \div 3a$$

$$(-2x - 3y + 6) \times \frac{3}{8}z$$

$$(5b^3 - 15b^2 + 11b) \div 2b$$

$$(8b^2 - 3b) \div 9b$$

$$\begin{aligned} & (-6x + 6) \times (-y) \\ &= -6x \times (-y) + 6 \times (-y) \\ &= 6xy - 6y \end{aligned}$$

$$\begin{aligned} & (-6ab - a) \div 3a \\ &= (-6ab - a) \times \frac{1}{3a} \\ &= -6ab \times \frac{1}{3a} - a \times \frac{1}{3a} \\ &= -2b - \frac{1}{3} \end{aligned}$$

$$\begin{aligned} & (-2x - 3y + 6) \times \frac{3}{8}z \\ &= -2x \times \frac{3}{8}z - 3y \times \frac{3}{8}z + 6 \times \frac{3}{8}z \\ &= -\frac{3}{4}xz - \frac{9}{8}yz + \frac{9}{4}z \end{aligned}$$

$$\begin{aligned} & (5b^3 - 15b^2 + 11b) \div 2b \\ &= (5b^3 - 15b^2 + 11b) \times \frac{1}{2b} \\ &= 5b^3 \times \frac{1}{2b} - 15b^2 \times \frac{1}{2b} + 11b \times \frac{1}{2b} \\ &= \frac{5}{2}b^2 - \frac{15}{2}b + \frac{11}{2} \end{aligned}$$

$$\begin{aligned} & (8b^2 - 3b) \div 9b \\ &= (8b^2 - 3b) \times \frac{1}{9b} \\ &= 8b^2 \times \frac{1}{9b} - 3b \times \frac{1}{9b} \\ &= \frac{8}{9}b - \frac{1}{3} \end{aligned}$$

$$(-10x^2 - 9xy) \div (-11x)$$

$$(3y + z - 6) \times 3z$$

$$\frac{1}{8}y(-x - 5y)$$

$$(14ab + 12a) \div (-2a)$$

$$-x(2x + 8)$$



$$\begin{aligned} & (-10x^2 - 9xy) \div (-11x) \\ &= (-10x^2 - 9xy) \times \left(-\frac{1}{11x}\right) \\ &= -10x^2 \times \left(-\frac{1}{11x}\right) - 9xy \times \left(-\frac{1}{11x}\right) \\ &= \frac{10}{11}x + \frac{9}{11}y \end{aligned}$$

$$\begin{aligned} & (3y + z - 6) \times 3z \\ &= 3y \times 3z + z \times 3z - 6 \times 3z \\ &= 9yz + 3z^2 - 18z \end{aligned}$$

$$\begin{aligned} & \frac{1}{8}y(-x - 5y) \\ &= \frac{1}{8}y \times (-x) + \frac{1}{8}y \times (-5y) \\ &= -\frac{1}{8}xy - \frac{5}{8}y^2 \end{aligned}$$

$$\begin{aligned} & (14ab + 12a) \div (-2a) \\ &= (14ab + 12a) \times \left(-\frac{1}{2a}\right) \\ &= 14ab \times \left(-\frac{1}{2a}\right) + 12a \times \left(-\frac{1}{2a}\right) \\ &= -7b - 6 \end{aligned}$$

$$\begin{aligned} & -x(2x + 8) \\ &= -x \times 2x - x \times 8 \\ &= -2x^2 - 8x \end{aligned}$$

$$(4x + 12y + 14z) \times \frac{1}{10}x$$

$$(-6a^2 + 13a) \div 8a$$

$$(-12xy - 3y) \div \frac{1}{9}y$$

$$x(10y - 10z + 2)$$

$$(10y - 2) \times 2y$$

$$\begin{aligned} & (4x + 12y + 14z) \times \frac{1}{10}x \\ &= 4x \times \frac{1}{10}x + 12y \times \frac{1}{10}x + 14z \times \frac{1}{10}x \\ &= \frac{2}{5}x^2 + \frac{6}{5}xy + \frac{7}{5}xz \end{aligned}$$

$$\begin{aligned} & (-6a^2 + 13a) \div 8a \\ &= (-6a^2 + 13a) \times \frac{1}{8a} \\ &= -6a^2 \times \frac{1}{8a} + 13a \times \frac{1}{8a} \\ &= -\frac{3}{4}a + \frac{13}{8} \end{aligned}$$

$$\begin{aligned} & (-12xy - 3y) \div \frac{1}{9}y \\ &= (-12xy - 3y) \times \frac{9}{y} \\ &= -12xy \times \frac{9}{y} - 3y \times \frac{9}{y} \\ &= -108x - 27 \end{aligned}$$

$$\begin{aligned} & x(10y - 10z + 2) \\ &= x \times 10y + x \times (-10z) + x \times 2 \\ &= 10xy - 10xz + 2x \end{aligned}$$

$$\begin{aligned} & (10y - 2) \times 2y \\ &= 10y \times 2y - 2 \times 2y \\ &= 20y^2 - 4y \end{aligned}$$

$$(-13a - 5) \times b$$

$$(-14xz + yz + 2z^2) \div 14z$$

$$(-5xy - 8yz + 9y) \div (-10y)$$

$$(a^2 + 6ab + 5ac) \div 2a$$

$$-2b(-2b - 7)$$

$$\begin{aligned} & (-13a - 5) \times b \\ &= -13a \times b - 5 \times b \\ &= -13ab - 5b \end{aligned}$$

$$\begin{aligned} & (-14xz + yz + 2z^2) \div 14z \\ &= (-14xz + yz + 2z^2) \times \frac{1}{14z} \\ &= -14xz \times \frac{1}{14z} + yz \times \frac{1}{14z} + 2z^2 \times \frac{1}{14z} \\ &= -x + \frac{1}{14}y + \frac{1}{7}z \end{aligned}$$

$$\begin{aligned} & (-5xy - 8yz + 9y) \div (-10y) \\ &= (-5xy - 8yz + 9y) \times \left(-\frac{1}{10y}\right) \\ &= -5xy \times \left(-\frac{1}{10y}\right) - 8yz \times \left(-\frac{1}{10y}\right) + 9y \times \left(-\frac{1}{10y}\right) \\ &= \frac{1}{2}x + \frac{4}{5}z - \frac{9}{10} \end{aligned}$$

$$\begin{aligned} & (a^2 + 6ab + 5ac) \div 2a \\ &= (a^2 + 6ab + 5ac) \times \frac{1}{2a} \\ &= a^2 \times \frac{1}{2a} + 6ab \times \frac{1}{2a} + 5ac \times \frac{1}{2a} \\ &= \frac{1}{2}a + 3b + \frac{5}{2}c \end{aligned}$$

$$\begin{aligned} & -2b(-2b - 7) \\ &= -2b \times (-2b) - 2b \times (-7) \\ &= 4b^2 + 14b \end{aligned}$$

$$\frac{1}{10}y(-5x - 4)$$

$$(-15ab + 11bc + 4b) \div (-2b)$$

$$-\frac{3}{4}c(-6b + 6c + 6)$$

$$(-6a^2 - 14ab) \div (-3a)$$

$$(11y^2 - 13y) \div 8y$$

$$\begin{aligned}
& \frac{1}{10}y(-5x-4) \\
&= \frac{1}{10}y \times (-5x) + \frac{1}{10}y \times (-4) \\
&= -\frac{1}{2}xy - \frac{2}{5}y
\end{aligned}$$

$$\begin{aligned}
& (-15ab + 11bc + 4b) \div (-2b) \\
&= (-15ab + 11bc + 4b) \times \left(-\frac{1}{2b}\right) \\
&= -15ab \times \left(-\frac{1}{2b}\right) + 11bc \times \left(-\frac{1}{2b}\right) + 4b \times \left(-\frac{1}{2b}\right) \\
&= \frac{15}{2}a - \frac{11}{2}c - 2
\end{aligned}$$

$$\begin{aligned}
& -\frac{3}{4}c(-6b + 6c + 6) \\
&= -\frac{3}{4}c \times (-6b) - \frac{3}{4}c \times 6c - \frac{3}{4}c \times 6 \\
&= \frac{9}{2}bc - \frac{9}{2}c^2 - \frac{9}{2}c
\end{aligned}$$

$$\begin{aligned}
& (-6a^2 - 14ab) \div (-3a) \\
&= (-6a^2 - 14ab) \times \left(-\frac{1}{3a}\right) \\
&= -6a^2 \times \left(-\frac{1}{3a}\right) - 14ab \times \left(-\frac{1}{3a}\right) \\
&= 2a + \frac{14}{3}b
\end{aligned}$$

$$\begin{aligned}
& (11y^2 - 13y) \div 8y \\
&= (11y^2 - 13y) \times \frac{1}{8y} \\
&= 11y^2 \times \frac{1}{8y} - 13y \times \frac{1}{8y} \\
&= \frac{11}{8}y - \frac{13}{8}
\end{aligned}$$

$$(-2x + 5) \times \left(-\frac{9}{10}x\right)$$

$$-\frac{1}{8}b(-a + b + 3)$$

$$(-6xy + 13y) \div 8y$$

$$x(9x - 12z + 9)$$

$$(-5a^2 + 8a) \div \frac{1}{6}a$$



$$\begin{aligned} & (-2x + 5) \times \left(-\frac{9}{10}x\right) \\ &= -2x \times \left(-\frac{9}{10}x\right) + 5 \times \left(-\frac{9}{10}x\right) \\ &= \frac{9}{5}x^2 - \frac{9}{2}x \end{aligned}$$

$$\begin{aligned} & -\frac{1}{8}b(-a + b + 3) \\ &= -\frac{1}{8}b \times (-a) - \frac{1}{8}b \times b - \frac{1}{8}b \times 3 \\ &= \frac{1}{8}ab - \frac{1}{8}b^2 - \frac{3}{8}b \end{aligned}$$

$$\begin{aligned} & (-6xy + 13y) \div 8y \\ &= (-6xy + 13y) \times \frac{1}{8y} \\ &= -6xy \times \frac{1}{8y} + 13y \times \frac{1}{8y} \\ &= -\frac{3}{4}x + \frac{13}{8} \end{aligned}$$

$$\begin{aligned} & x(9x - 12z + 9) \\ &= x \times 9x + x \times (-12z) + x \times 9 \\ &= 9x^2 - 12xz + 9x \end{aligned}$$

$$\begin{aligned} & (-5a^2 + 8a) \div \frac{1}{6}a \\ &= (-5a^2 + 8a) \times \frac{6}{a} \\ &= -5a^2 \times \frac{6}{a} + 8a \times \frac{6}{a} \\ &= -30a + 48 \end{aligned}$$

$$(-9x^2 + 9xz - 10x) \div (-12x)$$

$$(-4a - c - 1) \times \frac{7}{8}c$$

$$\frac{1}{6}y(3x - 5z + 3)$$

$$(2xy - 14x) \div 13x$$

$$-x(-9x + 8y + 5)$$

$$\begin{aligned}
& (-9x^2 + 9xz - 10x) \div (-12x) \\
&= (-9x^2 + 9xz - 10x) \times \left(-\frac{1}{12x}\right) \\
&= -9x^2 \times \left(-\frac{1}{12x}\right) + 9xz \times \left(-\frac{1}{12x}\right) - 10x \times \left(-\frac{1}{12x}\right) \\
&= \frac{3}{4}x - \frac{3}{4}z + \frac{5}{6}
\end{aligned}$$

$$\begin{aligned}
& (-4a - c - 1) \times \frac{7}{8}c \\
&= -4a \times \frac{7}{8}c - c \times \frac{7}{8}c - 1 \times \frac{7}{8}c \\
&= -\frac{7}{2}ac - \frac{7}{8}c^2 - \frac{7}{8}c
\end{aligned}$$

$$\begin{aligned}
& \frac{1}{6}y(3x - 5z + 3) \\
&= \frac{1}{6}y \times 3x + \frac{1}{6}y \times (-5z) + \frac{1}{6}y \times 3 \\
&= \frac{1}{2}xy - \frac{5}{6}yz + \frac{1}{2}y
\end{aligned}$$

$$\begin{aligned}
& (2xy - 14x) \div 13x \\
&= (2xy - 14x) \times \frac{1}{13x} \\
&= 2xy \times \frac{1}{13x} - 14x \times \frac{1}{13x} \\
&= \frac{2}{13}y - \frac{14}{13}
\end{aligned}$$

$$\begin{aligned}
& -x(-9x + 8y + 5) \\
&= -x \times (-9x) - x \times 8y - x \times 5 \\
&= 9x^2 - 8xy - 5x
\end{aligned}$$

$$(-7xz - 4yz + 8z^2) \div 9z$$

$$2y(-7x - 4y)$$

$$\frac{1}{4}c(7a - 5b - 3c)$$

$$-\frac{1}{3}a(-2a + 7c + 4)$$

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

$$\begin{aligned} & (-7xz - 4yz + 8z^2) \div 9z \\ &= (-7xz - 4yz + 8z^2) \times \frac{1}{9z} \\ &= -7xz \times \frac{1}{9z} - 4yz \times \frac{1}{9z} + 8z^2 \times \frac{1}{9z} \\ &= -\frac{7}{9}x - \frac{4}{9}y + \frac{8}{9}z \end{aligned}$$

$$\begin{aligned} & 2y(-7x - 4y) \\ &= 2y \times (-7x) + 2y \times (-4y) \\ &= -14xy - 8y^2 \end{aligned}$$

$$\begin{aligned} & \frac{1}{4}c(7a - 5b - 3c) \\ &= \frac{1}{4}c \times 7a + \frac{1}{4}c \times (-5b) + \frac{1}{4}c \times (-3c) \\ &= \frac{7}{4}ac - \frac{5}{4}bc - \frac{3}{4}c^2 \end{aligned}$$

$$\begin{aligned} & -\frac{1}{3}a(-2a + 7c + 4) \\ &= -\frac{1}{3}a \times (-2a) - \frac{1}{3}a \times 7c - \frac{1}{3}a \times 4 \\ &= \frac{2}{3}a^2 - \frac{7}{3}ac - \frac{4}{3}a \end{aligned}$$

$$\begin{aligned} & -4y(-2y + 3) \\ &= -4y \times (-2y) - 4y \times 3 \\ &= 8y^2 - 12y \end{aligned}$$

$$(-7a + 7b + 7) \times (-c)$$

$$-\frac{1}{10}y(-4y + 14z + 15)$$

$$(-14x^2 + 14x) \div (-10x)$$

$$-x(2x + 15y)$$

$$4b(4b + 5)$$

$$\begin{aligned} & (-7a + 7b + 7) \times (-c) \\ &= -7a \times (-c) + 7b \times (-c) + 7 \times (-c) \\ &= 7ac - 7bc - 7c \end{aligned}$$

$$\begin{aligned} & -\frac{1}{10}y(-4y + 14z + 15) \\ &= -\frac{1}{10}y \times (-4y) - \frac{1}{10}y \times 14z - \frac{1}{10}y \times 15 \\ &= \frac{2}{5}y^2 - \frac{7}{5}yz - \frac{3}{2}y \end{aligned}$$

$$\begin{aligned} & (-14x^2 + 14x) \div (-10x) \\ &= (-14x^2 + 14x) \times \left(-\frac{1}{10x}\right) \\ &= -14x^2 \times \left(-\frac{1}{10x}\right) + 14x \times \left(-\frac{1}{10x}\right) \\ &= \frac{7}{5}x - \frac{7}{5} \end{aligned}$$

$$\begin{aligned} & -x(2x + 15y) \\ &= -x \times 2x - x \times 15y \\ &= -2x^2 - 15xy \end{aligned}$$

$$\begin{aligned} & 4b(4b + 5) \\ &= 4b \times 4b + 4b \times 5 \\ &= 16b^2 + 20b \end{aligned}$$

$$(-12b + 2) \times (-b)$$

$$(8x^2 - 11xy - 7xz) \div (-4x)$$

$$(-9x + 2z + 9) \times \frac{1}{4}y$$

$$-\frac{1}{8}x(-3x + 9y)$$

$$-\frac{1}{6}a(-4a - 4b)$$



$$\begin{aligned} & (-12b + 2) \times (-b) \\ &= -12b \times (-b) + 2 \times (-b) \\ &= 12b^2 - 2b \end{aligned}$$

$$\begin{aligned} & (8x^2 - 11xy - 7xz) \div (-4x) \\ &= (8x^2 - 11xy - 7xz) \times \left(-\frac{1}{4x}\right) \\ &= 8x^2 \times \left(-\frac{1}{4x}\right) - 11xy \times \left(-\frac{1}{4x}\right) - 7xz \times \left(-\frac{1}{4x}\right) \\ &= -2x + \frac{11}{4}y + \frac{7}{4}z \end{aligned}$$

$$\begin{aligned} & (-9x + 2z + 9) \times \frac{1}{4}y \\ &= -9x \times \frac{1}{4}y + 2z \times \frac{1}{4}y + 9 \times \frac{1}{4}y \\ &= -\frac{9}{4}xy + \frac{1}{2}yz + \frac{9}{4}y \end{aligned}$$

$$\begin{aligned} & -\frac{1}{8}x(-3x + 9y) \\ &= -\frac{1}{8}x \times (-3x) - \frac{1}{8}x \times 9y \\ &= \frac{3}{8}x^2 - \frac{9}{8}xy \end{aligned}$$

$$\begin{aligned} & -\frac{1}{6}a(-4a - 4b) \\ &= -\frac{1}{6}a \times (-4a) - \frac{1}{6}a \times (-4b) \\ &= \frac{2}{3}a^2 + \frac{2}{3}ab \end{aligned}$$