式と計算（単項式と多項式の乗除）解答と解説

1 解答 (1) $2ab+3ac$　(2) $3x^2-6xy$　(3) $-2x^2+10x$　(4) $-12ab-20b^2$

(1) $a(2b+3c)=a\times 2b+a\times 3c$
$=2ab+3ac$

(2) $(x-2y)\times 3x=x\times 3x-2y\times 3x$
$=3x^2-6xy$

(3) $-2x(x-5)=-2x\times x-2x\times(-5)$
$=-2x^2+10x$

(4) $(3a+5b)\times(-4b)=3a\times(-4b)+5b\times(-4b)$
$=-12ab-20b^2$

2 解答 (1) $3a^2-6ab+15ac$　(2) $4x^2-10xy$　(3) $-6a^3+4a^2b-3ab$

(1) $3a(a-2b+5c)=3a\times a+3a\times(-2b)+3a\times 5c$
$=3a^2-6ab+15ac$

(2) $(6x-15y)\times\frac{2}{3}x=6x\times\frac{2}{3}x-15y\times\frac{2}{3}x$
$=4x^2-10xy$

(3) $-\frac{1}{4}a(24a^2-16ab+12b)=-\frac{1}{4}a\times 24a^2-\frac{1}{4}a\times(-16ab)-\frac{1}{4}a\times 12b$
$=-6a^3+4a^2b-3ab$

3 解答 (1) $xy+x$　(2) $-8ac+12bc$　(3) $6x^2-3xy-3x$

(1) $x(y+1)=x\times y+x\times 1$
$=xy+x$

(2) $(2a-3b)\times(-4c)=2a\times(-4c)-3b\times(-4c)$
$=-8ac+12bc$

(3) $3x(2x-y-1)=3x\times 2x+3x\times(-y)+3x\times(-1)$
$=6x^2-3xy-3x$

4 解答 (1) $ab+2ac$　(2) $6x^2-2xy$　(3) $-3x^2+3x$　(4) $-20a^2-15ab$
(5) $3x^3-x^2$　(6) $4a^3-6a^2$

(1) $a(b+2c)=a\times b+a\times 2c$
$=ab+2ac$

(2) $(3x-y)\times 2x=3x\times 2x-y\times 2x$
$=6x^2-2xy$

(3) $-3x(x-1)=-3x\times x-3x\times(-1)$
$=-3x^2+3x$

(4) $(4a+3b)\times(-5a)=4a\times(-5a)+3b\times(-5a)$
$=-20a^2-15ab$

(5) $(6x^2-2x)\times\frac{1}{2}x=6x^2\times\frac{1}{2}x-2x\times\frac{1}{2}x$
$=3x^3-x^2$

(6) $-\frac{2}{3}a(-6a^2+9a)=-\frac{2}{3}a\times(-6a^2)-\frac{2}{3}a\times 9a$
$=4a^3-6a^2$

5 解答 (1) $3ab+4ac-2a$　(2) $-2x^2+4xy-6x$　(3) $-6a^2-3ab+9a$

(1) $a(3b+4c-2)=a\times 3b+a\times 4c+a\times(-2)$
$=3ab+4ac-2a$

(2) $(x-2y+3)\times(-2x)=x\times(-2x)-2y\times(-2x)+3\times(-2x)$
$=-2x^2+4xy-6x$

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

6 解答 (1) $4ab-12a$ (2) $5x^2+10x$ (3) $-3ax-7a$ (4) $2a^2+16ab$
(5) $14x^2-21xy$ (6) $24ab-60ac$ (7) $9m-2n$ (8) $-3ax+12ay$
(9) $-7ap+2p^2$

(1) $4a(b-3)=4ab-12a$
(2) $5x(x+2)=5x^2+10x$
(3) $-a(3x+7)=-3ax-7a$
(4) $2a(a+8b)=2a^2+16ab$
(5) $7x(2x-3y)=14x^2-21xy$
(6) $12a(2b-5c)=24ab-60ac$
(7) $-(-9m+2n)=9m-2n$
(8) $-3a(x-4y)=-3ax+12ay$
(9) $p(-7a+2p)=-7ap+2p^2$

7 解答 (1) $5ax+6a$ (2) $21x^2-28x$ (3) $20ap-28a$ (4) $4ax+3ay$
(5) $22x^2-2xy$ (6) $-25mn+35n^2$ (7) $-8ax-7bx$
(8) $-28ab+63b^2$ (9) $48ux+30vx$

(1) $(5x+6)\times a=5ax+6a$
(2) $(3x-4)\times 7x=21x^2-28x$
(3) $(5p-7)\times 4a=20ap-28a$
(4) $(4x+3y)\times a=4ax+3ay$
(5) $(11x-y)\times 2x=22x^2-2xy$
(6) $(-5m+7n)\times 5n=-25mn+35n^2$
(7) $(8a+7b)\times(-x)=-8ax-7bx$
(8) $(4a-9b)\times(-7b)=-28ab+63b^2$
(9) $(-8u-5v)\times(-6x)=48ux+30vx$

8 解答 (1) $36ax-45bx+27x$ (2) $14ab+35b^2-21bc$ (3) $-20x^2-5xy+30xz$
(4) $-3mx-7my+mz$ (5) $-35ac+20bc+65c^2$ (6) $8px-2qx-3rx$
(7) $-9ac+6bc-12c^2$ (8) $-12x^2+18xy-22xz$ (9) $54ab-21b^2+12bc$

(1) $9x(4a-5b+3)=36ax-45bx+27x$
(2) $7b(2a+5b-3c)=14ab+35b^2-21bc$
(3) $5x(-4x-y+6z)=-20x^2-5xy+30xz$
(4) $-m(3x+7y-z)=-3mx-7my+mz$
(5) $-5c(7a-4b-13c)=-35ac+20bc+65c^2$
(6) $(8p-2q-3r)\times x=8px-2qx-3rx$
(7) $(-3a+2b-4c)\times 3c=-9ac+6bc-12c^2$
(8) $(6x-9y+11z)\times(-2x)=-12x^2+18xy-22xz$
(9) $(-18a+7b-4c)\times(-3b)=54ab-21b^2+12bc$

9 解答 (1) $2a+3$ (2) $-x+2$ (3) $2a+3b$ (4) $-3x-4y$

(1) $(2a^2+3a)\div a=(2a^2+3a)\times\dfrac{1}{a}$

$=\dfrac{2a^2}{a}+\dfrac{3a}{a}$

$=2a+3$

(2) $(3x^2-6x)\div(-3x)=(3x^2-6x)\times\left(-\dfrac{1}{3x}\right)$

$=-\dfrac{3x^2}{3x}+\dfrac{6x}{3x}$

$=-x+2$

(3) $(8a^2+12ab)\div 4a=(8a^2+12ab)\times\dfrac{1}{4a}$

$=\dfrac{8a^2}{4a}+\dfrac{12ab}{4a}$

$=2a+3b$

(4) $(15x^2y+20xy^2)\div(-5xy)=(15x^2y+20xy^2)\times\left(-\dfrac{1}{5xy}\right)$

$=-\dfrac{15x^2y}{5xy}-\dfrac{20xy^2}{5xy}$

$=-3x-4y$

6 解答 (1) $4ab-12a$ (2) $5x^2+10x$ (3) $-3ax-7a$ (4) $2a^2+16ab$
(5) $14x^2-21xy$ (6) $24ab-60ac$ (7) $9m-2n$ (8) $-3ax+12ay$
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(1) $(2a^2+3a)\div a=(2a^2+3a)\times\dfrac{1}{a}$

$=\dfrac{2a^2}{a}+\dfrac{3a}{a}$

$=2a+3$

(2) $(3x^2-6x)\div(-3x)=(3x^2-6x)\times\left(-\dfrac{1}{3x}\right)$

$=-\dfrac{3x^2}{3x}+\dfrac{6x}{3x}$

$=-x+2$

(3) $(8a^2+12ab)\div 4a=(8a^2+12ab)\times\dfrac{1}{4a}$

$=\dfrac{8a^2}{4a}+\dfrac{12ab}{4a}$

$=2a+3b$

(4) $(15x^2y+20xy^2)\div(-5xy)=(15x^2y+20xy^2)\times\left(-\dfrac{1}{5xy}\right)$

$=-\dfrac{15x^2y}{5xy}-\dfrac{20xy^2}{5xy}$

$=-3x-4y$

10 解答 (1) $-3a+2$ (2) $6x+3y$ (3) $6a-10b$

(1) $(24a^2b-16ab)\div(-8ab)=(24a^2b-16ab)\times\left(-\frac{1}{8ab}\right)$

$=-\frac{24a^2b}{8ab}+\frac{16ab}{8ab}$

$=-3a+2$

(2) $(4x^2+2xy)\div\frac{2}{3}x=(4x^2+2xy)\times\frac{3}{2x}$

$=\frac{4x^2\times3}{2x}+\frac{2xy\times3}{2x}$

$=6x+3y$

(3) $(-3a^2b+5ab^2)\div\left(-\frac{1}{2}ab\right)=(-3a^2b+5ab^2)\times\left(-\frac{2}{ab}\right)$

$=\frac{3a^2b\times2}{ab}-\frac{5ab^2\times2}{ab}$

$=6a-10b$

11 解答 (1) $3a-8$ (2) $-3x-2y$ (3) $9a-15$

(1) $(6a^2-16a)\div2a=(6a^2-16a)\times\frac{1}{2a}$

$=\frac{6a^2}{2a}-\frac{16a}{2a}$

$=3a-8$

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

$=-\frac{9x^2y}{3xy}-\frac{6xy^2}{3xy}$

$=-3x-2y$

(3) $(3ab-5b)\div\frac{1}{3}b=(3ab-5b)\times\frac{3}{b}$

$=\frac{3ab\times3}{b}-\frac{5b\times3}{b}$

$=9a-15$

12 解答 (1) $3x+2$ (2) $2x-5y$ (3) $-3a+2$ (4) $9a+12b$ (5) $4x^2+6y^2$

(1) $(12x^2+8x)\div4x=(12x^2+8x)\times\frac{1}{4x}$

$=\frac{12x^2}{4x}+\frac{8x}{4x}$

$=3x+2$

(2) $(6ax-15ay)\div3a=(6ax-15ay)\times\frac{1}{3a}$

$=\frac{6ax}{3a}-\frac{15ay}{3a}$

$=2x-5y$

(3) $(24a^2b-16ab)\div(-8ab)=(24a^2b-16ab)\times\left(-\frac{1}{8ab}\right)$

$=-\frac{24a^2b}{8ab}+\frac{16ab}{8ab}$

$=-3a+2$

(4) $(6a^2+8ab)\div\frac{2}{3}a=(6a^2+8ab)\times\frac{3}{2a}$

$=\frac{6a^2\times3}{2a}+\frac{8ab\times3}{2a}$

$=9a+12b$

(5) $(-2x^3y-3xy^3)\div\left(-\frac{1}{2}xy\right)=(-2x^3y-3xy^3)\times\left(-\frac{2}{xy}\right)$

$=\frac{2x^3y\times2}{xy}+\frac{3xy^3\times2}{xy}$

$=4x^2+6y^2$

13 解答 (1) $7-4y$ (2) $5a+3b$ (3) $3xy-4z$ (4) $-\frac{5a}{2}+c$

(5) $2x-8$ (6) $10y-25axy$ (7) $-12p^2+8q^2$ (8) $-6b^3+10a$

(1) $(14x-8xy)\div 2x=(14x-8xy)\times\frac{1}{2x}$

$=\frac{14x}{2x}-\frac{8xy}{2x}$

$=7-4y$

(2) $(15a^2+9ab)\div 3a=(15a^2+9ab)\times\frac{1}{3a}$

$=\frac{15a^2}{3a}+\frac{9ab}{3a}$

$=5a+3b$

(3) $(-12xy^2+16yz)\div(-4y)=(-12xy^2+16yz)\times\left(-\frac{1}{4y}\right)$

$=\frac{12xy^2}{4y}-\frac{16yz}{4y}$

$=3xy-4z$

(4) $(20abc-8bc^2)\div(-8bc)=(20abc-8bc^2)\times\left(-\frac{1}{8bc}\right)$

$=-\frac{5a}{2}+c$

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

$=2x-8$

(6) $(12xy^2-30ax^2y^2)\div\frac{6xy}{5}=(12xy^2-30ax^2y^2)\times\frac{5}{6xy}$

$=10y-25axy$

(7) $(6p^3q^2-4pq^4)\div\left(-\frac{pq^2}{2}\right)=(6p^3q^2-4pq^4)\times\left(-\frac{2}{pq^2}\right)$

$=-12p^2+8q^2$

(8) $(-3ab^3+5a^2)\div 0.5a=(-3ab^3+5a^2)\div\frac{a}{2}$

$=(-3ab^3+5a^2)\times\frac{2}{a}$

$=-6b^3+10a$

14 解答 (1) $4x^2-x$ (2) $3x^2-10xy+6y^2$ (3) $11x-12$ (4) $5x^2-3x$

(1) $2x(x+1)+x(2x-3)=2x^2+2x+2x^2-3x$

$=4x^2-x$

(2) $3x(x-2y)-2y(2x-3y)=3x^2-6xy-4xy+6y^2$

$=3x^2-10xy+6y^2$

(3) $3(x^2+2x-4)-x(3x-5)=3x^2+6x-12-3x^2+5x$

$=11x-12$

(4) $x(2x-1)-(6x^2-9x^3)\div 3x=2x^2-x-(2x-3x^2)$

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

$=5x^2-3x$

15 解答 (1) $4x^2-3x$ (2) $9a^2$

(1) $2x(3x+1)-x(2x+5)=6x^2+2x-2x^2-5x$

$=4x^2-3x$

(2) $3a(a-4b)+6a(2b+a)=3a^2-12ab+12ab+6a^2$

$=9a^2$