Operazioni con i monomi. Livello base. Completi di soluzione guidata.

Polynomials: Combining "Like Terms".
Eléments du calcul littéral.

Somma algebrica di monomi

1. $-4y^2+5y^2-15y^2$ soluzione

2. $2ab+b^2-ab-3b^2-3ab+b^2+b^2$ soluzione

3. $14ab-15ab+2ab-5ab$ soluzione

4. $\frac{1}{3}ab+\frac{1}{2}ab-\frac{1}{6}ab$ soluzione

5. $\frac{1}{2}a+2b+a-b$ soluzione

6. $7a-3b+5b-12a+4b+6a$ soluzione

7. $-4a+3b-a-2b+5a-4b$ soluzione

8. $-10xy+4y^2-7xy+11xy-3y^2-y^2$ soluzione

9. $-5x^2y+6x^2y-9xy^2+3x^2y-2xy^2$ soluzione

10. $6x^2y-9xy^2+3x^2y-5x^2y-2xy^2+9xy^2$ soluzione

11. $2xy^2+6x^2y+9xy^2+3x^2y-5x^2y-2xy^2-9xy^2$

12. $\frac{1}{3}-2x+\frac{1}{3}y-\frac{7}{2}-\frac{1}{6}y+\frac{1}{4}x+\frac{19}{6}=$

13. $\frac{1}{5}x^2y^3-5x^2y^3-\frac{2}{3}x^2y^3+\frac{7}{15}x^2y^3+5x^3y^2=$

14. $4\mathrm{x}-4\mathrm{xy}+3\mathrm{x}-9\mathrm{y}-(-11y)$

15. $11\mathrm{y}-4\mathrm{x}-(-3\mathrm{x})-9\mathrm{y}+4x$ soluzione

16. $-3\mathrm{x}+(-7\mathrm{a})-(-2\mathrm{x})+(+5\mathrm{a})-(+8\mathrm{a})$ soluzione (*)

17. $\left(8a^2b+3ab-b^2\right)+\left(10ab+5ab-8a^2b-5b^2-10ab\right)-\left(-3a^2b+8ab-3b^2\right)-3a^2b$ soluzione

18. $(8a^2b+3ab-b^2)-(2ab+5ab-8a^2b-5b^2-2ab)-3a^2b+8ab-3b^2$ soluzione

19. $\left(-2a^2+5a-3b\right)-\left(-3b-2a^2\right)-\left(5a-6\right)$ soluzione

20. $\left(-\frac{1}{6}cx+\frac{1}{2}bx\right)+\left(\frac{3}{7}ax-\frac{2}{5}bx-\frac{1}{6}cx\right)-\left(\frac{1}{10}bx-\frac{1}{3}cx-\frac{4}{7}ax\right)$ soluzione

21. $y^2+3x^2-\left[5xy-\left(2x^3+10xy+3y^2\right)\right]-\left[2x^3-\left(-5xy+10x^3\right)\right]-4y^2-10x^3$ soluzione

22. $2x^3y^3+2+xy^3-6x^2y^3+3-xy^3+3x^2y^3-5+2x^2y^3-2x^3y^3$ soluzione

Prodotto, divisione e potenze di monomi

23. $a\cdot a\cdot a$ $\quad a^2\cdot a^2\cdot a^2$ soluzione

24. $(-12x^4y):(+6x^2)$ $\quad (-18x^6y^4z):(6x^6y^2z)$ soluzione

25. $\left(-\frac{3}{4}x^3y\right)\cdot\left(-\frac{4}{7}xy^2\right)$ $\quad \left(+\frac{3}{4}x^3y^2z\right):\left(-\frac{9}{4}xy\right)$ soluzione

26. $\left(-\frac{3}{4}x^3y^2z\right)\cdot\left(+\frac{9}{4}xy\right)$ $\quad \left(\frac{21}{5}x^2y^4z\right)\cdot\left(\frac{15}{7}xy^2z\right)$ soluzione

27. $\left(\frac{21}{5}x^2y^4z\right):\left(-\frac{14}{5}xy^2z\right)$ soluzione

28. $\left(-\frac{4}{3}x^2\right)\cdot\left(\frac{2}{5}y\right)$

29. $\left(-\frac{15}{2}x^3y^2z\right):\left(-\frac{5}{4}xyz\right)$

30. $5a^3b^2:(-2ab)$

31. $\left(+6a^5b^3c\right):\left(-3ab^4c^3\right)$

32. $\left(-\frac{1}{2}ab^2c^3\right)^3:\left(-\frac{3}{2}ab^3c^2\right)^2$ (*)

(*) gentile concessione della Commissione e-learning IPSSCART B. Stringher - Udine

Soluzioni

$-4y^2 + 5y^2 - 15y^2 =$

I monomi sono simili tra loro e posso sommare i loro coefficenti procedendo nell'ordine dato

$= 1y^2 - 15y^2 =$

$= -14y^2$

Oppure

$-4y^2 + 5y^2 - 15y^2 =$

I monomi sono tutti simili tra loro e posso sommare i loro coefficenti

$= (-4 + 5 - 15)y^2 =$

$= -14y^2$

$2ab + b^2 - ab - 3b^2 - 3ab + b^2 + b^2 =$

Pongo i monomi simili vicini tra loro (proprietà commutativa)

$= 2ab - ab - 3ab + b^2 - 3b^2 + b^2 + b^2 =$

Sommo i monomi simili

$= -2ab + 0b^2 = -2ab$

Oppure

$2ab + b^2 - ab - 3b^2 - 3ab + b^2 + b^2 =$

Dei monomi simili posso sommare i loro coefficenti

$(2 - 1 - 3)ab + (1 - 3 + 1 + 1)b^2$

$= -2ab + 0b^2 = -2ab$

$14ab - 15ab + 2ab - 5ab =$

I monomi sono simili tra loro e posso sommare i loro coefficenti

$= (14 - 15 + 2 - 5)ab =$

$= -4ab$

$\frac{1}{3}ab + \frac{1}{2}ab - \frac{1}{6}ab =$

I monomi sono simili tra loro e posso sommare i loro coefficenti

$= \frac{2+3-1}{6}ab =$

$= \frac{4}{6}ab = \frac{2}{3}ab$

$\frac{1}{2}a + 2b + a - b =$ $= \frac{1}{2}a + a + 2b - b =$ $= \frac{1+2}{2}a + b =$ $= \frac{3}{2}a + b$	$\frac{1}{2}a + 2b + a - b =$ $= \frac{1}{2}a + a + 2b - b =$ $= \frac{3}{2}a + b$

$7a-3b+5b-12a+4b+6a=$ Pongo i monomi simili vicini tra loro (proprietà commutativa) $=7a-12a+6a-3b+5b+4b=$ $=-5a+6a+2b+4b=$ $=a+6b$	$7a-3b+5b-12a+4b+6a=$ $=7a-3b+5b-12a+4b+6a=$ $=7a-12a+6a-3b+5b+4b=$ $=(7-12+6)a+(-3+5+4)b=$ $=a+6b$

$-4a+3b-a-2b+5a-4b=$

Pongo i monomi simili vicini tra loro (proprietà commutativa)

$=-4a-a+5a-4b+3b-2b=$

$=-5a+5a-b-2b=$

$=-3b$

$-4a+3b-a-2b+5a-4b=$

$=-4a+3b-a-2b+5a-4b=$

$=-4a-a+5a-2b-4b+3b=$

$=(-4-1+5)a+(-2-4+3)b=$

$=-3b$

$-10xy+4y^2-7xy+11xy-3y^2-y^2=$

$=-10xy-7xy+11xy-3y^2-y^2+4y^2=$

$=-17xy+11xy-4y^2+4y^2=$

$=-6xy$

$-10xy+4y^2-7xy+11xy-3y^2-y^2=$

$=-10xy+4y^2-7xy+11xy-3y^2-y^2=$

$=-10xy-7xy+11xy+4y^2-3y^2-y^2=$

$=(-10-7+11)xy+(4-3-1)y^2=$

$=-6xy$

$$-5x^2y+6x^2y-9xy^2+3x^2y-2xy^2=$$
$$=-5x^2y+6x^2y+3x^2y-2xy^2-9xy^2=$$
$$=1^2y+3x^2y-11xy^2=$$
$$=4x^2y-11xy^2$$

$-5x^2y+6x^2y-9xy^2+3x^2y-2xy^2 =$

$= -5x^2y+6x^2y-9xy^2+3x^2y-2xy^2 =$

$= -5x^2y+6x^2y+3x^2y-2xy^2 -9xy^2 =$

$= (-5+6+3)\ x^2y +(-2-9)xy^2 =$

$= 4\ x^2y - 11\ xy^2$

$$6x^2y-9xy^2+3x^2y-5x^2y-2xy^2+9xy^2=$$
$$=6x^2y+3x^2y-5x^2y-2xy^2+9xy^2-9xy^2=$$
$$=9x^2y-5x^2y+7xy^2-9xy^2=$$
$$=4x^2y-2xy^2$$

$6x^2y-9xy^2+3x^2y-5x^2y-2xy^2 +9xy^2=$

$= 6x^2y-9xy^2+3x^2y-5x^2y-2xy^2 +9xy^2=$

$= 6x^2y+3x^2y-5x^2y +9xy^2-2xy^2 -9xy^2=$

$= (6+3-5)x^2y+(-9-2+9)xy^2 =$

$= 4\ x^2y - 2\ xy^2$

$$2xy^2+6x^2y+9xy^2+3x^2y-5x^2y-2xy^2-9xy^2=$$
$$=2xy^2-2xy^2+9xy^2-9xy^2+6x^2y+3x^2y-5x^2y=$$
$$=9xy^2-5xy^2=$$
$$=4x^2y$$

$2xy^2+6x^2y+9xy^2+3x^2y-5x^2y-2xy^2-9xy^2=$

$=2xy^2+6x^2y-9xy^2+3x^2y-5x^2y-2xy^2+9xy^2=$

$=6x^2y+3x^2y-5x^2y=$

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

$=4\,x^2y$

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

$$\frac{1}{3}-2x+\frac{1}{3}y-\frac{7}{2}-\frac{1}{6}y+\frac{1}{4}x+\frac{19}{6}=$$
$$=-2x+\frac{1}{4}x+\frac{1}{3}y-\frac{1}{6}y+\frac{19}{6}+\frac{1}{3}-\frac{7}{2}=$$
$$=\frac{-8+1}{4}x+\frac{2-1}{6}y+\frac{19+2-21}{6}=$$
$$=-\frac{7}{4}x+\frac{1}{6}y$$

$$\frac{1}{5}x^2y^3 - 5x^2y^3 - \frac{2}{3}x^2y^3 + \frac{7}{15}x^2y^3 + 5x^3y^2 =$$
$$= \left(\frac{3-75-10+7}{15}x^2y^3\right) + 5x^3y^2 =$$
$$= \left(-\frac{{}^{5}\cancel{75}}{{}_{1}\cancel{15}}x^2y^3\right) + 5x^3y^2 =$$
$$= -5x^2y^3 + 5x^3y^2$$

$$4\mathrm{x} - 4\mathrm{xy} + 3\mathrm{x} - 9\mathrm{y} - (-11y) =$$
$$= 4\mathrm{x} - 4\mathrm{xy} + 3\mathrm{x} - 9\mathrm{y} + 11y =$$
$$= 4x + 3x + 2y - 4xy =$$
$$= 7x - 4xy + 2y$$

$$11\mathrm{y} - 4\mathrm{x} - (-3\mathrm{x}) - 9\mathrm{y} + 4x =$$
$$= 11\mathrm{y} - 4\mathrm{x} + 3\mathrm{x} - 9\mathrm{y} + 4x =$$
$$= 4x - 4x + 3x + 2y =$$
$$= 3x + 2y$$

$$-3x + (-7a) - (-2x) + (+5a) - (+8a) =$$
$$= -3x - 7a + 2x + 5a - 8a =$$
$$= -3x + 2x - 7a + 5a - 8a =$$
$$= (-3+2)x + (-7+5-8)a =$$
$$= -x - 10a$$

$$\left(8a^2b+3ab-b^2\right)+\left(10ab+5ab-8a^2b-5b^2-10ab\right)-\left(-3a^2b+8ab-3b^2\right)-3a^2b=$$

$$\left(8a^2b+3ab-b^2\right)+\left(\cancel{10ab}+5ab-8a^2b-5b^2-\cancel{10ab}\right)-\left(-3a^2b+8ab-3b^2\right)-3a^2b=$$

$$=\cancel{8a^2b}+3ab-b^2+5ab-\cancel{8a^2b}-5b^2+\cancel{3a^2b}-8ab+3b^2-\cancel{3a^2b}=$$

$$=\cancel{3ab}+\cancel{5ab}-\cancel{8ab}-b^2-5b^2+3b^2=$$

$$=-3b^2$$

$$\left(8a^2b+3ab-b^2\right)+\left(10ab+5ab-8a^2b-5b^2-10ab\right)-\left(-3a^2b+8ab-3b^2\right)-3a^2b=$$

$= 8a^2b +3ab -b^2 +5ab -8a^2b -5b^2 +3a^2b -8ab +3b^2 -3a^2b =$

$= 8a^2b -8a^2b +3a^2b -3a^2b +3ab +5ab -8ab -5b^2 +3b^2 -b^2 =$

$= -3b^2$

$$(8a^2b+3ab-b^2)-(2ab+5ab-8a^2b-5b^2-2ab)-3a^2b+8ab-3b^2$$

$$=8a^2b+3ab-b^2-(5ab-8a^2b-5b^2)-3a^2b+8ab-3b^2=$$

$$=8a^2b+3ab-b^2-5ab+8a^2b+5b^2-3a^2b+8ab-3b^2=$$

$$=8a^2b+8a^2b-3a^2b-b^2+5b^2-3b^2+3ab-5ab+8ab=$$

$$=13a^2b+b^2+6ab$$

$= 8a^2b +3ab -b^2 -5ab +8a^2b +5b^2 -3a^2b +8ab -3b^2 -3a^2b =$

$= 8a^2b +8a^2b -3a^2b +3ab -5ab +8ab -b^2 +5b^2 -3b^2 =$

$= 13a^2b+6ab+b^2$

$$\left(-2a^2+5a-3b\right)-\left(-3b-2a^2\right)-\left(5a-6\right)=$$

$$=-2a^2+5a-3b+3b+2a^2-5a+6=$$

$$=-2a^2+2a^2+5a-5a-3b+3b+6=$$

$$=6$$

$$\left(-\frac{1}{6}cx+\frac{1}{2}bx\right)+\left(\frac{3}{7}ax-\frac{2}{5}bx-\frac{1}{6}cx\right)-\left(\frac{1}{10}bx-\frac{1}{3}cx+\frac{4}{7}ax\right)=$$

$$=-\frac{1}{6}cx+\frac{1}{2}bx+\frac{3}{7}ax-\frac{2}{5}bx-\frac{1}{6}cx-\frac{1}{10}bx+\frac{1}{3}cx-\frac{4}{7}ax=$$

$$=+\frac{3}{7}ax-\frac{4}{7}ax+\frac{1}{2}bx-\frac{2}{5}bx-\frac{1}{10}bx-\frac{1}{6}cx-\frac{1}{6}cx+\frac{1}{3}cx=$$

$$=\frac{3-4}{7}ax+\frac{5-4-1}{10}bx+\frac{-1-1+2}{6}cx=$$

$$=-\frac{1}{7}ax+\frac{0}{10}bx+\frac{0}{6}cx=$$

$$=-\frac{1}{7}ax$$

$$y^2+3x^2-\left[5xy-\left(2x^3+10xy+3y^2\right)\right]-\left[2x^3-\left(-5xy+10x^3\right)\right]-4y^2-10x^3=$$

$$=y^2+3x^2-\left[5xy-2x^3-10xy-3y^2\right]-\left[2x^3+5xy-10x^3\right]-4y^2-10x^3=$$

$$=y^2+3x^2-5xy+2x^3+10xy+3y^2-2x^3-5xy+10x^3-4y^2-10x^3=$$

$$=+10x^3-10x^3+2x^3-2x^3+3x^2-5xy-5xy+10xy+y^2+3y^2-4y^2=$$

$$=+3x^2-10xy+10xy+4y^2-4y^2=$$

$$=3x^2$$

$$2x^3y^3+2+xy^3-6x^2y^3+3-xy^3+3x^2y^3-5+2x^2y^3-2x^3y^3=$$

$$2x^3y^3+2+xy^3-6x^2y^3+3-xy^3+3x^2y^3-5+2x^2y^3-2x^3y^3=$$

$$=2x^3y^3-2x^3y^3+2+3-5+xy^3-xy^3-6x^2y^3+3x^2y^3+2x^2y^3=$$

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

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

$$=-x^2y^3$$

Soluzioni esercizi su prodotto, divisione e potenze di monomi

$$a \cdot a \cdot a = a^3$$

$$a^2 \cdot a^2 \cdot a^2 = a^{2+2+2} = a^6$$

$$(-12x^4y):(+6x^2) = -2x^2y$$

$$(-18x^6y^4z):(6x^6y^2z) = -3y^2$$

$$\left(-\frac{3}{4}x^3y\right)\cdot\left(-\frac{4}{7}xy^2\right) = +\frac{3}{7}x^4y^3$$

$$\left(+\frac{3}{4}x^3y^2z\right):\left(-\frac{9}{4}xy\right) = -\frac{1}{3}x^2yz$$

$$\left(-\frac{3}{4}x^3y^2z\right)\cdot\left(+\frac{9}{4}xy\right) = -\frac{27}{16}x^4y^3z$$

$$\left(\frac{21}{5}x^2y^4z\right)\cdot\left(\frac{15}{7}xy^2z\right) = +9x^3y^6z^2$$

$$\left(\frac{21}{5}x^2y^4z\right):\left(-\frac{14}{5}xy^2z\right)=-\frac{3}{2}xy^2$$

$$\left(-\frac{4}{3}x^2\right)\cdot\left(\frac{2}{5}y\right)=-\frac{8}{15}x^2y$$

$$\left(-\frac{15}{2}x^3y^2z\right):\left(-\frac{5}{4}xyz\right)=6x^2y$$

$$5a^3b^2:(-2ab)=-\frac{5}{2}a^2b$$

$$\left(+6a^5b^3c\right):\left(-3ab^4c^3\right)=-2a^4b^{-1}c^{-2}\left(oppure=-\frac{2a^4}{bc^2}\right)$$

$$\left(-\frac{1}{2}ab^2c^3\right)^3:\left(-\frac{3}{2}ab^3c^2\right)^2=\left(-\frac{1}{8}a^3b^6c^9\right):\left(+\frac{9}{4}a^2b^6c^4\right)=-\frac{1}{18}ac^5$$

KEYWORDS

Algebra, calcolo letterale, monomio, polinomio, binomio, trinomio, prodotti notevoli, esercizi con soluzioni

Algebra, Monomial, Polynomial, binomial, trinomial, perfect square trinomials, algebraic factoring, exercises with solution

Algebra, Polinomio, monomio, binomio, trinomio, Igualdades notables, operaciones con polinomios,
Algèbre, Polynôme, Monôme, Polynômes remarquables

Algebra, Polynom, Binom