1) Il calcolo letterale: concetto.

a) Quali valori numerici posso sostituire alle seguenti lettere?

$\frac{a}{2}$; $\frac{2}{b}$

$\frac{2}{c+1}$; $\frac{d+1}{2}$;

$\sqrt{x}$ $\sqrt{x+1}$

b) Semplifica le seguenti frazioni algebriche, riducendole ai minimi termini.

$\frac{27a}{9b} =$ $\frac{3ab}{2b} =$ $\frac{3ab}{b} =$

$\frac{3a+b}{2b} =$ $\frac{3b^2}{2b} =$ $\frac{20x^3y^3}{4x^4y^2} =$

$\frac{30ab^2c^3}{6abc} =$ $\frac{6abc}{30ab^2c^3} =$ $\frac{a(a+1)}{a+1} =$

$\frac{15(x+y)^2}{(x+y)^3} =$ $\frac{x+y}{x-y} =$ $\frac{x\cdot(+y)}{x\cdot(-y)}$

2) Il calcolo letterale: operazioni.

$\frac{2}{3}x+\frac{3}{2}x =$ $-\frac{5}{6}x+\frac{3}{4}x =$ $+\frac{8}{9}x-\frac{5}{12}x =$

$-\frac{8}{6}x-\frac{15}{12}x =$

$-x+3y =$ $\left(-\frac{2}{3}x\right)\cdot\left(+\frac{3}{2}x\right) =$ $\left(-\frac{8}{6}x\right):\left(-\frac{24}{18}x\right) =$

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

$\left(-\frac{2}{3}y^3\right)^3 =$ $\left(-\frac{2^5}{3^2}y^3\right)^3 =$ $\left(-\frac{2a^5b^3c^2}{3x^2y^3z^4}\right)^3 =$

$\left(-\frac{2}{3}y\right)^{-2} =$ $\left(-\frac{2^5}{3^2}y^3\right)^{-3} =$ $\left(-\frac{a^5b^{-2}}{x^2y^{-3}}\right)^{-3} =$

3) La proprietà distributiva.

$+\frac{2}{3}\cdot\left(\frac{1}{2}x+\frac{3}{4}y\right) =$

$-\frac{4}{5}\cdot\left(\frac{15}{6}x+\frac{20}{16}y\right) =$

$-\frac{2}{3}\cdot\left(\frac{1}{2}x-\frac{3}{4}y\right) =$

Attenzione!

$+(x+y) =$ $-(x+y) =$ $-(x-y)$

4) Espressioni con il calcolo letterale.

78 $-4y^2-6x^3+\frac{2x^2y}{3}-y+4y^2+4x^3-\frac{x^2y}{3}+y$ $\left[\frac{x^2y}{3}-2x^3\right]$

79 $-\left[4a^2b+\frac{1}{2}a^2b-\left(-\frac{1}{2}a^2b\right)\right]+5a^2b-3ab^2$ $[-3ab^2]$

80 $ax^3+x^3-(2x^2-3x^2)-(5x^3-4x^3)-[-(-2ax^3)]$ $[x^2-ax^3]$

145 $\frac{1}{2}x^4+\left(-\frac{3}{2}x^2\right)\left(\frac{9}{4}x^2\right)+\left(\frac{2}{9}x^2\right)\left(\frac{3}{2}x^2\right)-\left(-\frac{9}{4}x^2\right)\left(\frac{3}{2}x^2\right)+\left(-\frac{1}{3}x\right)\left(\frac{9}{4}x^3\right)-\frac{3}{4}x^4$ $\left[-\frac{2}{3}x^4\right]$

146 $\left(\frac{3}{4}xy^2\right)\left(\frac{2}{3}x\right)+\left(-\frac{1}{2}x^2y\right)y+\frac{1}{3}y\left(-\frac{3}{2}x^2y\right)+\frac{4}{5}x^2y^2-x^2y^2$ $\left[-\frac{7}{10}x^2y^2\right]$

147 $\frac{4}{3}xy^2+(-y^2)\left(\frac{4}{3}x\right)+\left(-\frac{1}{3}\right)(xy^2-2xy^2)+2xy^2+\left(-\frac{1}{3}\right)2xy^2+\frac{2}{3}xy^2+xy^2$ $\left[\frac{10}{3}xy^2\right]$

194 $(-xy^2)^3+\frac{1}{5}xy^4\left(\frac{10}{3}x^2y^2\right)$; $(3a^3b^2)^2\cdot(-2a^4b^3)-(a^2b)^3(-4a^4b^4)$. $\left[-\frac{1}{3}x^3y^6;-14a^{10}b^7\right]$

195 $(2x+3x)^2(-x)^3-2x^3(-2x)^2$; $(-3a^2)\left(\frac{1}{2}ab\right)^2-\left(\frac{2}{3}a^2\right)^2(-3b^2)$. $\left[-33x^5;\frac{7}{12}a^4b^2\right]$

196 $\left(-\frac{1}{2}ab^3\right)^2+\left(-\frac{1}{2}ab^2\right)\left(-\frac{3}{2}ab\right)(-2b)^3$; $\left(-\frac{2}{3}a^2b^4\right)^2-(-2ab^3)^2\cdot\left(-\frac{1}{3}ab\right)^2$. $\left[-\frac{23}{4}a^2b^6;0\right]$

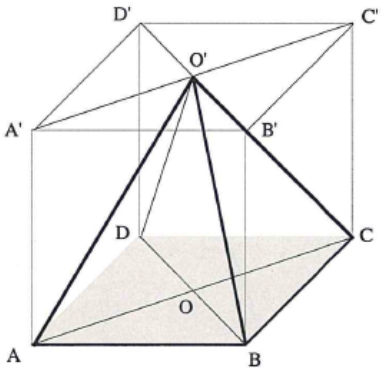
262 $\left(xy-\frac{2}{3}xy\right)y^3-x(-y^2)^3:\left(-\frac{1}{3}y\right)^2+\frac{2}{3}xy^4$ $[10xy^4]$

263 $-a^2(a^5:a^3)+(-3a^2)^2+(2a^3)^2:\left(-\frac{1}{2}a\right)^2+2a^4-(-a^2)^2$ $[25a^4]$

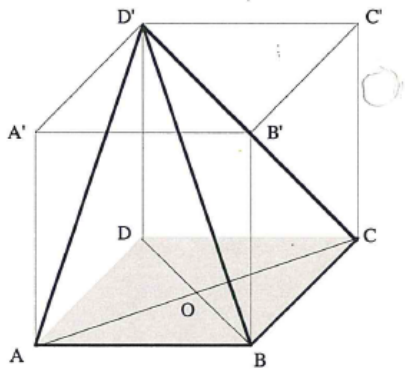
264 $\frac{1}{4}\cdot\left[(3a^3b^3)^2:\left(\frac{1}{9}ab\right)^2\right]:[a^4b^4:(-2ab)^2]+(-9ab)^2$ $[810a^2b^2]$

5) La piramide.

Considera le due piramidi seguenti, inscritte in un cubo di spigolo 1m



Piramide di base ABCD e vertice O'



Piramide di base ABCD e vertice D'

i) Calcola il loro volume.
ii) Disegna il loro sviluppo totale, in scala 1:20
iii) Calcola la loro area totale.