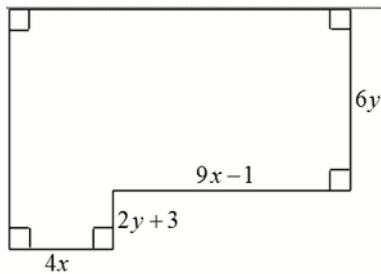


ALGEBRA CRAZINESS! UNDERSTANDING ERRORS CAUSED BY LACK OF UNDERSTANDING

Craziness!	What the Student Failed to Understand	Correct Response
Craziness! <i>(cannot start with =)</i> (a) Perimeter $= 6y + (6y + 2y + 3) + (2y + 3) + (9x - 1) + 4x + (9x - 1) + 4x$ <i>Wrong!!</i> $= 6y + 11y + 5y + 8x + 4x + 12x$ $= 24y + 24x$ <i>(-24)</i>	The student failed to realize that like terms must have the same variable part and hence, the same degree. e.g. $2y + 3$ cannot be simplified because the terms are unlike 	 $P = 13x - 1 + 6y + 9x - 1 + 2y + 3 + 4x + 2y + 3 + 6y$ $= 13x + 9x + 4x + 6y + 2y + 2y + 6y - 1 - 1 + 3 + 3$ $= 26x + 16y + 4$
(c) $-(5a^2b + 3ab) - (6a^2b - 7ab)$ $= -(7a^3b^2) + (-6)a^2b + (-7)ab$ $= -(7a^3b^2) - 13a^2b^2$ $= -20a^6b^4$ <i>(-4)</i>	The student once again failed to comprehend the concept of like terms. The student also did not correctly apply the concept of subtraction being equivalent to adding the opposite. i.e. $x - y = x + (-y)$	(c) $-(5a^2b + 3ab) - (6a^2b - 7ab)$ ✓ $= +(-5a^2b - 3ab) + (-6a^2b + 7ab)$ $= -5a^2b - 3ab - 6a^2b + 7ab$ $= -5a^2b - 6a^2b - 3ab + 7ab$ $= -11a^2b + 4ab$ <i>(4)</i>

Craziness!	What the Student Failed to Understand	Correct Response
Continuation of question 2 (e) $-2b^3(5a^2b^3+3a^3b)-5a(6a^2b^4-7ab^6)$ $= (-5a^2)(-2b^3)(b^3)(-2b^3)$ <i>operations disappear then reappear</i> $= (-10a^2b^9)(2b^9)$ $= (20a^2b^{12}) + (-6a^3b^4) + -5a(6a^2b^4+7ab^6)$ $= (20a^2b^{12}) + (-6a^3b^4) + (-30a^3b^4) + (-35a^2b^6)$ $= (14a^5b^{16}) + (-65a^5b^{10})$ $= -51a^5b^{26}$ <i>Anything to the exponent 0 is ONE!</i> <i>-6k</i>	The distributive property is not applied correctly. The monomial on the outside of the brackets should multiply each TERM within the brackets, <u>NOT</u> each factor. Also, the student has forgotten to look for like terms when adding/subtracting.	(e) $-2b^3(5a^2b^3+3a^3b)-5a(6a^2b^4-7ab^6)$ $= -10a^2b^6 - 6a^3b^4 - 30a^3b^4 + 35a^2b^6$ $= -10a^2b^6 + 35a^2b^6 - 6a^3b^4 - 30a^3b^4$ * $= 25a^2b^6 - 36a^3b^4$
(d) $\frac{32b^9d^2(-b^{-1}d^4)}{3^{-2}(2b^3d)^{-1}(35abc)^0}$ <i>Too much detail! Use Scrap paper!</i> $32(bbbbbbbbbb)(b)(dd)(ddddd)$ $= (\frac{1}{3^2})[(2)(\frac{1}{(2b^3d)^1})](1)$ * $= \frac{32b^{10}d^6}{\frac{1}{9} \cdot [2 \frac{2}{b^3d}]}$ <i>Multiplication changed to subtraction.</i> $= \frac{32b^{10}d^6}{\frac{1}{9}(\frac{4}{2b^3d})}$ $= \frac{32b^{10}d^6}{\frac{1}{9} \cdot \frac{2}{b^3d}}$ $= \frac{32b^{10}d^6}{\frac{2}{9b^3d}}$ $= \frac{32b^{10}d^6}{4.5b^3d}$ $= 7b^7d^5$	• too much detail → use scrap paper • multiplication magically changed to subtraction • disorganized	(d) $\frac{32b^9d^2(-b^{-1}d^4)}{3^{-2}(2b^3d)^{-1}(35abc)^0}$ <i>anything to exponent zero is 1</i> $= \frac{(-1)(32)b^9b^{-1}d^2d^4}{(\frac{1}{3^2})(2^{-1})(b^3)^{-1}(d^{-1})(1)}$ <i>-b⁻¹ is equivalent to (-1)b⁻¹</i> $= \frac{-32b^8d^6}{(\frac{1}{9})(\frac{1}{2})b^{-3}d^{-1}}$ <i>Showing work</i> $= [\frac{-32}{(\frac{1}{18})}][\frac{b^8}{b^{-3}}][\frac{d^6}{d^{-1}}]$ $= -576b^{8-(-3)}d^{6-(-1)}$ $= -576b^{11}d^7$