Übung zu Binomische Formel 14. Stunde
Tägliche Übung 20 min
I. Kopfrechnen

1. 548 + [117] = 665

2. 817 − [321] = 496

ZT
3. 30.845 ≈ 30.000 $5(7x+9) = 35x+45$
HT $(x+3)(x+7)=x^2+3x+7x+21$
4. 981.250 ≈ 1.000.000 $= x^2 + 10x + 21$

5. 572 + 275 + 428 = 1275 $-2x(5 +9x) = -10x - 18x^2$
      $(y+3)(y-5) = y^2-5y+3y-15$
6. 654 − 195 = 459 $=y^2 - 2y - 15$

7. 5782 + 802 = 6584 $-10y(20-10y) = -200y+100y^2$
Mio. $(a-3)(b-9) = ab - 9a - 3b + 27$
8. 754.822.100 ≈ 755 Mio

9. 0,45 * 0,02 = 0,009

10. 1500 : 0,05 = 30000

2. Berechne!
a.) $(4a)^2$ = $16a^2$
b.) $(6p)^2$ = $36p^2$
c.) $(1/2x)^2$ = $1/4x^2$
d.) $(2/3b)^2$ = $4/9b^2$
e.) $(1,5c)^2$ = $2,25c^2$
f.) $(-2x)^2$ = $4x^2$
g.) $(2,5r)^2$ = $6,25r^2$
h.) $(-3/4z)^2$ = $9/16z^2$
i.) $-(-5x)^2$ = $-25x^2$
j.) $-(-2y)^3$ = $8y^3$

Wiederholung zu binomischen Formeln 10 min
a.) $(4z + 9)(4z + 9)$ = $16z^2 + 72z + 81$
b.) $(2x + 5y)(2x - 5y)$ = $4x^2 - 25y^2$
c.) $(10a - 12b)(10a - 12b)$ = $100a^2 - 240ab + 144b^2$
d.) $4x^2 - 25y^2$ = $(2x + 5y)(2x - 5y)$
e.) $16a^2 - 56a + 49$ = $(4a - 7)(4a - 7)$
f.) $121s^2 + 165 st + 225t^2$ = $(11s + 15t)(11s + 15t)$

7. Löse die Gleichungen mithilfe der binomischen Formeln.

  a) $(x + 2)^2 = x^2 + 8$ **c)** $(y + 4)^2 = (y - 3)^2$ **e)** $(a - 5)(a + 5) = (a - 7)(a + 4)$

  b) $(x - 1)^2 = (x - 7)^2$ **d)** $(z + 5)^2 = (z + 3)^2$ **f)** $(2y - 4)^2 - 3y = 4(y + 3)(y - 4)$

$(x+2)^2 = x^2 + 8$

$x^2 + 4x + 4 = x^2 + 8$	$/-x^2$
$4x + 4 = 8$	$/-4$
$4x = 4$	$/:4$
x = 1	

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

$y^2 + 8y + 16 = y^2 - 6x + 9$	$/-y^2$
$8y + 16 = -6y + 9$	$/+6y$
$14y + 16 = 9$	$/-16$
$14y = -7$	$/:14$
x = -0,5	

$(x-1)^2 = (x-7)^2$

$x^2 - 2x + 1 = x^2 - 14x + 49$	$/-x^2$
$-2x + 1 = -14x + 49$	$/+14x$
$12x + 1 = 49$	$/-1$
$12x = 48$	$/:12$
x = 4	

$(z + 5)^2 = (z + 3)^2$

$z^2 + 10z + 25 = z^2 + 6z + 9$	$/-z^2$
$10z + 25 = 6z + 9$	$/-6z$
$4z + 25 = 9$	$/-25$
$4z = -16$	$/:4$
z = -4	

$(a - 5)(a + 5) = (a - 7)(a + 4)$

$a^2 - 25 = a^2 + 4a - 7a - 28$	$/-a^2$
$-25 = -3a - 28$	$/+28$
$-3a = 3$	$/:(-3)$
a = -1	

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

$4y^2 - 16y + 16 - 3y = 4(y^2 - 4y + 3y - 12)$	
$4y^2 - 19y + 16 = 4(y^2 - y - 12)$	
$4y^2 - 19y + 16 = 4y^2 - 4y - 48$	$/-4y^2$
$-19y + 16 = -4y - 48$	$/+19y$
$16 = 15y - 48$	$/+48$
$12y = 64$	$/: 15$
y = 4,267 (64/15)	