LK Mathematik 11/12 NI Bild-Term-Binome

1a) $(4x+5)(3x+11) = 12x^2 + 44x + 15x + 55$
$= 12x^2 + 59x + 55$

1b) $(x+9)^2 = x^2 + 18x + 81$ (1. BINOM)

1c) $(2a-4b)(a-3b) = 2a^2 - 6ab - 4ab + 12b^2$
$= 2a^2 - 10ab + 12b^2$

1d) $(3m-p)^2 = 9m^2 - 6mp + p^2$ (2. BINOM)

1e) $(5p^2-2q)(5p^2+2q) = 25p^4 - 4q^2$ (3. BINOM)

1f) $(3x+\sqrt{m})(3x-\sqrt{11}) = 9x^2 - 11$ (3. BINOM)

2a) $b^2 - 10b + 21 = (b-3)(b-7)$

2b) $b^2 - b - 42 = (b-7)(b+6)$

2c) $c^2 - 256 = (c+16)(c-16)$ 3. BINOM

2d) $c^2 + 5c - 36 = (c+9)(c-4)$

2e) $i^2 + 14i + 45 = (i+9)(i+5)$

3a) $5m^3 + 30m^2 + 45m = 5m(m^2 + 6m + 9)$
$= 5m(m+3)(m+3)$

3b) $3x^2 - 30x + 72 = 3(x^2 - 10x + 24)$
$= 3(x-6)(x-4)$

3c) $17a^2 - 68c^2 = 17(a^2 - 4c^2)$
$= 17(a+2c)(a-2c)$

3d) $6x^3 + 12x^2 = 6x^2(x+2)$

4a) $(x+10)(x-3) = (x-14)(x-1)$ TU

$x^2 - 3x + 10x - 30 = x^2 - x - 14x + 14$ $-x^2$

$7x - 30 = -15x + 14$ $+15x$

$22x - 30 = 14$ $+30$

$22x = 44$ $:2$

$x = 2$

4b) $(x-8)(x+13) = (x-7)^2 - 2(x+3)$ TU

$x^2 + 13x - 8x - 104 = x^2 - 14x + 49 - 2x - 6$ TU

$x^2 + 5x - 104 = x^2 - 16x + 43$ $-x^2$

$5x - 104 = -16x + 43$ $+16x$

$21x - 104 = 43$ $+104$

$21x = 147$ $:21$

$x = 7$

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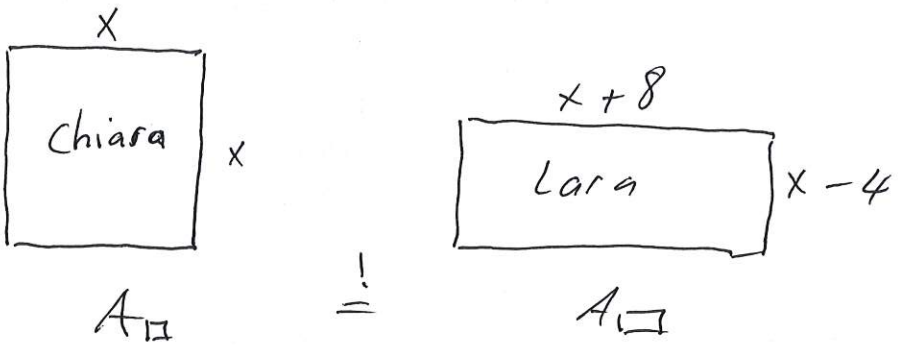
5)

S1)



S2) $x^2 = (x+8)(x-4)$ TU

$x^2 = x^2 + 8x - 4x - 32$ $-x^2$

$0 = 4x - 32$ $+32$

$32 = 4x$ $:4$

$8 = x$

S3) Laras Pool ist 16m lang und 4m breit.
(Chiaras Pool hat eine Seitenlänge von 8m)

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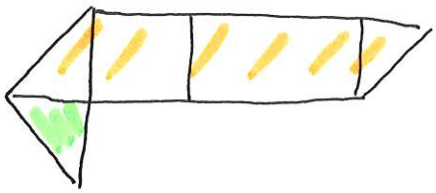
6) links: $A = 3b \cdot a + \frac{a \cdot b}{2}$

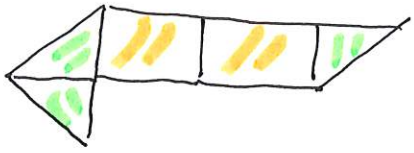
$= 3ab + \frac{ab}{2}$

$= \frac{6ab + ab}{2} = \frac{7ab}{2}$ oder $3.5\,ab$



rechts: $A = 2 \cdot a \cdot b + \frac{3 \cdot a \cdot b}{2}$

$= \frac{4 \cdot a \cdot b + 3 \cdot a \cdot b}{2} = \frac{7ab}{2}$ oder $3.5\,ab$



7a) $\frac{2z-12}{z^2-12z+36} = \frac{2\cancel{(z-6)}}{\cancel{(z-6)}(z-6)} = \frac{2}{z-6}$

7b) $\frac{e^2+8e+7}{e^2-49} = \frac{\cancel{(e+7)}(e+1)}{\cancel{(e+7)}(e-7)} = \frac{e+1}{e-7}$

7c) $\frac{t^2-8t+16}{t^2-11t+28} = \frac{\cancel{(t-4)}(t-4)}{\cancel{(t-4)}(t-7)} = \frac{t-4}{t-7}$

8a) $(a-6)^2-(5a-3)^2 = a^2-12a+36-[25a^2-30a+9]$

$= a^2-12a+36-25a^2+30a-9$

$= -24a^2+18a+27$

8b) $(12g-4h)^2-2(7h+g)^2 = 144g^2-96gh+16h^2-2(49h^2+14hg+g^2)$

$= 144g^2-96gh+16h^2-98h^2-28gh-2g^2$

$= 142g^2-124gh-82h^2$