Fehlerteufel Lösungen:

<u>Aufgaben leicht:</u>

Richtig umgeformt: L3, L5, L8, L19

Falsch umgeformt:

L1	korrigiert
$-2x + 3 = 4 - x \qquad / - 3$ $-2x = 4 - x$	$-2x + 3 = 4 - x \qquad / - 3$ $-2x = 1 - x$
L2	
$-w = 5 \qquad / + 1$ $w = 6$	$-w = 5 \qquad / \cdot (-1)$ $w = -5$
L4	
$-2(5 - b) = 9 \qquad / + 2$ $5 - b = 11$	$-2(5 - b) = 9 \qquad / : (-2)$ $5 - b = -4,5$
L6	
$19x + 84 = 23x \qquad / - 23x$ $4x + 84 = 0$	$19x + 84 = 23x \qquad / - 23x$ $-4x + 84 = 0$
L7	
$r = 3 - r \qquad / - r$ $0 = r$	$r = 3 - r \qquad / + r$ $2r = 3$
L9	
$-5 + 3(c - 2) = 9 \qquad / : 3$ $-5 + c - 2 = 3$	$-5 + 3(c - 2) = 9 \qquad / : 3$ $-\dfrac{5}{3} + c - 2 = 3$
L10	
$0,5t - 9 + t = 5 - 2t \qquad / + 2t$ $2,5t - 9 + 3t = 5$	$0,5t - 9 + t = 5 - 2t \qquad / + 2t$ $2,5t - 9 + t = 5$
L11	
$3q = 6 - 3q \qquad / : 3$ $q = 6 - q$	$3q = 6 - 3q \qquad / : 3$ $q = 2 - q$

L12	
$-2x + 9 = 4 - 5x \qquad / + 2x$ $\quad 9 = 4 - \boxed{7x}$	$-2x + 9 = 4 - 5x \qquad / + 2x$ $\quad 9 = 4 - 3x$
L13	
$8p - 6 = 6 - p \qquad / + 6$ $\quad 8p = \boxed{-p}$	$8p - 6 = 6 - p \qquad / + 6$ $\quad 8p = 12 - p$
L14	
$0,1x = 9 \qquad / \boxed{-} 0,1$ $\quad x = 8,9$	$0,1x = 9 \qquad / : 0,1$ $\quad x = 90$
L15	
$a + 3 = 5 \qquad / - 3$ $\quad a = \boxed{-2}$	$a + 3 = 5 \qquad / - 3$ $\quad a = 2$
L16	
$3c + 1 = -6 \qquad / - 1$ $\quad 3c = -7 \qquad / \boxed{-} 3$ $\quad c = -11$	$3c + 1 = -6 \qquad / - 1$ $\quad 3c = -7 \qquad / : 3$ $\quad c = -\dfrac{7}{3}$
L17	
$-d = 3 \qquad / \cdot (-1)$ $\quad d = \boxed{3}$	$-d = 3 \qquad / \cdot (-1)$ $\quad d = -3$
L18	
$-e = -8 \qquad / \boxed{-} 1$ $\quad e = -9$	$-e = -8 \qquad / \cdot (-1)$ $\quad e = 8$
L20	
$-5q = -8 \qquad / : (-5)$ $\quad q = \boxed{-\dfrac{8}{5}}$	$-5q = -8 \qquad / : (-5)$ $\quad q = \dfrac{8}{5}$

Aufgaben mittel:

Richtig umgeformt: M1, M5, M6, M8, M10, M12, M13, M15, M17

Falsch umgeformt:

M2	korrigiert
$4z = -5z \qquad / - 5z$ $-z = 0$	$4z = -5z \qquad / + 5z$ $9z = 0$
M3	
$8z = 0 \qquad / - 8$ $z = 0$	$8z = 0 \qquad / : 8$ $z = 0$
M4	
$-16z = 0 \qquad / : 16$ $z = 16$	$-16z = 0 \qquad / : (-16)$ $z = 0$
M7	
$x = -2x \qquad / : x$ $x = -2$	$x = -2x \qquad / - x$ $0 = -3x$
M9	
$-0,5c = c \qquad / : (-0,5c)$ $1 = c$	$-0,5c = c \qquad / + 0,5c$ $0 = 1,5c$
M11	
$-11 - x = 11 - 2x \qquad / + 11$ $x = 22 - 2x$	$-11 - x = 11 - 2x \qquad / + 11$ $-x = 22 - 2x$
M14	
$x - 7 = -x + 8 \qquad / - x$ $0x - 7 = 8$ $-7 = 8$	$x - 7 = -x + 8 \qquad / - x$ $-7 = -2x - 8$
M16	
$2(x + 5) = x - 7$ $2x + 10 = x - 7 \qquad / - 10$ $2x = x - 17 \qquad / - x$ $x = 17$	$2(x + 5) = x - 7$ $2x + 10 = x - 7 \qquad / - 10$ $2x = x - 17 \qquad / - x$ $x = -17$

M18	
$$7 - (x+2) = -x$$ $$\boxed{9} - x = -x \quad / + x$$ $$9 = 0$$	$$7 - (x+2) = -x$$ $$5 - x = -x \quad / + x$$ $$5 = 0$$
M19	
$$-(z+1) = z$$ $$\boxed{z} - 1 = z \quad / - z$$ $$-1 = 0$$	$$-(z+1) = z$$ $$-z - 1 = z \quad / + z$$ $$-1 = 2z$$ $$\left(z = -\frac{1}{2}\right)$$
M20	
$$(z+1) \cdot (-2) = z$$ $$\boxed{z + 1 - 2} = z \quad / - z$$ $$-1 = 0$$	$$(z+1) \cdot (-2) = z$$ $$-2z - 2 = z \quad / + 2z$$ $$-2 = 3z$$ $$\left(z = -\frac{2}{3}\right)$$

Aufgaben schwer:

Richtig umgeformt: S1, S4, S8, S10, S13, S15

Falsch umgeformt:

S2	**korrigiert**
$$\frac{12x}{4} + \frac{48}{12} = \frac{1}{6} \quad / \cdot 12$$ $$\boxed{12x} + 48 = 2$$	$$\frac{12x}{4} + \frac{48}{12} = \frac{1}{6} \quad / \cdot 12$$ $$36x + 48 = 2$$
S3	
$$\frac{x}{4} + \frac{5}{8} = \frac{1}{4} \quad / \cdot 8$$ $$\boxed{x + 8} = 2$$	$$\frac{x}{4} + \frac{5}{8} = \frac{1}{4} \quad / \cdot 8$$ $$2x + 5 = 2$$
S5	

$\frac{12x}{3} + \frac{48}{3} = \frac{1}{6}$ $\quad / \cdot 3$ $12x + 48 = \boxed{3}$	$\frac{12x}{3} + \frac{48}{3} = \frac{1}{6}$ $\quad / \cdot 3$ $12x + 48 = \frac{3}{6}$ $(12x + 48 = \frac{1}{2})$

S6

$\frac{1}{x} + \frac{x}{x} = \frac{2}{x} + \frac{2}{x}$ $\quad / \cdot x$ $\boxed{x = 2}$	$\frac{1}{x} + \frac{x}{x} = \frac{2}{x} + \frac{2}{x}$ $\quad / \cdot x$ $1 + x = 2 + 2$ $(1 + x = 4)$

S7

$\frac{16x}{2x} + \frac{9}{2} = \frac{3}{4x}$ $\quad / \cdot \boxed{2}$ $32x + 18 = 6$	$\frac{16x}{2x} + \frac{9}{2} = \frac{3}{4x}$ $\quad / \cdot 4x$ $32x + 18x = 3$

S9

$\frac{7}{8y} + \frac{1}{2} = \frac{4}{4y}$ $\quad / \cdot 8y$ $7 + \boxed{4 = 4}$	$\frac{7}{8y} + \frac{1}{2} = \frac{4}{4y}$ $\quad / \cdot 8y$ $7 + 4y = 8$

S11

$\frac{12}{z} = \frac{1}{3}$ $\quad / \cdot z$ $12 = \boxed{3z}$	$\frac{12}{z} = \frac{1}{3}$ $\quad / \cdot z$ $12 = \frac{z}{3}$

S12

$\frac{12}{x} = \frac{1}{3x}$ $\quad / \cdot x$ $12 = \boxed{\frac{1}{2x}}$	$\frac{12}{x} = \frac{1}{3x}$ $\quad / \cdot x$ $12 = \frac{1}{3}$

S14

$8x + 7 = 3x - 3$ $\quad / - 3x$ $5x + 7 = \boxed{3}$ $\quad / - 7$ $5x = -4$ $\quad / : 5$ $x = -0,8$	$8x + 7 = 3x - 3$ $\quad / - 3x$ $5x + 7 = -3$ $\quad / - 7$ $5x = -10$ $\quad / : 5$ $x = -2$

S16

$\dfrac{12+2x}{2}=0 \qquad /\cdot 2$ $12+2x=\boxed{2} \qquad /-12$ $2x=-10 \qquad /:2$ $x=-5$	$\dfrac{12+2x}{2}=0 \qquad /\cdot 2$ $12+2x=0 \qquad /-12$ $2x=-12 \qquad /:2$ $x=-6$

S17

$(x-4)^2=x^2$ $x^2 \boxed{-16}=x^2 \qquad /-x^2$ $-16=0$	$(x-4)^2=x^2$ $x^2-8x+16=x^2 \qquad /-x^2$ $(-8x+16=0 \qquad /-16)$ $(-8x=-16 \qquad /:(-8))$ $(x=2)$

S18

$(v+5)^2=v^2$ $v^2\boxed{-10v}+25=v^2 \qquad /-v^2$ $-10v=-25 \qquad /:10$ $v=2,5$	$(v+5)^2=v^2$ $v^2+10v+25=v^2 \qquad /-v^2$ $(10v+25=0 \qquad /-25)$ $(10v=-25 \qquad /:10)$ $(v=-2,5)$

S19

$(y+5)(y-5)=y^2$ $y^2\boxed{+5-5}=y^2 \qquad /-y^2$ $5-5=0$ $0=0$	$(y+5)(y-5)=y^2$ $y^2-25=y^2 \qquad /-y^2$ $-25=0$

S20

$(a-4)^2-(a+3)^2=21$ $-8a+16\boxed{+6a+9}=21$ $2a+25=21 \qquad /-25$ $2a=-4 \qquad /:2$ $a=2$	$(a-4)^2-(a+3)^2=21$ $-8a+16-6a-9=21$ $-14a+7=21 \qquad /-7$ $-14a=14 \qquad /:(-14)$ $a=-1$