

$$\begin{aligned}
 1 - 2x &= 3x + 4 & | +2x \\
 1 &= 5x + 4 & | -4 \\
 -3 &= 5x & | :5 \\
 \underline{\underline{-\frac{3}{5} = x}} & & \color{red}{1}
 \end{aligned}$$

$$\begin{aligned}
 b.) \quad 17 + \frac{27}{x} &= \frac{1}{2} \\
 \frac{28x}{2x} + \frac{54}{2x} &= \frac{x}{2x} & | \cdot 4x \\
 28x + 54 &= x & | -x \\
 27x + 54 &= 0 & | -54 \\
 27x &= -54 & | :27 \\
 \underline{\underline{x = -2}} & & \color{red}{1}
 \end{aligned}$$

(4)

$$\begin{aligned}
 c.) \quad \frac{3}{2x} &= \frac{1}{2} \\
 \frac{3}{2x} &= \frac{x}{2x} & | \cdot 4x \\
 \underline{\underline{3 = x}} & & \color{red}{1}
 \end{aligned}$$

$$\begin{aligned}
 d.) \quad \frac{2}{x+8} &= \frac{15}{3-2x} \\
 \frac{2 \cdot (3-2x)}{(x+8)(3-2x)} &= \frac{15 \cdot (x+8)}{(x+8)(3-2x)} & | \cdot 4x \\
 2(3-2x) &= 15(x+8) \\
 6 - 4x &= 15x + 120 & | +4x \\
 6 &= 19x + 120 & | -120 \\
 -114 &= 19x & | :19 \\
 \underline{\underline{-6 = x}} & & \color{red}{1}
 \end{aligned}$$

2.

a.) $3(2x+5) - 4 > 5(2x-1) + 4x$

$$6x + 15 - 4 > 10x - 5 + 4x$$

$$6x + 11 > 14x - 5 \quad | -6x$$

$$11 > 8x - 5 \quad | +5$$

$$16 > 8x \quad | :8$$

$$\underline{2 > x}$$

$$\underline{\underline{L = \{ 1; 0; -1; -2; \dots \}}}$$

2

(4)

b.) $\frac{3}{2x-1} < \frac{5}{4x}$

$$\frac{3 \cdot 4x}{4x(2x-1)} < \frac{5 \cdot (2x-1)}{4x(2x-1)} \quad | \cdot 4x$$

$$3 \cdot 4x < 5 \cdot (2x-1)$$

$$12x < 10x - 5 \quad | -10x$$

$$2x < -5 \quad | :2$$

$$\underline{x < -2,5}$$

$$\underline{\underline{L = \{ -3; -4; -5; \dots \}}}$$

2

3.

a.) $\frac{x}{4} - 5 = \frac{x}{5} + 4$

$$\frac{5x}{20} - \frac{100}{20} = \frac{4x}{20} + \frac{80}{20} \quad | \cdot 20$$

$$5x - 100 = 4x + 80 \quad | -4x$$

$$x - 100 = 80 \quad | +100$$

$$\underline{x = 180}$$

$$\underline{\underline{\text{Zahl: } 180}}$$

2

$$b.) \quad \frac{13+x}{16-2x} = 3 \quad | \cdot (16-2x)$$

$$13+x = 3 \cdot (16-2x)$$

$$13+x = 48 - 6x \quad | +6x$$

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$$7x + 13 = 48 \quad | -13$$

$$7x = 35 \quad | :7$$

$$\underline{x = 5}$$

Zahl: 5.

2

4

$$2x + 3y = 80 \quad | -2x$$

$$3y = 80 - 2x \quad | :3$$

$$\underline{y = \frac{80-2x}{3}}$$

(2)

x	1	4	7	10	13	16	19	22	25	...
y	26	24	22	20	18	16	14	12	10	...

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$$\Rightarrow \underline{\underline{x = 19, y = 14}}$$

2

5

$$4(x+1) - 57 = 47 - (2x-5)$$

$$4x + 4 - 57 = 47 - 2x + 5$$

$$4x - 53 = 52 - 2x \quad | +2x$$

(2)

$$6x - 53 = 52 \quad | +53$$

$$6x = 105 \quad | :6$$

$$\underline{x = 16}$$

Zahl: 16.

2

$$\underline{6} \quad \begin{array}{l} \text{Mädchen: } \frac{5x}{4} - 4 \\ \text{Knaben: } x + 8 \end{array} \quad \begin{array}{l} \text{⊗} \cdot \frac{4}{3} \\ \text{⊗} = 0 \end{array}$$

$$\Rightarrow \frac{4}{3} \cdot \left(\frac{5x}{4} - 4 \right) = x + 8$$

$$\frac{5x}{3} - \frac{16}{3} = x + 8 \quad | \cdot 3$$

$$\textcircled{2} \quad 5x - 16 = 3x + 24 \quad | -3x$$

$$2x - 16 = 24 \quad | +16$$

$$2x = 40 \quad | : 2$$

$$\underline{x = 20}$$

Anzahl Mädchen zu Beginn: 25 2

18 Pkte