

1

1a $7x + 3 = 4x + 15$
 $3x + 3 = 15$
 $3x = 12$
 $x = 4$

1b $5a + 9 = 8a + 3$
 $9 = 3a + 3$
 $6 = 3a$
 $a = 2$

1c $6p + 2 = 5p + 17$
 $p + 2 = 17$
 $p = 15$

1d $4m - 8 = 2m + 4$
 $2m - 8 = 4$
 $2m = 12$
 $m = 6$

1e $3q + 3 = 8q - 22$
 $3 = 5q - 22$
 $25 = 5q$
 $q = 5$

1f $7h - 12 = h + 36$
 $6h - 12 = 36$
 $6h = 48$
 $h = 8$

1g $9z + 13 = 7z - 15$
 $2z + 13 = -15$
 $2z = -28$
 $z = -14$

1h $-8d + 7 = 2d + 47$
 $7 = 10d + 47$
 $-40 = 10d$
 $d = -4$

1i $6w - 7 = 4w - 21$
 $2w - 7 = -21$
 $2w = -14$
 $w = -7$

1j $12 + 2k = -5k - 23$
 $12 + 7k = -23$
 $7k = -35$
 $k = -5$

2

2a $8x + 13 = 3x + 33$
 $5x + 13 = 33$
 $5x = 20$
 $x = 4$

2b $4a + 13 = 7a + 3$
 $13 = 3a + 3$
 $10 = 3a$
 $a = 3\frac{1}{3}$

2c $7p + 7 = 5p + 19$
 $2p + 7 = 19$
 $2p = 12$
 $p = 6$

2d $3m - 7 = m + 13$
 $2m - 7 = 13$
 $2m = 20$
 $m = 10$

2e $5q + 6 = 9q - 32$
 $6 = 4q - 32$
 $38 = 4q$
 $q = 9\frac{1}{2}$

2f $9h - 14 = 2h + 35$
 $7h - 14 = 35$
 $7h = 49$

$$h = 7$$

$$\begin{aligned} 2g \quad 11z + 23 &= 5z - 37 \\ 6z + 23 &= -37 \\ 6z &= -60 \\ z &= -10 \end{aligned}$$

$$\begin{aligned} 2h \quad -8d + 9 &= 3d + 42 \\ 9 &= 11d + 42 \\ -33 &= 11d \\ d &= -3 \end{aligned}$$

$$\begin{aligned} 2i \quad 9w - 31 &= 6w - 18 \\ 3w - 31 &= -18 \\ 3w &= 13 \\ d &= 4\frac{1}{3} \end{aligned}$$

$$\begin{aligned} 2j \quad 5 + 4k &= -5k - 67 \\ 5 + 9k &= -67 \\ 9k &= -72 \\ k &= -8 \end{aligned}$$

3

$$8x - 43 = 3x - 25$$

3a

$$\begin{aligned} 5x - 43 &= -25 \\ 5x &= 18 \\ x &= 3,6 \end{aligned}$$

$$\begin{aligned} 3b \quad 4a + 19 &= 7a - 14 \\ 19 &= 3a - 14 \\ 33 &= 3a \\ a &= 11 \end{aligned}$$

$$\begin{aligned} 3c \quad -5p - 12 &= p + 15 \\ -12 &= 6p + 15 \\ -27 &= 6p \\ p &= -4,5 \end{aligned}$$

$$\begin{aligned} 3d \quad 27 - 4m &= 2m + 3 \\ 27 &= 6m + 3 \\ 24 &= 6m \\ m &= 4 \end{aligned}$$

$$\begin{aligned} 3e \quad 6q + 2 &= -2q - 26 \\ 8q + 2 &= -26 \\ 8q &= -28 \\ q &= -3,5 \end{aligned}$$

$$\begin{aligned} 3f \quad 2h - 10 &= 16 - 3h \\ 5h - 10 &= 16 \\ 5h &= 26 \\ h &= 5,2 \end{aligned}$$

$$\begin{aligned} 3g \quad -2z + 17 &= -4z - 15 \\ 2z + 17 &= -15 \\ 2z &= -32 \\ z &= -16 \end{aligned}$$

$$\begin{aligned} 3h \quad -5d + 32 &= 3d - 32 \\ 32 &= 8d - 32 \\ 64 &= 8d \\ d &= 8 \end{aligned}$$

$$\begin{aligned} 3i \quad 12 - w &= 5w + 12 \\ 12 &= 6w + 12 \\ 0 &= 6w \\ w &= 0 \end{aligned}$$

$$\begin{aligned} 3j \quad 31 + -4k &= -7k - 23 \\ 31 + 3k &= -23 \\ 3k &= -54 \\ k &= -18 \end{aligned}$$

4

$$\begin{aligned} 4a \quad 6x - 37 &= 4x - 24 \\ 2x - 37 &= -24 \\ 2x &= 13 \\ x &= 6\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 4b \quad 14a + 67 &= 9a - 13 \\ 5a + 67 &= -13 \\ 5a &= -80 \end{aligned}$$

$$a = -16$$

$$\begin{aligned} 4c \quad -6p - 17 &= p + 18 \\ -17 &= 7p + 18 \\ -35 &= 7p \\ p &= -5 \end{aligned}$$

$$\begin{aligned} 4d \quad 45 - 9m &= 4m + 6 \\ 45 &= 13m + 6 \\ 39 &= 13m \\ m &= 3 \end{aligned}$$

$$\begin{aligned} 4e \quad 8q + 5 &= -4q - 25 \\ 12q + 5 &= -25 \\ 12q &= -30 \\ q &= -2\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 4f \quad 5h - 30 &= 46 - 5h \\ 10h - 30 &= 46 \\ 10h &= 76 \\ h &= 7,6 \end{aligned}$$

$$\begin{aligned} 4g \quad -3z + 26 &= -6z - 16 \\ 3z + 26 &= -16 \\ 3z &= -42 \\ z &= -14 \end{aligned}$$

$$\begin{aligned} 4h \quad -7d + 42 &= 8d - 33 \\ 42 &= 15d - 33 \\ 75 &= 15d \\ d &= 5 \end{aligned}$$

$$\begin{aligned} 4i \quad 19 - w &= 3w + 41 \\ 19 &= 4w + 41 \\ 22 &= 4w \\ w &= 5\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 4j \quad 19 + -9k &= -6k - 32 \\ 19 &= 3k - 32 \\ 51 &= 3k \\ k &= 17 \end{aligned}$$

5

5a $\frac{1}{2}x - 4 = \frac{1}{4}x + 12$
 $2x - 16 = x + 48$
 $x - 16 = 48$
 $x = 64$

5b $2(a + 3) = 5a - 5$
 $2a + 6 = 5a - 5$
 $6 = 3a - 5$
 $11 = 5a$
 $a = 3\frac{2}{3}$

5c $2\frac{2}{3}p - \frac{1}{3} = 3\frac{1}{3}p + 1$
 $8p - 1 = 10p + 3$
 $-1 = 2p + 3$
 $-4 = 2p$
 $p = -2$

5d $5(7 - m) = 2(m + 7)$
 $35 - 5m = 2m + 14$
 $35 = 7m + 14$
 $21 = 7m$
 $m = 3$

5e $3(q + 2) - 4q = q - 6$
 $3q + 6 - 4q = q - 6$
 $-q + 6 = q - 6$
 $6 = 2q - 6$
 $12 = 2q$
 $q = 6$

5f $-3(h - 2\frac{1}{3}) = 4(3\frac{1}{2} - h)$
 $-3h + 7 = 14 - 4h$
 $h + 7 = 14$
 $h = 7$

5g $5 - 4z + 17 = -3z - 15 + z$
 $22 - 4z = -2z - 15$
 $22 = 2z - 15$
 $37 = 2z$

$$z = 18^{1/2}$$

5h $3(2d + 4) = 2(d - 6) + 6$
 $6d + 12 = 2d - 12 + 6$
 $6d + 12 = 2d - 6$
 $4d + 12 = -6$
 $4d = -18$
 $d = -4^{1/2}$

5i $^{1/4}(12 - w) = 2^{3/4}w + 12$
 $^{3-1/4}w = 2^{3/4}w + 12$
 $12 - w = 11w + 48$
 $12 = 12w + 48$
 $-36 = 12w$
 $w = -3$

5j $3(k - 3) - 5(k - 4) = 4(k - 1)$
 $3k - 9 - 5k + 20 = 4k - 4$
 $-2k + 11 = 4k - 4$
 $11 = 6k - 4$
 $15 = 6k$
 $k = 2^{1/2}$

6

6a $^{1/3}x - 5 = ^{3/4}x + 15$
 $4x - 60 = 9x + 180$
 $-60 = 5x + 180$
 $-240 = 5x$
 $x = -48$

6b $7(a + 5) = 4a - 7$
 $7a + 35 = 4a - 7$
 $3a + 35 = -7$
 $3a = -42$
 $a = -14$

6c $1^{2/3}p - 3^{2/3} = 4^{1/3}p + 3$
 $5p - 11 = 13p + 9$

$$-11 = 8p + 9$$

$$-20 = 8p$$

$$p = -2\frac{1}{2}$$

$$6d \quad 9(5 - m) = 5(m + 2)$$

$$45 - 9m = 5m + 10$$

$$45 = 14m + 10$$

$$35 = 14m$$

$$m = 2\frac{1}{2}$$

$$6e \quad 7(q + 3) - 5q = q - 9$$

$$7q + 21 - 5q = q - 9$$

$$2q + 21 = q - 9$$

$$q + 21 = -9$$

$$q = -30$$

$$6f \quad -4(h - 2\frac{3}{4}) = 5(1\frac{1}{2} - h)$$

$$-4h + 11 = 7\frac{1}{2} - 5h$$

$$-8h + 22 = 15 - 10h$$

$$2h + 22 = 15$$

$$2h = -7$$

$$h = -3\frac{1}{2}$$

$$6g \quad 13 - 5z + 21 = -8z - 42 + z$$

$$34 - 5z = -7z - 42$$

$$34 + 2z = -42$$

$$2z = -76$$

$$z = -38$$

$$6h \quad 5(3d + 7) = 4(d - 9) + 5$$

$$15d + 35 = 4d - 36 + 5$$

$$15d + 35 = 4d - 31$$

$$11d + 35 = -31$$

$$11d = -66$$

$$d = -6$$

$$6i \quad \frac{1}{5}(15 - w) = 2\frac{1}{5}w + 27$$

$$3 - \frac{1}{5}w = 2\frac{1}{5}w + 27$$

$$15 - w = 11w + 135$$

$$15 = 12w + 135$$

$$-120 = 12w$$

$$w = -10$$

$$\begin{aligned}
6j \quad & 4(k - 6) - 6(k - 3) = 3(k - 4) \\
& 4k - 24 - 6k + 18 = 3k - 12 \\
& -2k - 6 = 3k - 12 \\
& -6 = 5k - 12 \\
& 6 = 5k \\
& k = 1,2
\end{aligned}$$

7

$$\begin{aligned}
7a \quad & 3b - 17 > 7 \\
& 3b - 17 = 7 \\
& 3b = 24 \\
& b = 8 \\
& \text{fout} \text{ ----- } 8 \text{ ----- } \text{goed} \\
& b > 8
\end{aligned}$$

$$\begin{aligned}
7b \quad & 28 - 4x > 0 \\
& 28 - 4x = 0 \\
& 28 = 4x \\
& x = 7 \\
& \text{goed} \text{ ----- } 7 \text{ ----- } \text{fout} \\
& x < 7
\end{aligned}$$

$$\begin{aligned}
7c \quad & 3(y - 4) < 15 \\
& 3(y - 4) = 15 \\
& 3y - 12 = 15 \\
& 3y = 27 \\
& y = 9 \\
& \text{goed} \text{ ----- } 9 \text{ ----- } \text{fout} \\
& y < 9
\end{aligned}$$

$$\begin{aligned}
7d \quad & 51 < 7x + 2 \\
& 51 = 7x + 2 \\
& 49 = 7x \\
& x = 7 \\
& \text{fout} \text{ ----- } 7 \text{ ----- } \text{goed} \\
& x > 7
\end{aligned}$$

$$\begin{aligned}
7e \quad & -17 + 4h > 11 + 3h \\
& -17 + 4h = 11 + 3h
\end{aligned}$$

$$\begin{aligned} -17 + h &= 11 \\ h &= 28 \\ \text{fout} &\text{----- } 28 \text{----- goed} \\ h &> 28 \end{aligned}$$

$$\begin{aligned} 7f \quad 6(p - 4) &< 3p - 21 \\ 6(p - 4) &= 3p - 21 \\ 6p - 24 &= 3p - 21 \\ 3p - 24 &= -21 \\ 3p &= 3 \\ p &= 1 \\ \text{goed} &\text{----- } 1 \text{----- fout} \\ p &< 1 \end{aligned}$$

$$\begin{aligned} 7g \quad 8w - 12 &< 12w - 36 \\ 8w - 12 &= 12w - 36 \\ -12 &= 4w - 36 \\ 24 &= 4w \\ w &= 6 \\ \text{fout} &\text{----- } 6 \text{----- goed} \\ w &> 6 \end{aligned}$$

$$\begin{aligned} 7h \quad 11 - q &> 14 - 3q \\ 11 - q &= 14 - 3q \\ 11 + 2q &= 14 \\ 2q &= 3 \\ q &= 1,5 \\ \text{fout} &\text{----- } 1,5 \text{----- goed} \\ q &> 1,5 \end{aligned}$$

$$\begin{aligned} 7i \quad 8x - 6 &> -3(4 - 2x) \\ 8x - 6 &= -3(4 - 2x) \\ 8x - 6 &= -12 + 6x \\ 2x - 6 &= -12 \\ 2x &= -6 \\ x &= -3 \\ \text{fout} &\text{----- } -3 \text{----- goed} \\ x &> -3 \end{aligned}$$

$$\begin{aligned} 7j \quad 4k - k + 5k + 4 &> 3k - 11 \\ 4k - k + 5k + 4 &= 3k - 11 \\ 8k + 4 &= 3k - 11 \end{aligned}$$

$$5k + 4 = -11$$

$$5k = -15$$

$$k = -3$$

goed ----- -3 ----- fout

$$k < -3$$

8

8a

$$2x - 3 = -\frac{1}{2}x + 4\frac{1}{2}$$

$$4x - 6 = -x + 9$$

$$5x - 6 = 9$$

$$5x = 15$$

$$x = 3$$

8b

$$-\frac{1}{2}x + 4\frac{1}{2} = \frac{2}{3}x + 10\frac{1}{3}$$

$$-3x + 27 = 4x + 62$$

$$27 = 7x + 62$$

$$-35 = 7x$$

$$x = -5$$

8c

$$2x - 3 = \frac{2}{3}x + 10\frac{1}{3}$$

$$6x - 9 = 2x + 31$$

$$4x - 9 = 31$$

$$4x = 40$$

$$x = 10$$

9

9a

$$\frac{3}{4}x > x - 2$$

$$\frac{3}{4}x = x - 2$$

$$3x = 4x - 8$$

$$-x = -8$$

$$x = 8$$

fout ----- 8 ----- goed

$$x > 8$$

9b

$$-2x - 11 > x - 2$$

$$-2x - 11 = x - 2$$

$$-11 = 3x - 2$$

$$-9 = 3x$$

$$x = -3$$

goed ----- -3 ----- fout

$$x < -3$$

9c

$$-2x - 11 > \frac{3}{4}x$$

$$-2x - 11 = \frac{3}{4}x$$

$$-8x - 44 = 3x$$

$$-44 = 11x$$

$$x = -4$$

goed ----- -4 ----- fout

$$x < -4$$