



# CAMI Wiskunde: Graad 10

## GRAAD 10 KABV Kurrikulum

### 10.4 Vergelykings en ongelykhede (A)

**1.1 Los die volgende lineêre vergelykings op.**

(a)  $\frac{y}{-11} = -6$

(b)  $15 + n = 22$

(c)  $13e = 91$

(d)  $-8t = 88$

**1.2 Los die volgende lineêre vergelykings op.**

(e)  $43p + 16 = 39p + 44$

(f)  $10y - 63 = 5y - 38$

(g)  $-5n - 54 = -15n - 164$

(h)  $-39x + 16 = -49x + 36$

**1.3 Los die volgende lineêre vergelykings op.**

(i)  $9x - 9 = 20x - 8 - 20x - 19$

(j)  $6y + 15 - 10y + 30 = -15y + 23$

(k)  $2r + 61 = 7r + 7 - 11r - 12$

**1.4 Los die volgende lineêre vergelykings op.**

(l)  $-2(6y - 6) = 5(-3y + 2) - 13$

(m)  $-4(-6f - 3) - 2 = 2(11f - 5)$

(n)  $5(4n + 2) = -5(3n + 7) + 5(9 + 5n) - 100$

(o)  $-7(-12m + 9) + 90 = -3(3m + 8) + 8(-6 + 13m)$

**1.5 Los die volgende lineêre vergelykings op.**

(p)  $t + 2 = \frac{t - 3}{9}$

(q)  $12 - n = \frac{n + 12}{7}$

(r)  $-10 - x = \frac{x - 7}{10}$

(s)  $\frac{8n + 9}{5} = \frac{3n - 8}{8}$

(t)  $\frac{3}{4}\left(n - \frac{5}{3}\right) = -8 + 4n$



## CAMI Wiskunde: Graad 10

**1.6 Los die volgende lineêre vergelykings op.**

(u)  $\frac{e}{e-8} + \frac{3}{e^2-64} = 1$

(v)  $\frac{8y-16}{y^2-6y-16} = \frac{y}{y-8} - \frac{y}{y+2}$

(w)  $\frac{x}{x-6} - \frac{7}{x^2-6x} = 1$

**2. Los die volgende kwadratiese vergelykings op.**

(a)  $16h^2 = -18h$

(b)  $d^2 - 169 = 0$

(c)  $5y^2 - 1125 = 0$

(d)  $3c^2 - 243 = 0$

(e)  $6x^2 - x - 1 = 0$

(f)  $4g^2 = -6g - 2$

(g)  $3w^3 - 192w = 0$



# CAMI Wiskunde: Graad 10

## MEMO

### 1.1 Los die volgende lineêre vergelykings op. [4.2.1.3]

(a)

$$\frac{y}{-11} = -6$$
$$y = 66$$

(b)  $15 + n = 22$

$$n = 22 - 15$$

$$n = 7$$

(c)  $13e = 91$

$$e = \frac{91}{13}$$

$$e = 7$$

(d)  $-8t = 88$

$$t = -11$$

### 1.2 Los die volgende lineêre vergelykings op. [4.2.1.4; 4.2.1.5; 4.2.1.6; 4.2.1.7]

(e)  $43p + 16 = 39p + 44$

$$43p - 39p = -16 + 44$$

$$4p = 28$$

$$p = 7$$

(f)  $10y - 63 = 5y - 38$

$$10y - 5y = 63 - 38$$

$$5y = 25$$

$$y = 5$$

(g)  $-5n - 54 = -15n - 164$

$$-5n + 15n = 54 - 164$$

$$10n = -110$$

$$n = -11$$

(h)  $-39x + 16 = -49x + 36$



# CAMI Wiskunde: Graad 10

$$-39x + 49x = -16 + 36$$

$$10x = 20$$

$$x = 2$$

## 1.3 Los die volgende lineêre vergelykings op. [4.2.1.8; 4.2.1.9]

(i)  $9x - 9 = 20x - 8 - 20x - 19$

$$9x - 20x + 20x = 9 - 8 - 19$$

$$9x = -18$$

$$x = -2$$

(j)  $6y + 15 - 10y + 30 = -15y + 23$

$$6y - 10y + 15y = -15 - 30 + 23$$

$$11y = -22$$

$$y = -2$$

(k)  $2r + 61 = 7r + 7 - 11r - 12$

$$2r - 7r + 11r = -61 + 7 - 12$$

$$6r = -66$$

$$r = -11$$

## 1.4 Los die volgende lineêre vergelykings op. [4.2.2.2; 4.2.2.3]

(l)  $-2(6y - 6) = 5(-3y + 2) - 13$

$$-12y + 12 = -15y + 10 - 13$$

$$-12y + 15y = -12 + 10 - 13$$

$$3y = -15$$

$$y = -5$$

(m)  $-4(-6f - 3) - 2 = 2(11f - 5)$

$$24f + 12 - 2 = 22f - 10$$

$$24f - 22f = -12 + 2 - 10$$

$$2f = -20$$

$$f = -10$$

(n)  $5(4n + 2) = -5(3n + 7) + 5(9 + 5n) - 100$

$$20n + 10 = -15n - 35 + 45 + 25n - 100$$

$$20n + 15n - 25n = -10 - 35 + 45 - 100$$

$$10n = -100$$

$$n = -10$$



# CAMI Wiskunde: Graad 10

$$\begin{aligned} \text{(o)} \quad & -7(-12m + 9) + 90 = -3(3m + 8) + 8(-6 + 13m) \\ & 84m - 63 + 90 = -9m - 24 - 48 + 104m \\ & 84m + 9m - 104m = 63 - 90 - 24 - 48 \\ & -11m = -75 \\ & m = \frac{75}{11} \end{aligned}$$

**1.5 Los die volgende lineêre vergelykings op. [4.2.3.5; 4.2.3.6; 4.2.3.7]**

(p)

$$\begin{aligned} t + 2 &= \frac{t-3}{9} \\ 9(t+2) &= t-3 \\ 9t+18 &= t-3 \\ 8t &= -21 \\ t &= \frac{-21}{8} \end{aligned}$$

(q)

$$\begin{aligned} 12 - n &= \frac{n+12}{7} \\ 7(12-n) &= n+12 \\ 84 - 7n &= n+12 \\ -7n - n &= -84 + 12 \\ -8n &= -72 \\ n &= 9 \end{aligned}$$

(r)

$$\begin{aligned} -10 - x &= \frac{x-7}{10} \\ 10(-10-x) &= x-7 \\ -100 - 10x &= x-7 \\ -10x - x &= 100 - 7 \\ -11x &= 93 \\ x &= \frac{-93}{11} \end{aligned}$$



## CAMI Wiskunde: Graad 10

(s)

$$\frac{8n+9}{5} = \frac{3n-8}{8}$$

$$8(8n+9) = 5(3n-8)$$

$$64n+72 = 15n-40$$

$$64n-15n = -72-40$$

$$49n = -112$$

$$n = \frac{-112}{49}$$

(t)

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

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

$$3n - 5 = -32 + 16n$$

$$3n - 16n = 5 - 32$$

$$-13n = -27$$

$$n = \frac{27}{13}$$

### 1.6 Solve the following linear equations. [4.2.3.9; 4.2.3.10]

(u)

$$\frac{e}{e-8} + \frac{3}{e^2-64} = 1$$

$$\frac{e}{e-8} + \frac{3}{(e+8)(e-8)} = 1$$

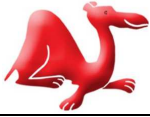
$$e(e+8)+3 = (e+8)(e-8)$$

$$e^2+8e+3 = e^2-64$$

$$8e = -3-64$$

$$8e = -67$$

$$e = \frac{-67}{8}$$



## CAMI Wiskunde: Graad 10

(v)

$$\begin{aligned}\frac{8y-16}{y^2-6y-16} &= \frac{y}{y-8} - \frac{y}{y+2} \\ \frac{8(y-2)}{(y-8)(y+2)} &= \frac{y}{y-8} - \frac{y}{y+2} \\ 8(y-2) &= y(y+2) - y(y-8) \\ 8y-16 &= y^2+2y-y^2+8y \\ 8y-2y-8y &= 16 \\ -2y &= 16 \\ y &= -8\end{aligned}$$

(w)

$$\begin{aligned}\frac{x}{x-6} - \frac{7}{x^2-6x} &= 1 \\ \frac{x}{x-6} - \frac{7}{x(x-6)} &= 1 \\ x^2-7 &= x(x-6) \\ x^2-7 &= x^2-6x \\ 6x &= 7 \\ x &= \frac{7}{6}\end{aligned}$$

**2. Solve quadratic equations by factorization.**  
**[4.2.5.1; 4.2.5.2; 4.2.5.3; 4.2.5.4; 4.2.5.5]**

(a)

$$\begin{aligned}16h^2 &= -18h \\ 16h^2 + 18h &= 0 \\ 2h(8h + 9) &= 0 \\ 2h = 0 &\quad \text{or} \quad 8h + 9 = 0 \\ h = 0 &\quad \quad \quad 8h = -9 \\ &\quad \quad \quad h = \frac{-9}{8}\end{aligned}$$



## CAMI Wiskunde: Graad 10

(b)  $d^2 - 169 = 0$   
 $(d + 13)(d - 13) = 0$   
 $d = -13$  or  $d = 13$

(c)  $5y^2 - 1125 = 0$   
 $5y^2 = 1125$   
 $y^2 = 225$   
 $y = \pm 15$

(d)  $3c^2 - 243 = 0$   
 $3(c^2 - 81) = 0$   
 $3(c + 9)(c - 9) = 0$   
 $c = -9$  or  $c = 9$

(e)  $6x^2 - x - 1 = 0$   
 $(3x + 2)(2x - 1) = 0$   
 $3x = -2$  or  $2x = 1$   
 $x = \frac{-2}{3}$  or  $x = \frac{1}{2}$

(f)  $4g^2 = -6g - 2$   
 $4g^2 + 6g + 2 = 0$   
 $2(2g^2 + 3g + 1) = 0$   
 $2(2g + 1)(g + 1) = 0$   
 $2g = -1$  or  $g = -1$   
 $g = \frac{-1}{2}$

(g)  $3w^3 - 192w = 0$   
 $3w(w^2 - 64) = 0$   
 $3w(w + 8)(w - 8) = 0$   
 $3w = 0$  or  $w + 8 = 0$  or  $w - 8 = 0$   
 $w = 0$  or  $w = -8$  or  $w = 8$