



1 $v = 180 \text{ km/h} = 180 / 3,6 \text{ m/s} = 50,0 \text{ m/s}$
 $s = 20 \text{ m}$
 $t = ?$
 $t = \frac{s}{v} = \frac{20 \text{ m}}{50 \text{ m/s}} = \mathbf{0.40 \text{ s}}$

2 $v = ?$
 $s = 500 \text{ m}$
 $t = 38,0 \text{ s}$
 $v_{\text{gem}} = \frac{s}{t} = \frac{500 \text{ m}}{38,0 \text{ s}} = 13,2 \text{ m/s}$

$v = 14 \text{ m/s}$
 $s = 500 \text{ m}$
 $t = ?$
 $t = \frac{s}{v} = \frac{500 \text{ m}}{14 \text{ m/s}} = \mathbf{36 \text{ s}}$

3 $v = ?$
 $s = 14 \text{ km}$
 $t = 37 \text{ min} = 37/60 \text{ h}$
 $v = \frac{s}{t} = \frac{14 \text{ km}}{37/60 \text{ h}} = 22,7 \text{ km/h} = 23 \text{ km/h}$

4 a) Lengte man is 8.5 cm
Afstand bal = 2 cm

Schaal $180 / 8.5 = 21$ $1 : 21$
 $S_{\text{bal}} = 21 \times 2 = 42 \text{ cm}$

b) De snelheid op de grond is momentaan
Bij benadering is dat de laatste twee plaatjes
 $v = ?$
 $s = 42 \text{ cm} = 0,42 \text{ m}$
 $t = 0,125 \text{ sec}$
 $v = \frac{s}{t} = \frac{0,42 \text{ m}}{0,125 \text{ s}} = 3,36 \frac{\text{m}}{\text{s}} = 3,4 \text{ m/s}$



c) $S_{\text{bal}} = 21 \times 6,1 = 128 \text{ cm} = 1,3 \text{ m}$

$$v = ?$$

$$s = 1,3 \text{ m}$$

$$t = 4 \times 0,125 \text{ sec} = 0,500 \text{ sec}$$

$$v = \frac{s}{t} = \frac{1,3\text{m}}{0,500\text{sec}} = 2,6\text{m/s}$$

5 $S_{\text{auto}} = 80361 - 80230 = 131\text{km}$

$$S_{\text{station}} = 0\text{km}$$

$$S_{\text{trein}} = 530\text{km}$$

$$S_{\text{lopen}} = 400\text{m} = 0,4\text{km}$$

$$S_{\text{metro}} = 23\text{km}$$

$$8:43 = 8 \frac{43}{60} \text{ h} = 8,72\text{h} \quad 10:04 = 10 \frac{4}{60} \text{ h} = 10,07\text{h}$$

$$t_{\text{auto}} = 10,07 - 8,72 = 1,35\text{h} = 1\text{h}21\text{min}$$

$$t_{\text{station}} = 26 / 60\text{h} = 0,43\text{h}$$

$$t_{\text{trein}} = 2\text{h}30\text{min} = 2,5\text{h}$$

$$t_{\text{lopen}} = 5\text{min} = 5 / 60\text{h} = 0,083\text{h}$$

$$t_{\text{metro}} = 21\text{min} = 21 / 60\text{h} = 0,35\text{h}$$

$$v_{\text{auto}} = \frac{s}{t} = \frac{131\text{km}}{1,35\text{h}} = 97,04\text{km/h}$$

$$v_{\text{station}} = \frac{s}{t} = \frac{0\text{km}}{0,43\text{h}} = 0\text{km/h}$$

$$v_{\text{Trein}} = \frac{s}{t} = \frac{530\text{km}}{2,5\text{h}} = 212\text{km/h}$$

$$v_{\text{lopen}} = \frac{s}{t} = \frac{0,4\text{km}}{5 / 60\text{h}} = 4,8\text{km/h}$$

$$v_{\text{metro}} = \frac{s}{t} = \frac{23\text{km}}{0,35\text{h}} = 65,71\text{km/h}$$

$$S_{\text{tot}} = S_1 + S_2 + S_3 + S_4 + S_5 = 131 + 0 + 530 + 0,4 + 23 = 684,4\text{km}$$

$$t_{\text{tot}} = t_1 + t_2 + t_3 + t_4 + t_5 = 1,35\text{h} + 0,43\text{h} + 2,5\text{h} + 0,083\text{h} + 0,35\text{h} = 4,71\text{h}$$

$$v_{\text{gem}} = ?$$

$$v_{\text{gem}} = \frac{s}{t} = \frac{684,4\text{km}}{4,71\text{h}} = 145\text{km/h}$$