

1.

$$a = 5 \text{ m/s}^2$$

$$v_1 = 50 \text{ m/s}; 180 \text{ km/h}$$

$$s_1 = 250 \text{ m}$$

$$a) v_1 = a \cdot t$$

$$\underline{v_1 = 50 \text{ m/s} = 180 \text{ km/h}}$$

$$b) s_1 = \frac{a \cdot t^2}{2}$$

$$\underline{s_1 = 250 \text{ m}}$$

2.

Motorrad 1:

$$a_1 = \frac{v_1}{t_1}$$

$$t_1 = 10 \text{ s}$$

$$\underline{a_1 = 2,78 \text{ m/s}^2}$$

$$v_1 = 100 \text{ km/h} \rightarrow 27,78 \text{ m/s}$$

Motorrad 2:

$$v = \sqrt{2 \cdot a \cdot s}$$

$$s_2 = 100 \text{ m}$$

$$v^2 = 2 \cdot a \cdot s$$

$$\underline{v_2 = 100 \text{ km/h} \rightarrow 27,78 \text{ m/s}}$$

$$a_2 = \frac{v^2}{2 \cdot s}$$

$$a_1 = 2,78 \text{ m/s}^2$$

$$\underline{a_2 = 3,85 \text{ m/s}^2}$$

$$a_2 = 3,85 \text{ m/s}^2$$

3.

$$a = 5 \text{ m/s}^2$$

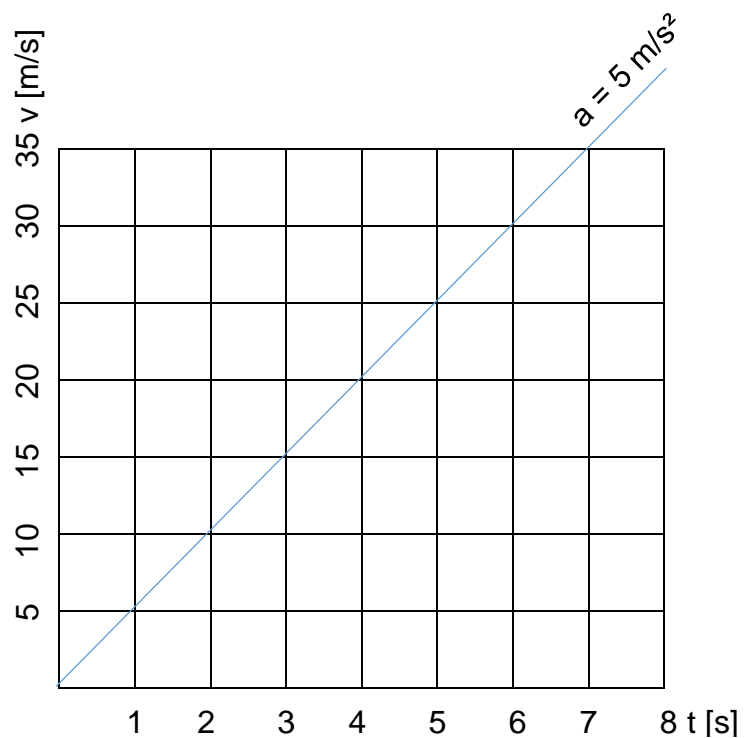
$$v = a \cdot t$$

$$1 \text{ s} = 5 \text{ m/s}$$

$$2 \text{ s} = 10 \text{ m/s}$$

$$3 \text{ s} = 15 \text{ m/s}$$

$$4 \text{ s} = 20 \text{ m/s}$$



4.

$$v_0 = 160 \text{ m/s}$$

$$v = v_0 + a \cdot t$$

$$\Delta t = 15 \text{ s}$$

$$\underline{v = 257,5 \text{ m/s}}$$

$$a = 6,5 \text{ m/s}^2$$

$$v = 257,5 \text{ m/s}$$

**5.**

$s = 45 \text{ m}$

$v = \sqrt{2 * a * s}$

$t = \frac{v}{a}$

$v = 30 \text{ m/s}$

$a = \frac{v^2}{2*s}$

$t = 3 \text{ s}$

$t = 3 \text{ s}$

$a = 10 \text{ m/s}^2$

$a = 10 \text{ m/s}^2$

**6.**

$t = 3 \text{ s}$

$a = \frac{v}{t}$

$s = \frac{a*t^2}{2}$

$v = 0,52 \text{ m/s}$

$a = 0,173 \text{ m/s}^2$

$s = 0,78 \text{ m}$

$s = 0,78 \text{ m}$

**7.**

$t = 5 \text{ s}$

$a = \frac{2*s}{t^2}$

$s = 20 \text{ m}$

$a = 1,6 \text{ m/s}^2$

$a = 1,6 \text{ m/s}^2$

**8.**

$t = 12 \text{ s}$

$a = \frac{2*s}{t^2}$

$v = a * t$

$s = 133 \text{ m}$

$a = 1,8472 \text{ m/s}^2$

$v = 22,16 \text{ m/s}$

$a = 1,85 \text{ m/s}^2$

$v = 22,16 \text{ m/s}$

**9.**

$v_0 = 28,8 \text{ km/h} \rightarrow 8 \text{ m/s}$

a)

b)

$v = 110,7 \text{ km/h} \rightarrow 30,75 \text{ m/s}$

$a = \frac{v - v_0}{t}$

$s = \frac{v_0*t + a*t^2}{2}$

$t = 3,9 \text{ s}$

$a = 5,83 \text{ m/s}^2$

$s = 59,94 \text{ m}$

$a = 5,83 \text{ m/s}^2$

$s = 59,94 \text{ m}$

**10.**

$s = 0,6 \text{ m}$

a)

$v = 60 \text{ m/s}$

Weil der Pfeil keinen Antrieb hat und durch den Luftwiderstand gebremst wird.

$a = 3000 \text{ m/s}^2$

$t = 0,02 \text{ s}$

b)

c)

$a = \frac{v^2}{2*s}$

$t = \frac{v}{a}$

$a = 3000 \text{ m/s}^2$

$t = 0,02 \text{ s}$