

FÍSICA B

Aula 01

	0	1	2	3	4	5	6	7	8	9
0		e	e	b	d	d	d	b	b	e
1	d	c	05							

01. e

02. e

03. b

$$\frac{90}{3,6} = 25 \text{ m/s}$$

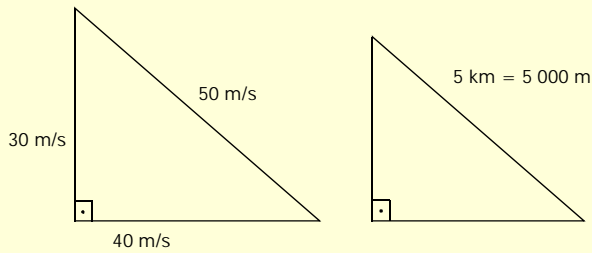
04. d

$$\frac{3\,000 \text{ cm}}{60 \text{ min}} = 50 \cdot 10^1 \text{ cm/s}$$

05. d

$$0,033 \frac{\text{m}}{\text{s}} \times 7\,200 \text{ s} = 237,6 \text{ m} \cong 240 \text{ m}$$

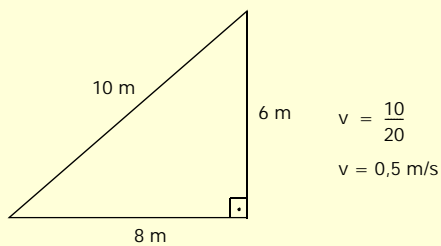
06. d



$$\therefore 50 = \frac{5\,000}{\Delta t}$$

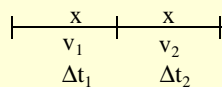
$$\Delta t = 100\text{s} = 1\text{min}40\text{s}$$

07. b



08. b

Generalizando:



$$v = \frac{\Delta x}{\Delta t}$$

$$v = \frac{x + x}{\Delta t_1 + \Delta t_2}$$

$$v = \frac{2x}{\frac{x}{v_1} + \frac{x}{v_2}}$$

$$v = \frac{2x}{\frac{x(v_2 + v_1)}{v_1 \cdot v_2}}$$

$$v = \frac{2 \cdot v_1 \cdot v_2}{v_2 + v_1}$$

$$\therefore v = \frac{2 \cdot v_1 \cdot v_2}{v_1 + v_2} \quad \therefore v = \frac{2 \cdot 120 \cdot 180}{120 + 180}$$

$$v = 144 \text{ km/h}$$

09. e

$$v = \frac{2 \cdot v_1 \cdot v_2}{v_1 + v_2}$$

$$v = \frac{2 \cdot 20 \cdot 30}{20 + 30}$$

$$v = 24 \text{ km/h}$$

10. d

$$v = \frac{2 \cdot 3 \cdot 7}{3 + 7} = 4,2 \text{ m/s}$$

11. c

$$n = \frac{21}{0,7} = 30$$

$$\therefore \Delta t = \frac{30}{1,5} = 20 \text{ s}$$

12. 05

$$d = \frac{4,74 \times 10^{16}}{3,00 \times 10^8 \times 3,16 \times 10^7} = 5 \text{ anos-luz}$$

Aula 02

	0	1	2	3	4	5	6	7	8	9
0		a	30	18	d	b	d	c	b	e
1	d									

01. a

02. 30

$$a = \frac{120}{4} = 30 \text{ m/s}^2$$

03. a = $\frac{72 - 0}{16 - 12} = 18 \text{ km/h}^2$

04. d

$$a = \frac{100}{25} = 4 \text{ m/s}^2$$

05. b

$$a = \frac{30}{6} = 5 \text{ m/s}^2$$

06. d
 $a = \frac{0-20}{20-0} = -1 \text{ m/s}^2$

$|a| = 1,0 \text{ m/s}^2$

07. c
 $a = \frac{0-20}{4-0} = -5 \text{ m/s}^2$

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

08. b
 $a = \frac{100}{20} = 5 \text{ m/s}^2$

09. e
 $a = \frac{12}{36} = \frac{1}{3} \text{ km/s}^2$

10. d
 $10^9 = \frac{9 \cdot 10^4 - 10^4}{\Delta t}$
 $\Delta t = 8 \cdot 10^{-5} \text{ s}$

Aula 03

	0	1	2	3	4	5	6	7	8	9
0		c	c	c	b	d	74	c	b	*
1	a	c	d							

01. c
 $0 = -40 + 80 t$
 $t = 0,5 \text{ h}$

02. c
 velocidade relativa:
 $V_{\text{rel}} = 20 - 15 = 5 \text{ m/s}$
 $V_{\text{rel}} = \frac{\Delta x}{\Delta t}$
 $5 = \frac{100}{\Delta t}$

$\Delta t = 20 \text{ s}$

03. c
 $90 - 30 = 60 \text{ m}$

04. b
 $x_A = x_B$
 $30 + 20 t = 90 - 10 t$
 $30 t = 60$
 $t = 2 \text{ s}$

05. d
 $x_0 = 200 \text{ km}$
 $v = \frac{170 - 200}{2 - 0} = -15 \text{ m/s}$

$\therefore x = x_0 + v \cdot t$
 $x = 200 - 15 \cdot t$

06. $v = 108 \text{ km/h} = 30 \text{ m/s}$
 $v = \frac{\Delta x}{\Delta t}$

$30 = \frac{1980 + 240}{\Delta t}$

$\Delta t = 74 \text{ s}$

07. c
 $x_A = 2 t$
 $x_B = 15 - 3 t$

$2 t = 15 - 3 t$

$5 t = 15$

$t = 3 \text{ s}$

08. b
 $x_P = 30 t$ $x_Q = 400 - 50 \cdot t$

$30 t = 400 - 50 t$

$t = 5 \text{ h}$

$\therefore x_P = 30 \cdot 5 = 150 \text{ km}$

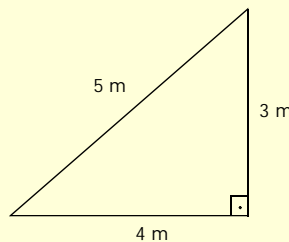
09. a. $V_{\text{rel}} = 100 - 80 = 20 \text{ km/h}$

b. $V_{\text{rel}} = \frac{\Delta x}{\Delta t}$

$20 = \frac{0,6}{\Delta t}$

$\Delta t = 3 \times 10^{-2} \text{ h}$

10. a



$v = \frac{\Delta x}{\Delta t}$

$35 = \frac{5}{\Delta t}$

$\Delta t = \frac{5}{35} = \frac{1}{7} \text{ s}$

11. c
 $12 = \frac{21,6}{\Delta t}$

$\Delta t = 1,8 \text{ s}$
 $\therefore 275 = \frac{\Delta t}{1,8}$

$\Delta x = 495,0 \text{ m}$

12. d
 $V_{\text{rel}} = 20 + 20 = 40 \text{ m/s}$

$V_{\text{rel}} = \frac{\Delta x_{\text{rel}}}{\Delta t}$

$40 = \frac{100 + x}{6}$

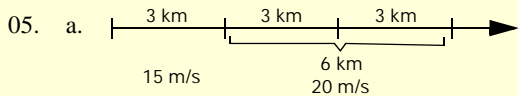
$x = 140 \text{ m}$

Aula 04

	0	1	2	3	4	5	6	7	8	9
0		c	e	a	01	*	c	c	*	c
1	a									

01. c
02. e
03. a
04. 01

$$V = \frac{x - x_0}{t - t_0} = \frac{4 - 0}{4 - 0} = 1 \text{ m/s}$$



$$v = \frac{\Delta x}{\Delta t}$$

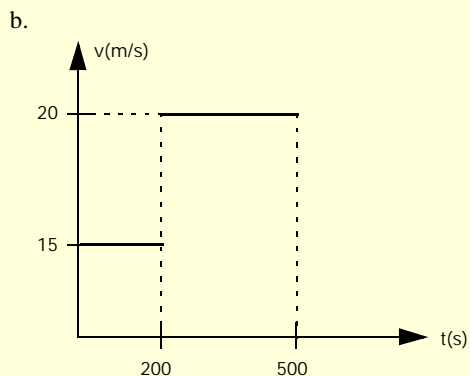
$$15 = \frac{3\,000}{t_1}$$

$$t_1 = 200\text{s}$$

$$20 = \frac{6\,000}{\Delta t}$$

$$t_2 = 300\text{s}$$

$$v = \frac{\Delta x}{\Delta t} = \frac{9\,000}{500} = 18 \text{ m/s}$$



06. c
 $x_0 = -30 \text{ m}$
 $v = \frac{-20 - (-30)}{2 - 0} = 5 \text{ m/s}$
 $x = x_0 + v \cdot t$
 $20 = -30 + 5 \cdot t$
 $t = 10\text{s}$

07. c
 $d = 100 + |80 - 100|$
 $d = 100 + 20$
 $d = 120 \text{ m}$
Obs.: a distância percorrida é sempre positiva. Soma-se a ida e a volta.

08. a. 30 m
b. $v = \frac{\Delta x}{\Delta t} = \frac{0 - 30}{20 - 10} = -3 \text{ m/s}$

(a velocidade é constante no intervalo de 10 a 20s).
c. 7,5 m

09. c
 $v_A = \frac{140 - 40}{5 - 0} = 20 \text{ m/s}$
 $v_B = \frac{140 - 90}{5 - 0} = 10 \text{ m/s}$
 $\therefore x_A = 40 + 20 t$
 $x_B = 90 + 10 t$

10. a
 $x = x_0 + v \cdot t$
 $x = 20 + 6 \cdot t$
 $x = 20 + 6 \cdot 30$
 $x = 200 \text{ m}$

$$\therefore \Delta x = x - x_0$$

$$\Delta x = 200 - 20$$

$$\Delta x = 180 \text{ m}$$

$$v = \frac{29 - 20}{1,5 - 0} = 6 \text{ m/s}$$

Testes complementares

	0	1	2	3	4	5	6	7	8	9
0		c	b	*	e	d	b	d	d	d
1	c									

01. d
02. b
03.
 $v = \frac{\Delta x}{\Delta t} = \frac{6\,000 \text{ km}}{120\,000\,000 \text{ anos}}$

$$v = \frac{600\,000\,000 \text{ cm}}{120\,000\,000 \text{ anos}}$$

$$v = 5 \text{ cm/ano}$$

04. e.
 $v = \frac{\Delta x}{\Delta t}$
 $900 = \frac{\Delta x}{75 \text{ min}}$
 $900 = \frac{\Delta x}{1,25 \text{ h}}$
 $\Delta x = 1\,125 \text{ km}$

05. d
 $v = \frac{\Delta x}{\Delta t}$
 $v = \frac{x - x_0}{t - t_0}$
Obs.:
6h30min = 6,5 h
7h15min = 7,25 h

