BOLETÍN 01 - FACTORES DE CONVERSIÓN 01

FÍSICA Y QUÍMICA 4.º ESO

Enunciados

1) 4,8 km a m
2) 0,072 m a mm
3) $6{,}5 \times 10^{5}$ nm a m
4) 0,0034 kg a mg
5) 8,2 MPa a kPa
6) 47 cm a mm
7) 3,6 μm a nm
8) $2{,}5 \times 10^{-4}$ s a μs
9) $7{,}8 \times 10^{4}$ mg a kg
10) 0,64 g a μg
11) 5,2 L a mL
12) $7{,}5 \times 10^{2}$ mL a L
13) 3,1 ms a μs
14) $4{,}6 \times 10^{3}$ μs a s
15) 0,82 ns a ps
16) 2,3 kPa a Pa
17) $4{,}4 \times 10^{-2}$ GPa a MPa
18) 6,7 kJ a mJ
19) $9{,}5 \times 10^{5}$ μJ a J
20) 3,8 MW a kW
21) 0,56 μm a mm
22) $2{,}9 \times 10^{7}$ pm a mm
23) 6,3 cg a mg
24) $4{,}1 \times 10^{-5}$ kg a g
25) 2,7 hm a cm
26) $6{,}4 \times 10^{2}$ dm a km
27) 5,5 TB a MB
28) $8{,}1 \times 10^{3}$ MB a GB
29) 0,24 GHz a MHz
30) $7{,}6 \times 10^{-3}$ MHz a Hz
31) 5,9 mW a μW
32) $3{,}2 \times 10^{4}$ nW a W
33) 0,91 hPa a kPa
34) $1{,}7 \times 10^{3}$ Pa a MPa
35) $2{,}6 \times 10^{-2}$ MJ a J
36) $4{,}8 \times 10^{6}$ pJ a mJ
37) $7{,}3 \times 10^{-2}$ MW a W
38) $2{,}1 \times 10^{6}$ μW a kW
39) 0,0045 m a μm
40) $8{,}6 \times 10^{8}$ pm a m

Soluciones

1) $4{,}8\,\text{km} = 4{,}8\,\cancel{\text{km}} \cdot \dfrac{10^3\,\text{m}}{1\,\cancel{\text{km}}} = \boxed{4{,}8 \times 10^3\,\text{m}}$

2) $0{,}072\,\text{m} = 7{,}2 \times 10^{-2}\,\text{m} = 7{,}2 \times 10^{-2}\,\cancel{\text{m}} \cdot \dfrac{1\,\text{mm}}{10^{-3}\,\cancel{\text{m}}} = 7{,}2 \times 10^{-2} \times 10^3\,\text{mm} = \boxed{7{,}2 \times 10^1\,\text{mm}}$

3) $6{,}5 \times 10^5\,\text{nm} = 6{,}5 \times 10^5\,\cancel{\text{nm}} \cdot \dfrac{10^{-9}\,\text{m}}{1\,\cancel{\text{nm}}} = 6{,}5 \times 10^5 \times 10^{-9}\,\text{m} = \boxed{6{,}5 \times 10^{-4}\,\text{m}}$

4) $0{,}0034\,\text{kg} = 3{,}4 \times 10^{-3}\,\text{kg} = 3{,}4 \times 10^{-3}\,\cancel{\text{kg}} \cdot \dfrac{10^3\,\cancel{g}}{1\,\cancel{\text{kg}}} \cdot \dfrac{1\,\text{mg}}{10^{-3}\,\cancel{g}}$

$= 3{,}4 \times 10^{-3} \times 10^3 \times 10^3\,\text{mg} = \boxed{3{,}4 \times 10^3\,\text{mg}}$

5) $8{,}2\,\text{MPa} = 8{,}2\,\cancel{\text{MPa}} \cdot \dfrac{10^6\,\cancel{\text{Pa}}}{1\,\cancel{\text{MPa}}} \cdot \dfrac{1\,\text{kPa}}{10^3\,\cancel{\text{Pa}}} = 8{,}2 \times 10^6 \times 10^{-3}\,\text{kPa} = \boxed{8{,}2 \times 10^3\,\text{kPa}}$

6) $47\,\text{cm} = 4{,}7 \times 10^1\,\text{cm} = 4{,}7 \times 10^1\,\cancel{\text{cm}} \cdot \dfrac{10^{-2}\,\cancel{\text{m}}}{1\,\cancel{\text{cm}}} \cdot \dfrac{1\,\text{mm}}{10^{-3}\,\cancel{\text{m}}}$

$= 4{,}7 \times 10^1 \times 10^{-2} \times 10^3\,\text{mm} = \boxed{4{,}7 \times 10^2\,\text{mm}}$

7) $3{,}6\,\mu\text{m} = 3{,}6\,\cancel{\mu\text{m}} \cdot \dfrac{10^{-6}\,\cancel{\text{m}}}{1\,\cancel{\mu\text{m}}} \cdot \dfrac{1\,\text{nm}}{10^{-9}\,\cancel{\text{m}}} = 3{,}6 \times 10^{-6} \times 10^9\,\text{nm} = \boxed{3{,}6 \times 10^3\,\text{nm}}$

8) $2{,}5 \times 10^{-4}\,\text{s} = 2{,}5 \times 10^{-4}\,\cancel{\text{s}} \cdot \dfrac{1\,\mu\text{s}}{10^{-6}\,\cancel{\text{s}}} = 2{,}5 \times 10^{-4} \times 10^6\,\mu\text{s} = \boxed{2{,}5 \times 10^2\,\mu\text{s}}$

9) $7{,}8 \times 10^4\,\text{mg} = 7{,}8 \times 10^4\,\cancel{\text{mg}} \cdot \dfrac{10^{-3}\,\cancel{g}}{1\,\cancel{\text{mg}}} \cdot \dfrac{1\,\text{kg}}{10^3\,\cancel{g}}$

$= 7{,}8 \times 10^4 \times 10^{-3} \times 10^{-3}\,\text{kg} = \boxed{7{,}8 \times 10^{-2}\,\text{kg}}$

10) $0{,}64\,\text{g} = 6{,}4 \times 10^{-1}\,\text{g} = 6{,}4 \times 10^{-1}\,\cancel{g} \cdot \dfrac{1\,\mu\text{g}}{10^{-6}\,\cancel{g}} = 6{,}4 \times 10^{-1} \times 10^6\,\mu\text{g} = \boxed{6{,}4 \times 10^5\,\mu\text{g}}$

11) $5{,}2\,\text{L} = 5{,}2\,\cancel{\text{L}} \cdot \dfrac{1\,\text{mL}}{10^{-3}\,\cancel{\text{L}}} = \boxed{5{,}2 \times 10^3\,\text{mL}}$

12) $7{,}5 \times 10^2\,\text{mL} = 7{,}5 \times 10^2\,\cancel{\text{mL}} \cdot \dfrac{10^{-3}\,\text{L}}{1\,\cancel{\text{mL}}} = 7{,}5 \times 10^2 \times 10^{-3}\,\text{L} = \boxed{7{,}5 \times 10^{-1}\,\text{L}}$

13) $3{,}1\,\text{ms} = 3{,}1\,\cancel{\text{ms}} \cdot \dfrac{10^{-3}\,\cancel{\text{s}}}{1\,\cancel{\text{ms}}} \cdot \dfrac{1\,\mu\text{s}}{10^{-6}\,\cancel{\text{s}}} = 3{,}1 \times 10^{-3} \times 10^6\,\mu\text{s} = \boxed{3{,}1 \times 10^3\,\mu\text{s}}$

14) $4{,}6 \times 10^{3}\,\mu\text{s} = 4{,}6 \times 10^{3}\,\cancel{\mu\text{s}} \cdot \dfrac{10^{-6}\,\text{s}}{1\,\cancel{\mu\text{s}}} = 4{,}6 \times 10^{3} \times 10^{-6}\,\text{s} = \boxed{4{,}6 \times 10^{-3}\,\text{s}}$

15) $0{,}82\,\text{ns} = 8{,}2 \times 10^{-1}\,\text{ns} = 8{,}2 \times 10^{-1}\,\cancel{\text{ns}} \cdot \dfrac{10^{-9}\,\cancel{\text{s}}}{1\,\cancel{\text{ns}}} \cdot \dfrac{1\,\text{ps}}{10^{-12}\,\cancel{\text{s}}}$
$= 8{,}2 \times 10^{-1} \times 10^{-9} \times 10^{12}\,\text{ps} = \boxed{8{,}2 \times 10^{2}\,\text{ps}}$

16) $2{,}3\,\text{kPa} = 2{,}3\,\cancel{\text{kPa}} \cdot \dfrac{10^{3}\,\text{Pa}}{1\,\cancel{\text{kPa}}} = \boxed{2{,}3 \times 10^{3}\,\text{Pa}}$

17) $4{,}4 \times 10^{-2}\,\text{GPa} = 4{,}4 \times 10^{-2}\,\cancel{\text{GPa}} \cdot \dfrac{10^{9}\,\cancel{\text{Pa}}}{1\,\cancel{\text{GPa}}} \cdot \dfrac{1\,\text{MPa}}{10^{6}\,\cancel{\text{Pa}}}$
$= 4{,}4 \times 10^{-2} \times 10^{9} \times 10^{-6}\,\text{MPa} = \boxed{4{,}4 \times 10^{1}\,\text{MPa}}$

18) $6{,}7\,\text{kJ} = 6{,}7\,\cancel{\text{kJ}} \cdot \dfrac{10^{3}\,\cancel{\text{J}}}{1\,\cancel{\text{kJ}}} \cdot \dfrac{1\,\text{mJ}}{10^{-3}\,\cancel{\text{J}}} = 6{,}7 \times 10^{3} \times 10^{3}\,\text{mJ} = \boxed{6{,}7 \times 10^{6}\,\text{mJ}}$

19) $9{,}5 \times 10^{5}\,\mu\text{J} = 9{,}5 \times 10^{5}\,\cancel{\mu\text{J}} \cdot \dfrac{10^{-6}\,\text{J}}{1\,\cancel{\mu\text{J}}} = 9{,}5 \times 10^{5} \times 10^{-6}\,\text{J} = \boxed{9{,}5 \times 10^{-1}\,\text{J}}$

20) $3{,}8\,\text{MW} = 3{,}8\,\cancel{\text{MW}} \cdot \dfrac{10^{6}\,\cancel{\text{W}}}{1\,\cancel{\text{MW}}} \cdot \dfrac{1\,\text{kW}}{10^{3}\,\cancel{\text{W}}} = 3{,}8 \times 10^{6} \times 10^{-3}\,\text{kW} = \boxed{3{,}8 \times 10^{3}\,\text{kW}}$

21) $0{,}56\,\mu\text{m} = 5{,}6 \times 10^{-1}\,\mu\text{m} = 5{,}6 \times 10^{-1}\,\cancel{\mu\text{m}} \cdot \dfrac{10^{-6}\,\cancel{\text{m}}}{1\,\cancel{\mu\text{m}}} \cdot \dfrac{1\,\text{mm}}{10^{-3}\,\cancel{\text{m}}}$
$= 5{,}6 \times 10^{-1} \times 10^{-6} \times 10^{3}\,\text{mm} = \boxed{5{,}6 \times 10^{-4}\,\text{mm}}$

22) $2{,}9 \times 10^{7}\,\text{pm} = 2{,}9 \times 10^{7}\,\cancel{\text{pm}} \cdot \dfrac{10^{-12}\,\cancel{\text{m}}}{1\,\cancel{\text{pm}}} \cdot \dfrac{1\,\text{mm}}{10^{-3}\,\cancel{\text{m}}}$
$= 2{,}9 \times 10^{7} \times 10^{-12} \times 10^{3}\,\text{mm} = \boxed{2{,}9 \times 10^{-2}\,\text{mm}}$

23) $6{,}3\,\text{cg} = 6{,}3\,\cancel{\text{cg}} \cdot \dfrac{10^{-2}\,\cancel{\text{g}}}{1\,\cancel{\text{cg}}} \cdot \dfrac{1\,\text{mg}}{10^{-3}\,\cancel{\text{g}}} = 6{,}3 \times 10^{-2} \times 10^{3}\,\text{mg} = \boxed{6{,}3 \times 10^{1}\,\text{mg}}$

24) $4{,}1 \times 10^{-5}\,\text{kg} = 4{,}1 \times 10^{-5}\,\cancel{\text{kg}} \cdot \dfrac{10^{3}\,\text{g}}{1\,\cancel{\text{kg}}} = 4{,}1 \times 10^{-5} \times 10^{3}\,\text{g} = \boxed{4{,}1 \times 10^{-2}\,\text{g}}$

25) $2{,}7\,\text{hm} = 2{,}7\,\cancel{\text{hm}} \cdot \dfrac{10^{2}\,\cancel{\text{m}}}{1\,\cancel{\text{hm}}} \cdot \dfrac{1\,\text{cm}}{10^{-2}\,\cancel{\text{m}}} = 2{,}7 \times 10^{2} \times 10^{2}\,\text{cm} = \boxed{2{,}7 \times 10^{4}\,\text{cm}}$

26) $6{,}4 \times 10^{2}\,\text{dm} = 6{,}4 \times 10^{2}\,\cancel{\text{dm}} \cdot \dfrac{10^{-1}\,\cancel{\text{m}}}{1\,\cancel{\text{dm}}} \cdot \dfrac{1\,\text{km}}{10^{3}\,\cancel{\text{m}}}$
$= 6{,}4 \times 10^{2} \times 10^{-1} \times 10^{-3}\,\text{km} = \boxed{6{,}4 \times 10^{-2}\,\text{km}}$

27) $5{,}5\,\text{TB} = 5{,}5\,\cancel{\text{TB}} \cdot \dfrac{10^{12}\,\cancel{\text{B}}}{1\,\cancel{\text{TB}}} \cdot \dfrac{1\,\text{MB}}{10^{6}\,\cancel{\text{B}}} = 5{,}5 \times 10^{12} \times 10^{-6}\,\text{MB} = \boxed{5{,}5 \times 10^{6}\,\text{MB}}$

28) $8{,}1 \times 10^{3}\,\text{MB} = 8{,}1 \times 10^{3}\,\cancel{\text{MB}} \cdot \dfrac{10^{6}\,\cancel{\text{B}}}{1\,\cancel{\text{MB}}} \cdot \dfrac{1\,\text{GB}}{10^{9}\,\cancel{\text{B}}}$
$= 8{,}1 \times 10^{3} \times 10^{6} \times 10^{-9}\,\text{GB} = \boxed{8{,}1 \times 10^{0}\,\text{GB}}$

29) $0{,}24\,\text{GHz} = 2{,}4 \times 10^{-1}\,\text{GHz} = 2{,}4 \times 10^{-1}\,\cancel{\text{GHz}} \cdot \dfrac{10^{9}\,\cancel{\text{Hz}}}{1\,\cancel{\text{GHz}}} \cdot \dfrac{1\,\text{MHz}}{10^{6}\,\cancel{\text{Hz}}}$
$= 2{,}4 \times 10^{-1} \times 10^{9} \times 10^{-6}\,\text{MHz} = \boxed{2{,}4 \times 10^{2}\,\text{MHz}}$

30) $7{,}6 \times 10^{-3}\,\text{MHz} = 7{,}6 \times 10^{-3}\,\cancel{\text{MHz}} \cdot \dfrac{10^{6}\,\text{Hz}}{1\,\cancel{\text{MHz}}} = 7{,}6 \times 10^{-3} \times 10^{6}\,\text{Hz} = \boxed{7{,}6 \times 10^{3}\,\text{Hz}}$

31) $5{,}9\,\text{mW} = 5{,}9\,\cancel{\text{mW}} \cdot \dfrac{10^{-3}\,\cancel{\text{W}}}{1\,\cancel{\text{mW}}} \cdot \dfrac{1\,\mu\text{W}}{10^{-6}\,\cancel{\text{W}}} = 5{,}9 \times 10^{-3} \times 10^{6}\,\mu\text{W} = \boxed{5{,}9 \times 10^{3}\,\mu\text{W}}$

32) $3{,}2 \times 10^{4}\,\text{nW} = 3{,}2 \times 10^{4}\,\cancel{\text{nW}} \cdot \dfrac{10^{-9}\,\text{W}}{1\,\cancel{\text{nW}}} = 3{,}2 \times 10^{4} \times 10^{-9}\,\text{W} = \boxed{3{,}2 \times 10^{-5}\,\text{W}}$

33) $0{,}91\,\text{hPa} = 9{,}1 \times 10^{-1}\,\text{hPa} = 9{,}1 \times 10^{-1}\,\cancel{\text{hPa}} \cdot \dfrac{10^{2}\,\cancel{\text{Pa}}}{1\,\cancel{\text{hPa}}} \cdot \dfrac{1\,\text{kPa}}{10^{3}\,\cancel{\text{Pa}}}$
$= 9{,}1 \times 10^{-1} \times 10^{2} \times 10^{-3}\,\text{kPa} = \boxed{9{,}1 \times 10^{-2}\,\text{kPa}}$

34) $1{,}7 \times 10^{3}\,\text{Pa} = 1{,}7 \times 10^{3}\,\cancel{\text{Pa}} \cdot \dfrac{1\,\text{MPa}}{10^{6}\,\cancel{\text{Pa}}} = 1{,}7 \times 10^{3} \times 10^{-6}\,\text{MPa} = \boxed{1{,}7 \times 10^{-3}\,\text{MPa}}$

35) $2{,}6 \times 10^{-2}\,\text{MJ} = 2{,}6 \times 10^{-2}\,\cancel{\text{MJ}} \cdot \dfrac{10^{6}\,\text{J}}{1\,\cancel{\text{MJ}}} = 2{,}6 \times 10^{-2} \times 10^{6}\,\text{J} = \boxed{2{,}6 \times 10^{4}\,\text{J}}$

36) $4{,}8 \times 10^{6}\,\text{pJ} = 4{,}8 \times 10^{6}\,\cancel{\text{pJ}} \cdot \dfrac{10^{-12}\,\cancel{\text{J}}}{1\,\cancel{\text{pJ}}} \cdot \dfrac{1\,\text{mJ}}{10^{-3}\,\cancel{\text{J}}}$
$= 4{,}8 \times 10^{6} \times 10^{-12} \times 10^{3}\,\text{mJ} = \boxed{4{,}8 \times 10^{-3}\,\text{mJ}}$

37) $7{,}3 \times 10^{-2}\,\text{MW} = 7{,}3 \times 10^{-2}\,\cancel{\text{MW}} \cdot \dfrac{10^{6}\,\text{W}}{1\,\cancel{\text{MW}}} = 7{,}3 \times 10^{-2} \times 10^{6}\,\text{W} = \boxed{7{,}3 \times 10^{4}\,\text{W}}$

38) $2{,}1 \times 10^{6}\,\mu\text{W} = 2{,}1 \times 10^{6}\,\cancel{\mu\text{W}} \cdot \dfrac{10^{-6}\,\cancel{\text{W}}}{1\,\cancel{\mu\text{W}}} \cdot \dfrac{1\,\text{kW}}{10^{3}\,\cancel{\text{W}}}$
$= 2{,}1 \times 10^{6} \times 10^{-6} \times 10^{-3}\,\text{kW} = \boxed{2{,}1 \times 10^{-3}\,\text{kW}}$

39) $0{,}0045\,\text{m} = 4{,}5 \times 10^{-3}\,\text{m} = 4{,}5 \times 10^{-3}\,\cancel{\text{m}} \cdot \dfrac{1\,\mu\text{m}}{10^{-6}\,\cancel{\text{m}}} = 4{,}5 \times 10^{-3} \times 10^{6}\,\mu\text{m} = \boxed{4{,}5 \times 10^{3}\,\mu\text{m}}$

40) $8{,}6 \times 10^{8}\,\text{pm} = 8{,}6 \times 10^{8}\,\cancel{\text{pm}} \cdot \dfrac{10^{-12}\,\text{m}}{1\,\cancel{\text{pm}}} = 8{,}6 \times 10^{8} \times 10^{-12}\,\text{m} = \boxed{8{,}6 \times 10^{-4}\,\text{m}}$