NUMERICAL/MOISTAIR

(1) **Moist air**

The dry thermometer of a meteorological station indicates a temperature $\theta = 25.\,°\text{C}$

The moist sensor indicates a relative humidity $\psi = 78.\,\%$

Atmospheric pressure is $p_{\text{atm}} = 101325.\,\text{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

NUMÉRIQUE   noté sur 1

$1.5559237183\text{e}+01 \pm 1.5559237183\text{e}+00$ ✓

g kg^{-1} $(6. \rightarrow 15.)$

Volume per dry air mass unit : $v =$

NUMÉRIQUE   noté sur 1

$8.6573585636\text{e-}01 \pm 8.6573585636\text{e-}02$ ✓

$\text{m}^3\,\text{kg}^{-1}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

$6.4751265258\text{e}+01 \pm 6.4751265258\text{e}+00$ ✓

kJ kg^{-1} $(32. \rightarrow 65.)$

(2) **Moist air**

1

The dry thermometer of a meteorological station indicates a temperature $\theta = 22.\,°\text{C}$

The moist sensor indicates a relative humidity $\psi = 48.\,\%$

Atmospheric pressure is $p_{\text{atm}} = 101325.\,\text{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

$7.8936363385\text{e}{+}00 \pm 7.8936363385\text{e}{-}01$ ✓

g kg^{-1} ($6. \rightarrow 15.$)

Volume per dry air mass unit : $v =$

$8.4671993647\text{e}{-}01 \pm 8.4671993647\text{e}{-}02$ ✓

$\text{m}^3\,\text{kg}^{-1}$ ($8.28\,10^{-1} \rightarrow 8.75\,10^{-1}$)

Enthalpy per dry air mass unit : $h =$

$4.2170413773\text{e}{+}01 \pm 4.2170413773\text{e}{+}00$ ✓

kJ kg^{-1} ($32. \rightarrow 65.$)

(3) **Moist air**

The dry thermometer of a meteorological station indicates a temperature $\theta = 22.\,°\text{C}$

The moist sensor indicates a relative humidity $\psi = 70.\,\%$

Atmospheric pressure is $p_{\mathrm{atm}} = 101325.\,\mathrm{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

| NUMÉRIQUE | noté sur 1 |

$1.1578906252\mathrm{e}{+}01 \pm 1.1578906252\mathrm{e}{+}00$ ✓

$\mathrm{g\,kg^{-1}}$ $(6. \rightarrow 15.)$

Volume per dry air mass unit : $v =$

| NUMÉRIQUE | noté sur 1 |

$8.5167403318\mathrm{e}{-}01 \pm 8.5167403318\mathrm{e}{-}02$ ✓

$\mathrm{m^3\,kg^{-1}}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

| NUMÉRIQUE | noté sur 2 |

$5.1535937615\mathrm{e}{+}01 \pm 5.1535937615\mathrm{e}{+}00$ ✓

$\mathrm{kJ\,kg^{-1}}$ $(32. \rightarrow 65.)$

(4) **Moist air**

| RÉPONSES INTÉGRÉES | pénalité 0.10 |

The dry thermometer of a meteorological station indicates a temperature $\theta = 22.\,°\mathrm{C}$

The moist sensor indicates a relative humidity $\psi = 63.\,\%$

Atmospheric pressure is $p_{\mathrm{atm}} = 101325.\,\mathrm{Pa}$

3

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34 \, 10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0 \, \%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

NUMÉRIQUE   noté sur 1

$1.0401651303\mathrm{e}{+}01 \pm 1.0401651303\mathrm{e}{+}00$ ✓

$\mathrm{g \, kg^{-1}}$ ($6. \rightarrow 15.$)

Volume per dry air mass unit : $v =$

NUMÉRIQUE   noté sur 1

$8.5009145307\mathrm{e}{-}01 \pm 8.5009145307\mathrm{e}{-}02$ ✓

$\mathrm{m^3 \, kg^{-1}}$ ($8.28 \, 10^{-1} \rightarrow 8.75 \, 10^{-1}$)

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

$4.8544132522\mathrm{e}{+}01 \pm 4.8544132522\mathrm{e}{+}00$ ✓

$\mathrm{kJ \, kg^{-1}}$ ($32. \rightarrow 65.$)

(5) **Moist air**

RÉPONSES INTÉGRÉES   pénalité 0.10

The dry thermometer of a meteorological station indicates a temperature $\theta = 29. \, °\mathrm{C}$

The moist sensor indicates a relative humidity $\psi = 56. \, \%$

Atmospheric pressure is $p_\mathrm{atm} = 101325. \, \mathrm{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34 \, 10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

4

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

NUMÉRIQUE   noté sur 1

$1.4096769526\mathrm{e}{+}01 \pm 1.4096769526\mathrm{e}{+}00$ ✓

$\mathrm{g\,kg^{-1}}$ ($6. \rightarrow 15.$)

Volume per dry air mass unit : $v =$

NUMÉRIQUE   noté sur 1

$8.7533800795\mathrm{e}{-}01 \pm 8.7533800795\mathrm{e}{-}02$ ✓

$\mathrm{m^3\,kg^{-1}}$ ($8.28\,10^{-1} \rightarrow 8.75\,10^{-1}$)

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

$6.5149277110\mathrm{e}{+}01 \pm 6.5149277110\mathrm{e}{+}00$ ✓

$\mathrm{kJ\,kg^{-1}}$ ($32. \rightarrow 65.$)

(6) **Moist air**

RÉPONSES INTÉGRÉES   pénalité 0.10

The dry thermometer of a meteorological station indicates a temperature $\theta = 20.\,°\mathrm{C}$

The moist sensor indicates a relative humidity $\psi = 60.\,\%$

Atmospheric pressure is $p_{\mathrm{atm}} = 101325.\,\mathrm{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

$8.7366105036\text{e}+00 \pm 8.7366105036\text{e-}01$ ✓

g kg^{-1} $(6. \rightarrow 15.)$

Volume per dry air mass unit : $v =$

$8.4210790838\text{e-}01 \pm 8.4210790838\text{e-}02$ ✓

$\text{m}^3\,\text{kg}^{-1}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

$4.2270896475\text{e}+01 \pm 4.2270896475\text{e}+00$ ✓

kJ kg^{-1} $(32. \rightarrow 65.)$

(7) **Moist air**

The dry thermometer of a meteorological station indicates a temperature $\theta = 16.\,°\text{C}$

The moist sensor indicates a relative humidity $\psi = 59.\,\%$

Atmospheric pressure is $p_{\text{atm}} = 101325.\,\text{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

6.6561524837e+00 ± 6.6561524837e-01 ✓	

$\mathrm{g\,kg^{-1}}$ (6. → 15.)

Volume per dry air mass unit : $v =$

NUMÉRIQUE   noté sur 1

8.2787753823e-01 ± 8.2787753823e-02 ✓	

$\mathrm{m^3\,kg^{-1}}$ $(8.28\,10^{-1} → 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

3.2922861368e+01 ± 3.2922861368e+00 ✓	

$\mathrm{kJ\,kg^{-1}}$ (32. → 65.)

(8) **Moist air**

RÉPONSES INTÉGRÉES   pénalité 0.10

The dry thermometer of a meteorological station indicates a temperature $\theta = 18.\,°\mathrm{C}$

The moist sensor indicates a relative humidity $\psi = 66.\,\%$

Atmospheric pressure is $p_{\mathrm{atm}} = 101325.\,\mathrm{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

NUMÉRIQUE   noté sur 1

8.4780040261e+00 ± 8.4780040261e-01 ✓	

$\mathrm{g\,kg^{-1}}$ (6. → 15.)

Volume per dry air mass unit : $v =$

noté sur 1

$8.3601974032\text{e-}01 \pm 8.3601974032\text{e-}02$ ✓

$\text{m}^3\,\text{kg}^{-1}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

noté sur 2

$3.9573770882\text{e+}01 \pm 3.9573770882\text{e+}00$ ✓

$\text{kJ}\,\text{kg}^{-1}$ $(32. \rightarrow 65.)$

(9) **Moist air**

pénalité 0.10

The dry thermometer of a meteorological station indicates a temperature $\theta = 25.\,°\text{C}$

The moist sensor indicates a relative humidity $\psi = 69.\,\%$

Atmospheric pressure is $p_{\text{atm}} = 101325.\,\text{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

noté sur 1

$1.3724325578\text{e+}01 \pm 1.3724325578\text{e+}00$ ✓

$\text{g}\,\text{kg}^{-1}$ $(6. \rightarrow 15.)$

Volume per dry air mass unit : $v =$

noté sur 1

$8.6324411849\text{e-}01 \pm 8.6324411849\text{e-}02$ ✓	

$\mathrm{m^3\,kg^{-1}}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

$6.0078112382\text{e+}01 \pm 6.0078112382\text{e+}00$ ✓	

$\mathrm{kJ\,kg^{-1}}$ $(32. \rightarrow 65.)$

(10) **Moist air**

RÉPONSES INTÉGRÉES   pénalité 0.10

The dry thermometer of a meteorological station indicates a temperature $\theta = 27.\,°\mathrm{C}$

The moist sensor indicates a relative humidity $\psi = 52.\,\%$

Atmospheric pressure is $p_{\mathrm{atm}} = 101325.\,\mathrm{Pa}$

Compute the quantities below

In your answers, use scientific notations if needed. ($6.34\,10^{-5}$ writes 6.34e-5 and 10^3 writes 1e3).

Your answer is considered correct within a relative error of $10.0\,\%$

Indicative ranges are proposed in front of each answer. This are orders of magnitude to help you to check your results.

Absolute humidity : $w =$

NUMÉRIQUE   noté sur 1

$1.1603805322\text{e+}01 \pm 1.1603805322\text{e+}00$ ✓	

$\mathrm{g\,kg^{-1}}$ $(6. \rightarrow 15.)$

Volume per dry air mass unit : $v =$

NUMÉRIQUE   noté sur 1

$8.6613588888\text{e-}01 \pm 8.6613588888\text{e-}02$ ✓	

$\mathrm{m^3\,kg^{-1}}$ $(8.28\,10^{-1} \rightarrow 8.75\,10^{-1})$

Enthalpy per dry air mass unit : $h =$

NUMÉRIQUE   noté sur 2

| 5.6729809246e+01 $\pm$ 5.6729809246e+00 ✓ | |

$\mathrm{kJ\,kg^{-1}}$ (32. $\to$ 65.)

Total des points : 40