





















water but not in benzene, a nonpolar carcinogenic liquid hydrocarbon that is used under highly restrictive protocols to protect workers.

The unknown substance is what type of molecule?

- a) neither polar nor nonpolar
- b) polar
- c) either polar or nonpolar
- d) nonpolar

# ANSWER

An unknown substance dissolves readily in water but not in benzene (a nonpolar solvent). Molecules of what type are present in the substance?

a) neither polar nor nonpolar

- b) polar
- c) either polar or nonpolar
- d) nonpolar
- e) none of these



 Reaction solutions typically have less solute dissolved than is possible and are "unsaturated".











https://phet.colorado.edu/sims/html/molarity/latest/molarity_en.html
QUESTION
40.0-g of HF [MM = 20.0 g/mol] was dissolved in water to give 2.0 x $10^2$ mL of HF <sub>(aq)</sub> , a weak acid solution. The concentration of the solution is: a) 0.5 M
b) 1.0 M
c) 2.0 M
d) 5.0 M
e) 10. M

#### ANSWER 40.0-g of HF [MM = 20.0 g/mol] was dissolved in water to give 2.0 x 10<sup>2</sup> mL of HF(aq), a weak acid solution. The concentration of the solution is: a) 0.50 M b) 1.0 M c) 2.0 M d) 5.0 M e)10. M

**40.0g<sub>HF</sub> x** (mol<sub>HF</sub> / 20.0 g<sub>HF</sub>) **x** 1/ 200mL x 1000mL/ L [1/ MM = mol<sub>HF</sub> / 20.0 g<sub>HF</sub>]



















A 51.24-g sample of Ba(OH)2 [MM= 171.3 g/mol] is dissolved in enough water to make 1.20 liters of solution. What is the molarity of the solution?

a) 0.300 M

- b) 3.33 M
- c) 0.278 M
- d) 2.49 x 10-1 mol/L
- e) 42.7 g/mL

# ANSWER

A 51.24-g sample of Ba(OH)2 [MM= 171.3 g/mol] is dissolved in enough water to make 1.20 liters of solution. What is the molarity of the solution?

a) 0.300 M

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c) 0.278 M

d) 2.49 x 10-1 mol/L

[51.24g x mol/171.3g x 1/1.20 L]

e) 42.7 g/mL















### **QUESTION**

What happens to the number of moles of  $C_{12}H_{22}O_{11}$  (sucrose) when 100.0 mL of a 0.20 M solution is diluted to a final concentration of 0.10 M?

A) The number of moles of  $C_{12}H_{22}O_{11}$  decreases.

B) The number of moles of  $C_{12}H_{22}O_{11}$  increases.

C) The number of moles of  $\mathrm{C_{12}H_{22}O_{11}}$  does not change.

D) There is insufficient information to answer the question.

## ANSWER

What happens to the number of moles of  $C_{12}H_{22}O_{11}$  (sucrose) when a 0.20 M solution is diluted to a final concentration of 0.10 M?

A) The number of moles of C<sub>12</sub>H<sub>22</sub>O<sub>11</sub> decreases.

B) The number of moles of C<sub>12</sub>H<sub>22</sub>O<sub>11</sub> increases.

C) The number of moles of C<sub>12</sub>H<sub>22</sub>O<sub>11</sub> does not change.

D) There is insufficient information to answer the question.







#### Answer

A 51.24-g sample of Ba(OH)<sub>2</sub> is dissolved in enough water to make 1.20 liters of solution. How many mL of this solution must be diluted with water in order to make 1.00 liter of 0.100 molar Ba(OH)<sub>2</sub>? a) 400. mL,  $V_1 = M_2V_2 / M_2$ 

- b) 333 mL
- c) 278 mL
- d) 1.20 x 103 mL
- e) 285 mL









(Chem 120 Prep)

#### QUESTION

What mass of NaOH is required to react exactly with 25.0 mL of 1.2 M  $\rm H_2SO_4?$ 

A) 1.2 g B) 1.8 g C) 2.4 g D) 3.5 g E) None of these





# ANSWER

B) 5.11 g

Seven Solutions Post Lab Questions http://chemconnections.org/general/chem120/solutions-mixes.108.html

Volume (L) times concentration (mol/L) gives moles. Moles are then converted to grams.