

Homework 3 Answer key Ch 3

Add 31,
remove 9cd



C: 6

O: $6 \times 2 + 6 = 18$

H: $6 \times 2 = 12$

C: 6
O: $6 + 6 \times 2 = 18$
H: 12

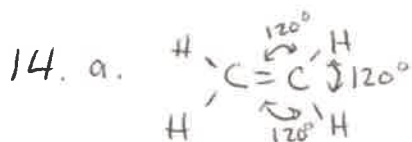
b. No. The reactant side has 12 molecules and the product side has 7.

6a. 29 MJ/m^2 comes to atmosphere but only 17 MJ/m^2 reaches surface. The remaining 12 MJ/m^2 is either absorbed or reflected by atmosphere.

9. a. The UV^{visible} radiation from sun can pass through car windows + be absorbed by the seats, etc. These then radiate IR back into the car. The IR can't escape car + is absorbed by gases in the air, causing temperature to rise.

b. Clouds contain water vapor which can absorb IR radiation from the earth (+ warm it). Since there are no clouds on clear nights, the IR is lost to space.

14.



b. $\sim 120^\circ$ because each C has three "bonds" + no lone pairs.

c. see above (sketch w/ angles)

17. a. $4.26 \times 10^{-6} \text{ m} = \lambda$

$E = h\nu$

$c = \lambda\nu$

or $\nu = \frac{c}{\lambda}$

$1 \mu\text{m} = 10^{-6} \text{ m}$

$E = \frac{(6.626 \times 10^{-34} \text{ J}\cdot\text{s})(3 \times 10^8 \text{ m/s})}{4.26 \times 10^{-6} \text{ m}}$

so $E = \frac{hc}{\lambda}$

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$= 4.66 \times 10^{-20} \text{ J}$

15.00 $\mu\text{m} = 15 \times 10^{-6} \text{ m} = \lambda$

$E = \frac{(6.626 \times 10^{-34} \text{ J}\cdot\text{s})(3 \times 10^8 \text{ m/s})}{15 \times 10^{-6} \text{ m}}$

$= 1.33 \times 10^{-20} \text{ J}$

b. If bombarded with these wavelengths, the energy increases, until the energy is reemitted as heat.

19. a. volcanic eruptions emit aerosols, these generally cause global cooling.

b. CFCs are greenhouse gases when in troposphere.

c. CFCs in stratosphere cause O_3 hole. Depletion of ozone has slight cooling effect at Earth's surface. (slight effect)

23. There must be slightly more Ag-107 since the atomic mass is lower than 108.

25. a. H : $1.008 \text{ g/mol} \times 2 = 2.016$

O : 16.00 g/mol

total 18.016 g/mol

c. N : $14.01 \text{ g/mol} \times 2 = 28.02 \text{ g/mol}$

O : 16.00 g/mol

total 44.02 g/mol

b. C : 12.01 g/mol

Cl : $35.45 \text{ g/mol} \times 2 = 70.9 \text{ g/mol}$

F : $19.00 \text{ g/mol} \times 2 = 38 \text{ g/mol}$

total : 120.91 g/mol

31. a causation. Combustion of coal (hydrocarbon) forms CO_2 which is emitted into atmosphere.
 b
 c correlation. So far no proof that cigarettes cause lung cancer. Not all lung cancer happens in smokers
 d causation. Multiple bonds are shorter than single bonds.
 e ~~correlation~~ or
 f no relationship. Having greenhouse doesn't lead to success
 no relationship. You could break your leg lots of ways, but probably not when buying the rollerblades.

39. The microwaves used in a microwave oven are just the right wavelength to effect the water but do not effect the ceramic.



b. 2 moles CO_2

(For every 2 moles $\text{C}_2\text{H}_5\text{OH}$, there are 4 moles CO_2 made, so for every 1 mole of $\text{C}_2\text{H}_5\text{OH}$, 2 moles CO_2 made)

c. 30 moles O_2

42. The longer it stays in the atmosphere, the more damage it can do.

