**Answer KEY - CSI : Case Profile – Tony DeMoy**

1. MM = 78.12

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Mass (g)** | **mass/atomic mass =** | **mol** | **mol/smallest (then multiply?) =** | **#** |
| **C** | **92.24** | **/12** | **7.68** | **/ 7.68** | **1** |
| **H** | **7.76** | **/1** | **7.76** | **/ 7.68** | **1** |

C – 12 x 1 = 12 mult = MM/EM=78.12g/mol / 13g/mol = 6

H – 1 x 1 = 1

13 g/mol

EF: \_CH\_

MF: C6H6

Compound Name: Benzene

2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Mass (g)** | **mass/atomic mass =** | **mol** | **mol/smallest (then multiply?) =** | **#** |
| **H** | **3.74** | **/ 1** | **3.74** | **/3.7 = 1.01** | **1** |
| **C** | **44.43** | **/ 12** | **3.70** | **/3.7 = 1** | **1** |
| **N** | **51.83** | **/ 14** | **3.70** | **/3.7 = 1** | **1** |

H – 1 x 1 = 1

C – 12 x 1 = 12 mult = MM/EM=27.03g/mol / 27g/mol = 1

N – 14 x 1 = 14

27 g/mol

EF: \_HCN\_

MF: HCN

Compound Name: Hydrogen cyanide

3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Mass (g)** | **mass/atomic mass =** | **mol** | **mol/smallest (then multiply?) =** | **#** |
| **C** | **346.12** | **/12** | **28.84** | **/1.7 = 16.96** | **17** |
| **H** | **23.98** | **/1** | **23.95** | **/1.7 = 14.1** | **14** |
| **O** | **108.52** | **/16** | **6.78** | **/1.7 = 4** | **4** |
| **S** | **54.36** | **/32** | **1.7** | **/1.7 = 1** | **1** |

C – 12 x 1 = 12 mult = MM/EM = 314.38g/mol / 314g/mol = 1

H – 1 x 1 = 1

O – 16 x 1 = 16

S – 32 x 1 = 32

314g/mol EF: C17H14O4S

MF: C17H14O4S

Compound Name: Rofecoxib

4.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Mass (g)** | **mass/atomic mass =** | **mol** | **mol/smallest (then multiply?) =** | **#** |
| **C** | **924.08** | **/ 12** | **77.01** | **/ 9.63 = 7.995** | **8** |
| **H** | **87.39** | **/ 1** | **87.39** | **/ 9.63 = 9.07** | **9** |
| **N** | **134.8** | **/ 14** | **9.63** | **/ 9.63 = 1** | **1** |
| **O** | **307.83** | **/ 16** | **19.24** | **/ 9.63 = 2** | **2** |

C – 12 x 8 = 96 mult = MM/EM = 151.18g/mol / 151g/mol = 1

H – 1 x 9 = 9

N - 14 x 1 = 14

O – 16 x 2 = 32

151g/mol EF: C8H9NO2

MF: C8H9NO2

Compound Name: Paracetamol

Once you’ve found the unknown compounds, you can look at the autopsy report and record it’s findings: The cause of death was the compound Rofecoxib.

Based on your findings, you conclude that the murderer was Finley Finch.