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
H – 1 x 1 = 1
13 g/mol

mult = MM/EM=78.12g/mol / 13g/mol = 6

EF: _CH_

MF: C_6H_6

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
N – 14 x 1 = 14
27 g/mol

mult = MM/EM=27.03g/mol / 27g/mol = 1

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
H – 1 x 1 = 1
O – 16 x 1 = 16
S – 32 x 1 = 32
314g/mol

mult = MM/EM = 314.38g/mol / 314g/mol = 1

EF: $C_{17}H_{14}O_4S$

MF: $C_{17}H_{14}O_4S$

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
H – 1 x 9 = 9
N - 14 x 1 = 14
O – 16 x 2 = 32
151g/mol

mult = MM/EM = 151.18g/mol / 151g/mol = 1

EF: $C_8H_9NO_2$

MF: $C_8H_9NO_2$

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.