Chemistry Challenge #2

In the previous challenge, you successfully modified the given Python program to provide the correct chemical equations for the combustion of propane. In this challenge, you'll be responsible for writing the code to verify the combustion of octane in air. Here's the formula for burning a single molecule of octane in air:

$$C_8H_{18} + 12.5O_2 + 47N_2 \rightarrow 8CO_2 + 9H_2O + 47N_2$$

You have been given this Python program:

```
# This function checks the right hand side of an octane in air
# combustion equation to ensure it is correct.
def check_octane_air_combustion_equation(lhs, rhs):
    return "TODO: Is this equation correct?"

octane_equations = [((1, 12.5, 47), (0, 16, 6)),
                    ((2, 25.0, 94), (16, 8, 14)),
                    ((3, 37.5, 141), (6, 12, 35)),
                    ((4, 50.0, 188), (32, 36, 25)),
                    ((5, 62.5, 235), (40, 35, 42)),
                    ((6, 75.0, 282), (48, 54, 282)),
                    ((7, 87.5, 329), (42, 28, 46)),
                    ((8, 100.0, 376), (64, 40, 63)),
                    ((9, 112.5, 423), (72, 81, 423)),
                    ((10, 125.0, 470), (30, 50, 26))]

for lhs, rhs in octane_equations:
    print("%dC8H18 + %.1fO2 + %dN2 --> %dCO2 + %dH2O + %dN2" % \
        (lhs[0], lhs[1], lhs[2], rhs[0], rhs[1], rhs[2]))
    print "%s\n" % check_octane_air_combustion_equation(lhs, rhs)
```

In the `octane_equations` variable above, ten equations involving the combustion of octane have been represented, each using two Python tuples: one for the left hand side of the equation, the other for the right. The left hand side of each of them is correct, but a few of them have incorrect right hand sides. Your challenge is to change the `check_octane_air_combustion_equation` function so that it returns a string explaining whether the equation's right hand side is right or wrong. If it is wrong, the string should say **which molecules** on the right hand side are wrong.

While you work on this, think about what you know from physics and chemistry. Matter can be neither created nor destroyed. If you have 8 atoms of carbon before a chemical reaction, you will have 8 atoms of carbon after the reaction. Use that knowledge to guide your changes to the Python code above.