Ideal Gas Law and Stoichiometry Name_____

Use the following reaction to answer the next few questions:

$$2 C_8H_{18(l)} + 25 O_{2(g)} ----> 16 CO_{2(g)} + 18 H_2O(g)$$
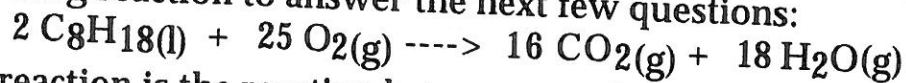
The above reaction is the reaction between gasoline (octane) and oxygen that occurs inside automobile engines.

1) If <u>4.00 moles of gasoline</u> are burned, what <u>volume of oxygen</u> is needed if the pressure is 0.953 atm, and the temperature is 35.0°C?

2) How many <u>grams of water</u> would be produced if 20.0 liters of <u>oxygen</u> were burned at a temperature of -10.0°C and a pressure of 1.3 atm?

3) If you burned one gallon of gas (C_8H_{18}) (approximately 4000 grams), how many liters of <u>carbon dioxide</u> would be produced at a temperature of 21.0°C and a pressure of 1.00 atm?

4) How many liters of oxygen would be needed to produced 45.0 liters of carbon dioxide if the temperature and pressure for both are 0.00°C and 5.02 atm?

Answers: 1) 1330 L   2) 16 g   3) 6760 L   4) 70.3 L