What is the percentage yield of water if 138g water is produced from 16g of hydrogen and excess oxygen.

1: Write the equation

$H_2 + O_2 \longrightarrow H_2O$

2: Balance the equation

$2H_2 + O_2 \longrightarrow 2H_2O$

3: Calculate actual yield

The actual yield is given - 138g

4: Calculate theoretical yield

The theoretical yield must be calculated using stoichiometry (see section below)
Theoretical yield – 142.56g

5: Calculate percent yield

Percent Yield = (Actual Yield ÷ Theoretical Yield) x 100%

=(138 ÷ 144) x 100%
= 95.83%

Answer: Percentage yield water with excess oxygen = 95.83%

CALCULATE THE THEORETICAL YIELD OF WATER

Formula $2H + O_2 = 2H_2O$

	$2H$	**O_2**	**$2H_2O$**
molar mass (g/mol)	2(1) = 2	2(16) = 32	
mass given (g)	16	Not given	
no. moles calculated by mass / molar mass	16/2 = 8 moles		
ratio of moles (hydrogen:oxygen:water)	2	1	2

The ratio tells you that 2 moles of hydrogen yields 2 moles of water

The ratio is 1:1

Therefore, 8 moles of hydrogen will yield 8 moles of water

Mass of water = moles x molar mass

Molar mass of water H_2O =2(1) + 16 = 18 amu
= 18 g/mol

Mass of water = moles x molar mass = 8 mol x 18 g/mol = 144 g