Answer to Question #50867, Chemistry, Other

$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$ What is the theoretical yield of in grams of water if the reaction started with 14.8 g C_3H_8 and 3.44 g O_2?

Solution:

C_3H_8	O_2
m = 14.8 g	m = 3.44 g
$M_r = 44.0$	$M_r = 32.0$
$n = \frac{m}{M_r}$	
$n = \frac{14.8}{44} = 0.34\ mol$	$n = \frac{3.44}{32} = 0.1075\ mol$
In excess	Will react completely

$$n(H_2O) = \frac{4}{5}n(O_2) = \frac{4}{5} \times 0.1075 = 0.086\ mol$$

$$m(H_2O) = 18\frac{g}{mol} \times 0.086\ mol = 1.548\ g$$

Answer:
1.548 g of H_2O