# Fireworks: the art and science – answers

***Education in Chemistry***  
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[**rsc.li/2ZuipHX**](https://rsc.li/2ZuipHX)

## How fireworks work

1. Potassium nitrate + sulfur + carbon 🡪 potassium sulfide + nitrogen + carbon dioxide
2. KNO3, K2S
3. 2KNO3 + S + 3C 🡪 K2S + 3CO2 + N2
4. Potassium nitrate 🡪 potassium nitrite + oxygen

2KNO3 🡪 2KNO2 + O2

1. Thermal: requires heat  
   Decomposition: chemical breaks down (decomposes)
2. Moles = 10.0 / 101 = 0.099  
   Ratio = 2:1 = moles O2 = 0.0594  
   Mass O2 = 0.0594 x 32 = 1.90 g
3. 0.0594 x 24 = 1.4 dm3

## Flame colours

1. a. crimson

b. yellow

c. lilac

d. orange–red

e. green

1. The manufacturers mix different metals together to get different colours and hues.