Name:	Date:
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Fireworks

Investigating blackpowder

Demonstration -	An explosion!
	Blackpowder is a mixture of three things so the reaction is complicated. Instead, watch the demonstration, which shows how blackpowder works.
Results	Write down what you saw:
Questions	I. Write down the formulae of the chemicals in the experiment.
2	2. Which chemical is acting as the fuel?
3	3. Which chemical supplies oxygen?
4	1. Complete the word equations for these two reactions:
	carbon + oxygen → ¿
	sulfur + oxygen →
	Are the products of these two reactions solids, liquids or gases at room temperature?
	5. Why does the explosion happen?
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Fireworks

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Extension work

1. Here is the equation for a reaction which might happen when blackpowder burns:

..... $KNO_3(s) +$ C(s) + $S(s) \rightarrow 3CO_2(g) + 3CO(g) + 2N_2(g) + K_2CO_3(s) + K_2S(s)$

Work out the numbers which should go in front of the reactants. This will give a balanced equation.

2. Sulfur burns to make sulfur dioxide - but this is not a product. What must happen to this gas?

3. Count up the numbers of molecules of products which are gases. Compare this to the number of products that are solids.

4. Use your answer to question 3 to explain why the blackpowder explodes.

5. Calculate the percentages of potassium nitrate, carbon and sulfur in the blackpowder mixture.

 A_r values: C = 12, N = 14, O = 16, S = 32, K = 39.

