

The content on this sheet is assessed on paper 2 only.

## Topic 8b—Earth and atmospheric science

\* Indicates that these are some examples only: you could be asked about any substance / reaction.

<p><b>8.18—Volcanic activity</b> Gases from volcanic eruptions formed the Earth’s early <b>atmosphere</b>.</p>	<p><b>8.23—Chemical test for oxygen</b> To test for oxygen, you place a <b>glowing</b> splint into the gas you suspect is oxygen. If the splint <b>relights</b>, then oxygen is present.</p>
<p><b>8.19—The Earth’s early atmosphere</b> The Earth’s early atmosphere thought to contain: a) little to no <b>oxygen</b>. b) large amount of <b>carbon dioxide</b>. c) some <b>water vapour</b>. d) small amounts of other gases. <i>You may be asked to interpret data from tables or graphs relating to this information.</i></p>	<p><b>8.24—The greenhouse effect</b> Various gases in the atmosphere, but mainly <b>methane</b>, <b>carbon dioxide</b> and <b>water vapour</b>, absorb energy radiated from the Earth, and <b>re-emit</b> it back to the Earth. This process is known as the greenhouse effect, and keeps the Earth at a habitable temperature.</p> <div data-bbox="1958 625 2418 989" style="text-align: right;"> <p style="text-align: right;">Greenhouse effect</p> </div>
<p><b>8.20—Formation of the oceans</b> The oceans formed when the water vapour in the early atmosphere <b>condensed</b> to form liquid water.</p>	<p><b>8.25—Human activity &amp; climate change</b> a) There is a correlation between <b>carbon dioxide</b> percentage in the atmosphere and the mean global <b>temperature</b>. This is linked to the use of <b>fossil</b> fuels, such as coal and oil, by humans. B) It is difficult to be sure that these measurements are accurate, due to issues with historical accuracy, and also the locations where measurements were taken.</p> <div data-bbox="1899 989 2418 1352" style="text-align: right;"> <p style="text-align: right;">NB. These graphs are an approximation only.</p> </div>
<p><b>8.21—CO<sub>2</sub> in the oceans</b> Over time, the levels of CO<sub>2</sub> <b>decreased</b> dramatically, as the CO<sub>2</sub> was able to <b>dissolve</b> in the oceans.</p>	<p><b>8.26—The atmosphere today</b> a) The atmosphere today consists mainly of <b>nitrogen</b> (~80%) and <b>oxygen</b> (~20%) with small amounts of other gases such as carbon dioxide, water vapour and <b>argon</b>. b) Human activities increase the levels of greenhouse gases such as <b>methane</b> and <b>carbon dioxide</b> in the atmosphere, particularly from <b>farming</b> and burning <b>fossil fuels</b> respectively. c) It is possible to mitigate the effects of these activities: however, companies must consider the <b>scale</b>, the associated <b>risks</b> and any <b>environmental</b> impact of these.</p>
<p><b>8.22—The growth of primitive plants</b> Plants started to appear on the Earth. These plants absorb <b>carbon dioxide</b> for the process of <b>photosynthesis</b>, which further reduced the amount of CO<sub>2</sub> in the atmosphere. <b>Oxygen</b> gas is released as a ‘waste’ product of this process, and so the levels of oxygen in the atmosphere started to increase at this time as well.</p>	