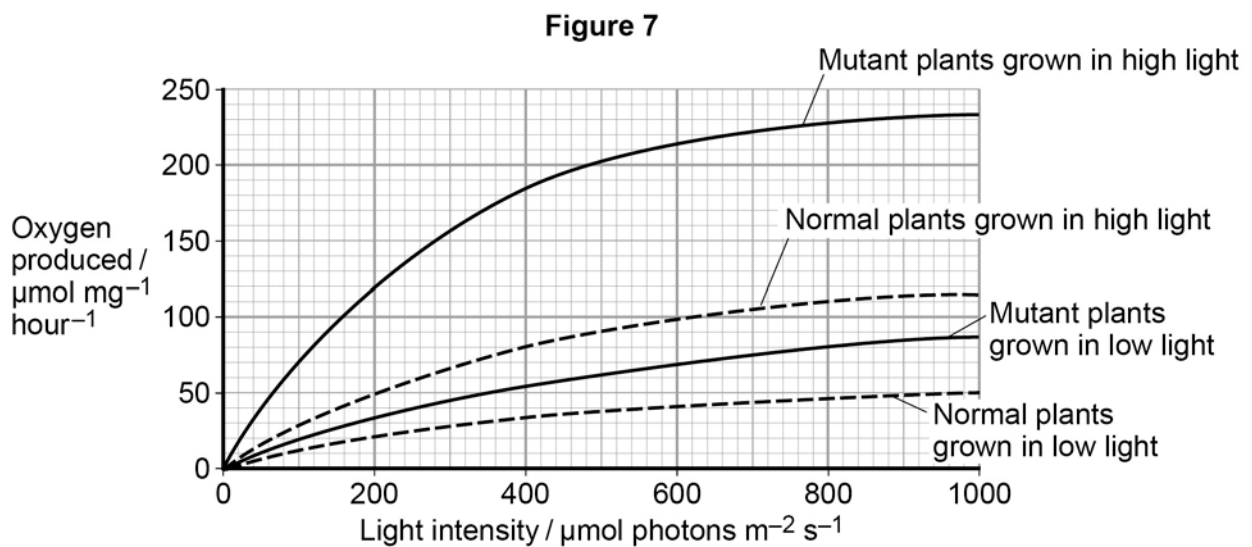


8 Chloroplasts contain chlorophyll a and chlorophyll b. Scientists found tobacco plants with a mutation that caused them to make more chlorophyll b than normal tobacco plants. They investigated the effect of this mutation on the rate of photosynthesis.

The scientists carried out the following investigation.

- They grew normal and mutant tobacco plants. They grew some of each in low light intensity and grew others in high light intensity.
- They isolated samples of chloroplasts from mature plants of both types.
- Finally, they measured oxygen production by the chloroplasts they had isolated from the plants.

Figure 7 shows the scientists' results.



0 8 . 1 Explain why the scientists measured the rate of production of oxygen in this investigation.

[2 marks]

In each trial, the scientists collected oxygen for 15 minutes.

0 8 . **2** Calculate the difference in the oxygen produced by the chloroplasts from mutant plants grown in low and high light intensities at a light intensity of $500 \mu\text{mol photons m}^{-2} \text{ s}^{-1}$ during these trials.

Show your working.

[2 marks]

Difference _____ $\mu\text{mol O}_2 \text{ mg}^{-1}$

0 8 . **3** The scientists suggested that mutant plants producing more chlorophyll b would grow faster than normal plants in all light intensities.

Explain how these data support this suggestion.

[4 marks]

[Extra space] _____
