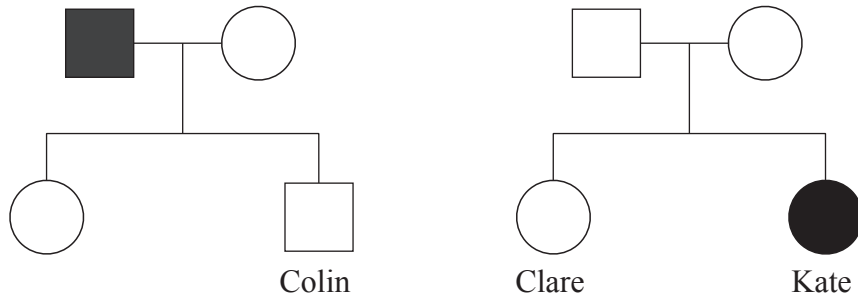


4. Thalassaemia is a genetic disease caused by a recessive allele. People may be carriers of thalassaemia, without showing any of the symptoms. Colin and Clare plan to marry. As there is a history of thalassaemia in both families, Colin and Clare undergo a pedigree analysis. They want to know if they are carriers of the thalassaemia allele.

The results of the pedigree analysis are shown in the following family trees.



- Key:
- Male without thalassaemia
 - Female without thalassaemia
 - Male with thalassaemia
 - Female with thalassaemia

- (a) Explain how the analysis shows that Colin is a carrier for thalassaemia.

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(2)

- (b) What is the probability that Clare is a carrier?

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(1)

(Total 3 marks)

Q4