

Full Higher Separate content. ★ = Higher Tier. ◆ = Separate Science only.

**Q1. Huntington's disease (H) is dominant. A person (Hh) has children with unaffected partner (hh). Use a Punnett square to find probability of affected child.**

[4 marks]

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**Q2. Distinguish between continuous and discontinuous variation. Give an example of each.**

[3 marks]

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★ HIGHER TIER

**Q3. ★ Explain what co-dominance means. Use ABO blood groups as your example.**

[2 marks]

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Total: 9 marks

**Q1 (4 marks)**

Huntington's disease (H) is dominant. A person (Hh) has children with unaffected partner (...)

- Gametes of Hh: H and h. Gametes of hh: h and h [1]
- Punnett square: Hh, Hh, hh, hh [1]
- 50% / 2 in 4 probability of Huntington's (Hh) [1]
- 50% probability of unaffected (hh) [1]

**Q2 (3 marks)**

Distinguish between continuous and discontinuous variation. Give an example of each.

- Continuous: range of values, many genes + environment (e.g. height) [1]
- Discontinuous: distinct categories, usually one gene (e.g. ABO blood group) [1]
- Continuous: normal distribution; discontinuous: separate groups [1]

**Q3 (2 marks) [★ HT]**

★ Explain what co-dominance means. Use ABO blood groups as your example.

- Co-dominance: both alleles expressed equally — neither masks the other [1]
- I<sup>A</sup> and I<sup>B</sup> are co-dominant: I<sup>A</sup>I<sup>B</sup> genotype → blood group AB (both A and B antigens expressed) [1]