

Inheritance – 2022 June O Level 5090

1. June/2022/Paper_11/No.37

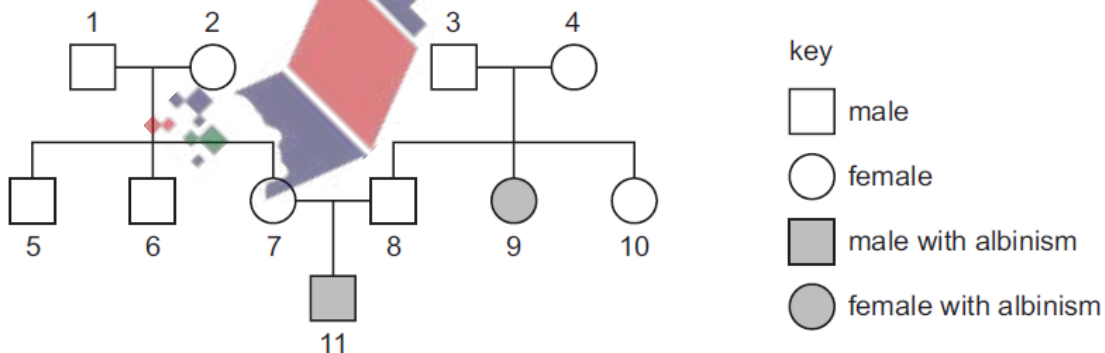
Which human feature shows discontinuous variation?

- A agility
- B body height
- C obesity
- D sickle cell anaemia

2. June/2022/Paper_11/No.38

Albinism is an inherited condition, caused by a recessive allele.

The diagram shows a family tree for a family affected by this condition.



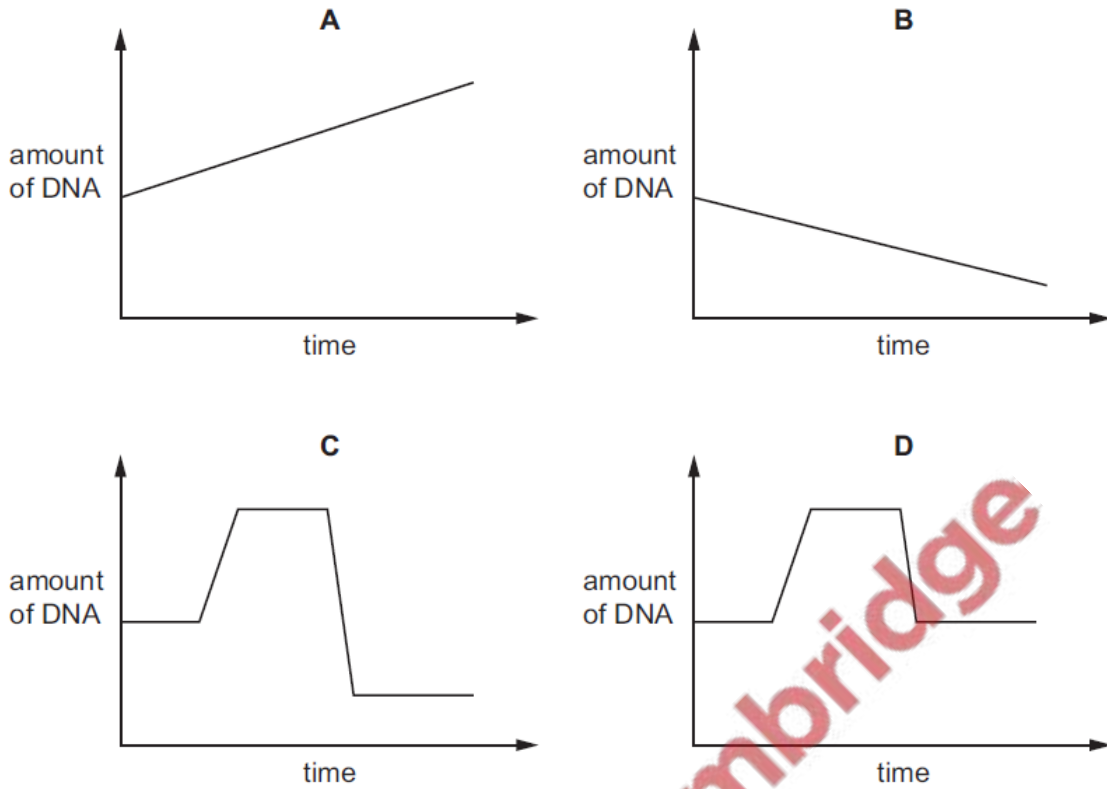
Individuals 9 and 11 have albinism.

What is the chance that individual 10 is heterozygous?

- A 0 in 4
- B 1 in 4
- C 2 in 3
- D 3 in 4

3. June/2022/Paper_12/No.33

Which graph shows how the amount of DNA in a cell changes when the cell divides by mitosis?



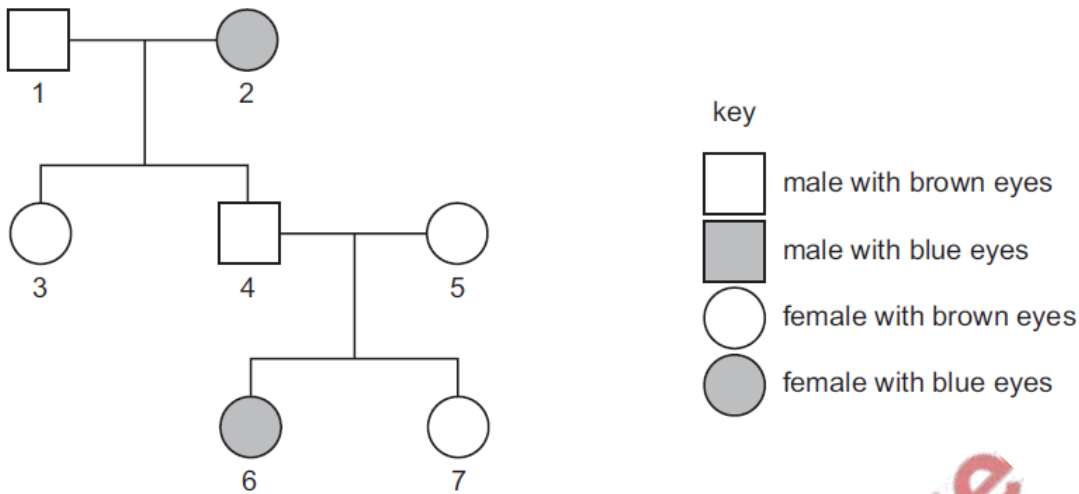
4. June/2022/Paper_12/No.37

Which row shows examples of continuous and discontinuous variation in humans?

	continuous variation	discontinuous variation
A	height	blood group
B	blood group	hair colour
C	hair colour	body mass
D	blood group	height

5. June/2022/Paper_12/No.38

The diagram shows a family tree for the inheritance of eye colour. The allele for brown eyes is dominant and the allele for blue eyes is recessive.



Which people **must** be heterozygous for eye colour?

- A 1, 3 and 7 B 2 and 6 C 3, 4 and 5 D 4 and 5 only

6. June/2022/Paper_12/No.39

The number of weed plants in a grass field was counted at monthly intervals. The table shows the results.

weeds	number of plants																
	2020								2021								
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
groundsel	361	382	400	490	475	400	275	120	60	0	0	5	5	4	4	2	0
dock	688	700	720	710	730	700	700	650	200	0	0	300	150	30	14	6	2
plantain	50	60	80	93	102	140	190	260	200	150	160	350	512	762	840	975	1090
dandelion	75	100	160	202	253	314	335	300	175	20	0	130	414	561	732	849	987

Since August 2020, the field was mown regularly and used as a football pitch.

From this information, which two weeds are best adapted to survive in mown grass?

- A dandelion and dock
 B dock and groundsel
 C plantain and dandelion
 D plantain and dock

7. June/2022/Paper_22/No.4(b)

(b) A rare gene mutation reduces the activity of the PAH enzyme. The mutation results in an increased concentration of phenylalanine in the blood. This condition can cause damage to the brain.

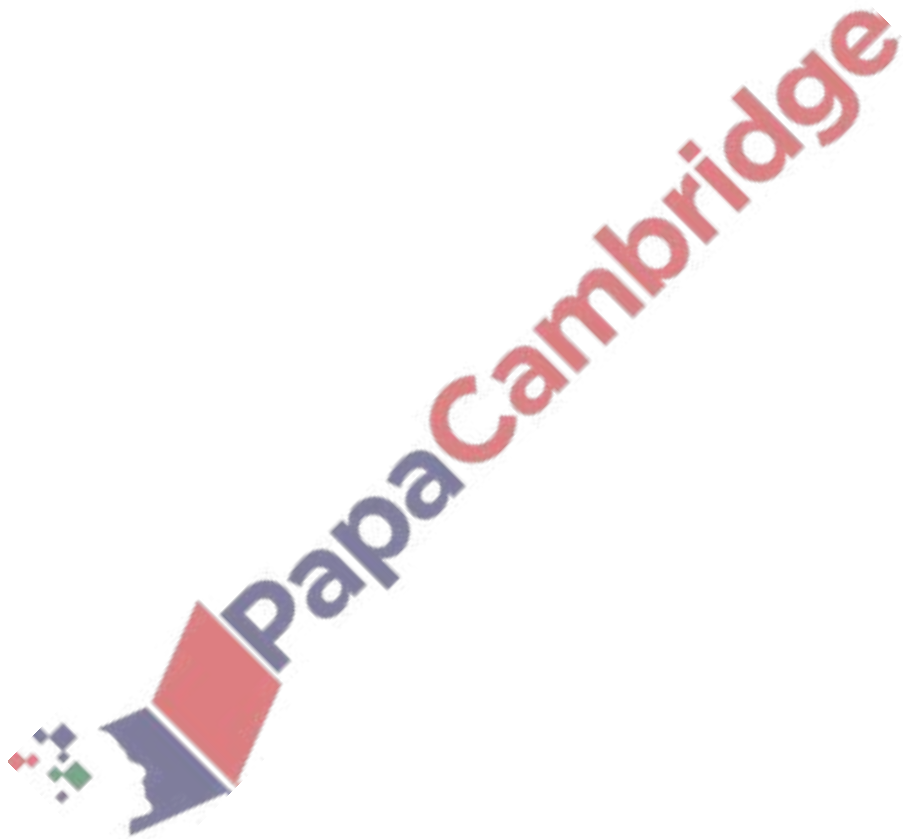
(i) Describe what is meant by the term *gene mutation*.

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..... [2]



(ii) Explain how a person with the condition should change their diet to reduce the risk of damage to the brain.

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..... [3]

(iii) The gene mutation produces a recessive allele, **h**. A person with a heterozygous genotype is described as a carrier. A carrier will **not** show symptoms of the condition.

Complete the genetic diagram to show the probability of two carriers reproducing to have offspring with the condition.

gametes	○	○
○
○

probability of offspring with the condition [3]