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90948M



909485



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

SUPERVISOR'S USE ONLY

Pūtaiao, Kaupae 1, 2017

90948M Te whakaatu māramatanga ki ngā ariā koiora e pā ana ki te rerekētanga ā-ira

9.30 i te ata Rāapa 15 Whiringa-ā-rangi 2017
Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki ngā ariā koiora e pā ana ki te rerekētanga ā-ira.	Te whakaatu māramatanga hōhonu ki ngā ariā koiora e pā ana ki te rerekētanga ā-ira.	Te whakaatu māramatanga matawhānui ki ngā ariā koiora e pā ana ki te rerekētanga ā-ira.

Tirohia mēnā e rite ana te Tau Ākongā ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

Me whakamātau koe i ngā tūmahi KATOĀ kei roto i tēnei pukapuka.

Mēnā ka hiahia whārangi atu anō mō ō tuinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i ngā tau tūmahi.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

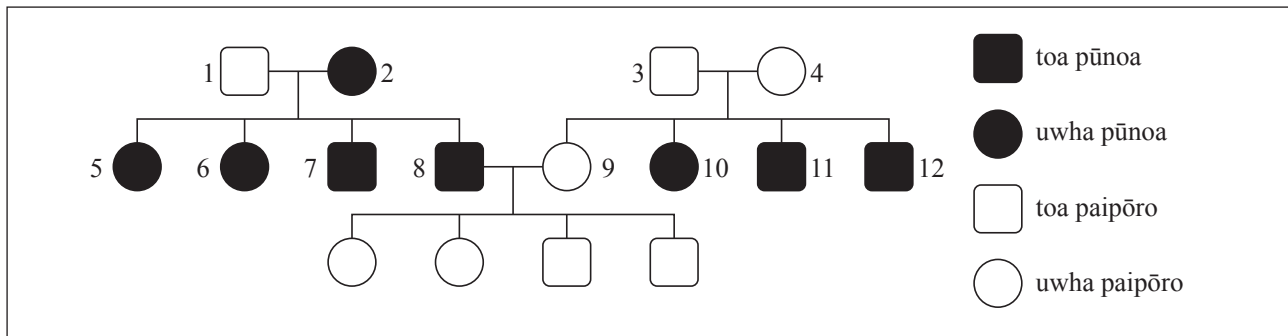
TŪMAHI TUARUA



<https://nz.pinterest.com/pin/255297872600783620/>

www.mybligr.com/wp-content/uploads/2017/02/beautiful-Black-horse-images-pictures-photos-13.jpg

Ko te paipōro he āhuetanga iranga e mā ai ētahi wāhi o te māhunga me te tinana o ngā hōiho. I ngā hōiho he huaira **tāpua** (H) te paipōro, ā, he huaira ngoikore te tae “pūnoa” (h).



- (a) Mai i te tūtohi kāwai i runga ake, whakarārangitia mai ngā tohuāhua me ngā momoira **katoa** ka taea mō ngā hōiho 3, 8, me 9.

Whakamahia te pū H mō te huaira tāpua me te h mō te huaira ngoikore.

Takitahi	Tohuāhua (pūnoa, paipōro rānei)	Momoira (HH, Hh, hh rānei)
3		
8		
9		

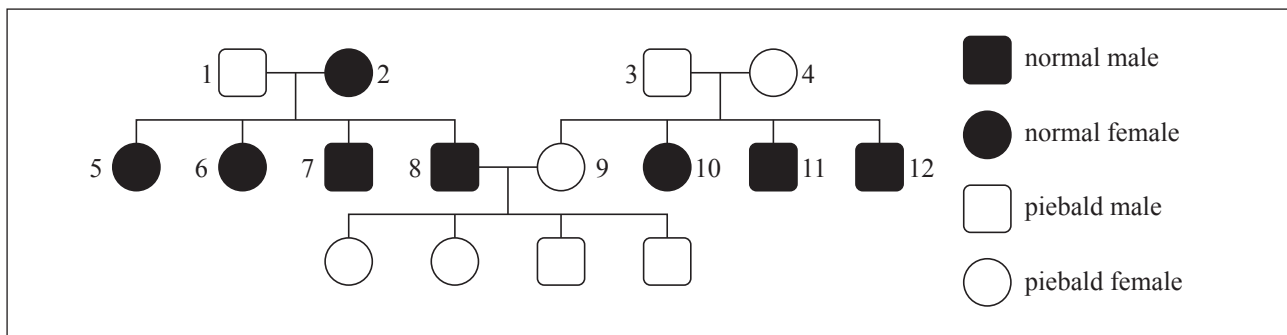
QUESTION TWO



<https://nz.pinterest.com/pin/255297872600783620/>

www.mybligr.com/wp-content/uploads/2017/02/beautiful-Black-horse-images-pictures-photos-13.jpg

Piebaldism is a genetic condition causing a white patch on the head and body of horses. In horses piebaldism is a **dominant** trait (H), and “normal” colour is recessive (h).



- (a) From the pedigree chart above, list **all** the possible phenotypes and genotypes of horses 3, 8, and 9.

Use the letter H for the dominant trait and h for the recessive.

Individual	Phenotype (normal or piebald)	Genotype (HH, Hh, or hh)
3		
8		
9		

English translation of the wording on the front cover

Level 1 Science, 2017

90948 Demonstrate understanding of biological ideas relating to genetic variation

9.30 a.m. Wednesday 15 November 2017
Credits: Four

90948M

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of biological ideas relating to genetic variation.	Demonstrate in-depth understanding of biological ideas relating to genetic variation.	Demonstrate comprehensive understanding of biological ideas relating to genetic variation.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–16 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.