

1

90948M



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, 2018

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

9.30 i te ata Rāpare 15 Whiringa-ā-rangi 2018
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 koe mō ō tuinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te 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.

ME HOATU RAWA KOE I TĒNEI PUKAPUKA KI TE KAIWHAKAHAERE Ā TE MUTUNGA O TE WHAKAMĀTAUTAU.

TAPEKE

MĀ TE KAIMĀKA ANAKE

TŪMAHI TUATAHI



Heru kotahi i runga heihei

<https://pixabay.com/en/hahn-cockscomb-comb-teeth-farm-66341/>

Heru rōhi i runga heihei

www.flickr.com/photos/archer10/7815488864

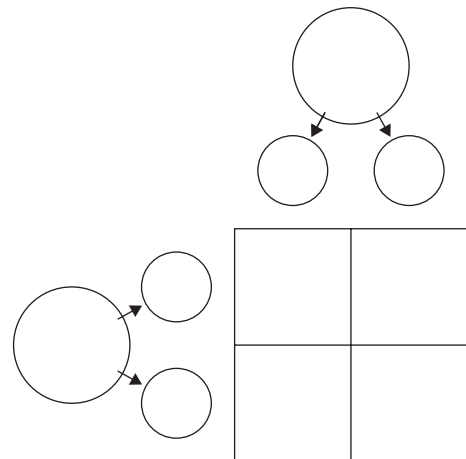
Ko te irarā mō te heru rōhi (R) he **tāpua**¹ ki te irarā mō te heru kotahi (r) i rō heihei.

(a) Ka puta i ngā heihei heru rōhi e rua tētahi uri heru kotahi.

Whakamāramahia mai he aha i puta ai i ngā heihei heru rōhi e rua tētahi uri heihei heru kotahi.

I tō tuhinga me:

- tautuhi tēnei mea te irarā tāpua
- whakamārama ngā tohuira o ngā kātua me te uri
- whakamahi tētahi tapawhā Punnett hei āwhina i tō whakamāramatanga.



¹ ngoi

QUESTION ONE



Single comb on a chicken

Rose comb on a chicken

<https://pixabay.com/en/hahn-cockscomb-comb-teeth-farm-66341/>

www.flickr.com/photos/archer10/7815488864

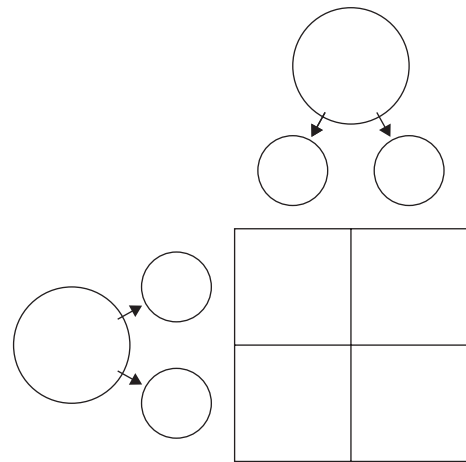
The allele for rose comb (R) is **dominant** to the allele for single comb (r) in chickens.

(a) Two rose comb chickens produce a single comb offspring.

Explain how it is possible for two rose comb chickens to produce a single comb offspring.

In your answer you should:

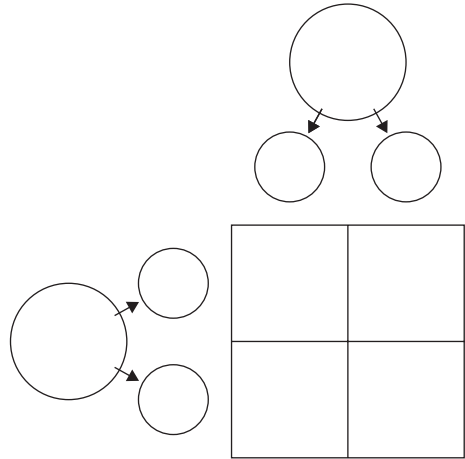
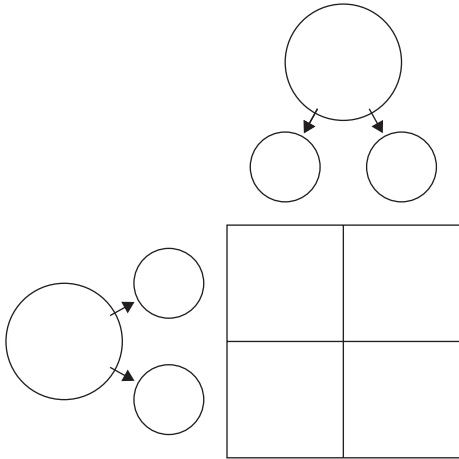
- define dominant allele
- explain the genotypes of the parents and offspring
- use a Punnett square to help your explanation.



(b) Whakamāramahia mai ka pēhea te whakamahi a tētahi kaiwhakatipu i te whakawhitinga ki te kimi mēnā he tohuira whakaputa ira horomata tō tētahi heihei heru rōhi mō te huaira.

I tō tuhinga, me:

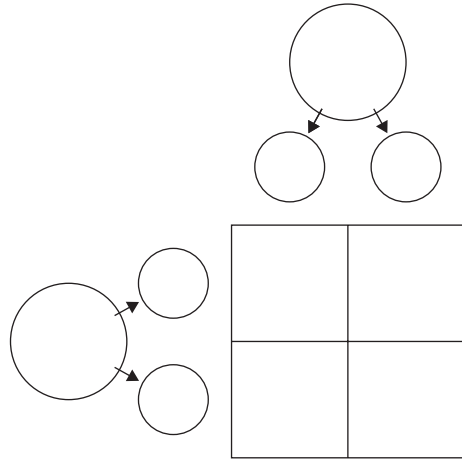
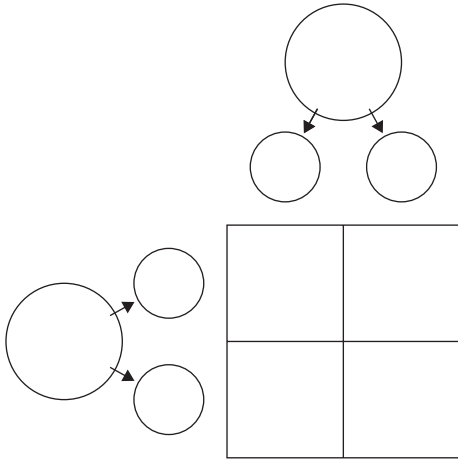
- tautuhi te whakaputa uri horomata me te tohuira
- whakamahi ngā tapawhā Punnett hei āwhina i tō whakamāramatanga
- whakamārama mō āhea e tino mōhio pū ai te kaiwhakatipu ki te tohuira o te heihei.



(b) Explain how a breeder could use crosses to find out if a rose comb chicken has a pure breeding genotype for the trait.

In your answer:

- define pure breeding and genotype
- use Punnett squares to help you explain
- explain when the breeder could be confident of the chicken's genotype.





TŪMAHI TUARUA



Kei rō whīra te karaihe rai Itāria

<http://agfaxweedsolutions.com/2017/02/03/mississippi-corn-control-italian-ryegrass-planting/>

Ko ngā patu otaota he matū hei whakamate i ngā tarutaru. I roto i ngā tau maha, kua tipu he parenga i roto i te karaihe rai Itāria (tarutaru noa) ki ētahi patu otaota (kua kore e patua).

- (a) Whakamāramahia ka pēhea te āwhina a te **tāupetanga** i te **taupori** karaihe rai Itāria kia tipu he parenga ki te patu otaota i roto i taua kaupori.

QUESTION TWO

ASSESSOR'S
USE ONLY

Italian ryegrass in a cornfield

<http://agfaxweedsolutions.com/2017/02/03/mississippi-corn-control-italian-ryegrass-planting/>

Herbicides are chemicals that are used to kill weeds. Over many years, Italian ryegrass (a common weed) has developed a resistance to some herbicides (it is no longer killed by them).

- (a) Explain how **variation** in the Italian ryegrass **population** can help the population develop herbicide resistance.

(b) Whakamāramahia mai he pēhea te whakapiki a te taurangitanga o te taupori karaihe rai Itāria mā te whakaputa uri tōrua.

Whakaurua mai ki tō tuhinga te **hanganga tohuhema** me te **whakatōnga**.

Ruled lines for writing the answer.

MĀ TE
KAIMĀKA
ANAKE

TŪMAHI TUATORU

He tūi whaikano

<https://www.flickr.com/photos/sidm/6557924841>

He tūi mā

<http://mandyart.blogspot.co.nz/2009/07/white-tui-albino-slug.html>

He āhuatanga iranga te rūkimi (leucism) ka ahu mai i tētahi irakētanga e mā ai he wāhanga (te katoa rānei) o tētahi kararehe.

- (a) Me pēhea e oti ai i tētahi huringa ki tētahi **ira** kia pērā ai te **tohuāhua** o te tūi mā e whakaaturia ana i runga.

Me uru ki tō tuhinga ko ngā kupu **pītauira** me te **irarā**.

Kāore i te hiahiatia ngā tapawhā Punnett.

(b) Whakamāramahia mai mēnā he mea tuku iho te kano mā, kāore rānei.
Me uru ki tō tuhinga ko ngā kupu **tuku iho** me te **kore tuku iho**.



(b) Explain whether the white colouration would be inheritable or not.

Your answer should include the terms **inheritable** and **non-inheritable**.

ASSESSOR'S
USE ONLY

--

English translation of the wording on the front cover

Level 1 Science, 2018

90948 Demonstrate understanding of biological ideas relating to genetic variation

9.30 a.m. Thursday 15 November 2018
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 2–15 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.