

SUPERVISOR'S USE ONLY

90948M



## Pūtaiao, Kaupae 1, 2017

KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

# 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 Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi.

#### Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

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

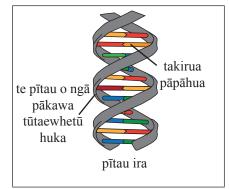
Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–15 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

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

TAPEKE

### TŪMAHI TUATAHI





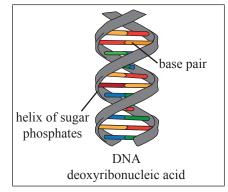
https://pixabay.com/en/panter-leopard-black-spotted-359245/

He mea urutau i: https://commons. wikimedia.org/wiki/File:Dna-baseflipping.svg

He **irakētanga** ō ētahi repara, hāpure rānei e pango ai te huru. E mōhiotia ana ēnei he "pānini pango" (black panther).

(a)	He pēhea te mahi a tēnei <b>irakētanga</b> kia rerekē ai te tae o te huru?
	I tō whakautu me whakamahi e koe ngā kupu pītau ira, ira, irarā, tohuāhua, irakētanga hoki hei whakamārama he pēhea te puta o tēnei huringa tae. Ka āwhina pea i a koe te hoahoa pītau ira i runga nei.





Adapted from: https://commons. wikimedia.org/wiki/File:Dna-baseflipping.svg

Some leopards or jaguars have a mutation causing them to have a black coat. These are known as "black panthers".

an this <b>mutation</b> cause the coat colour to be different?  answer you should use the terms DNA, gene, allele, phenoty	me and mutation to
how this colour change occurs. The DNA diagram above ma	

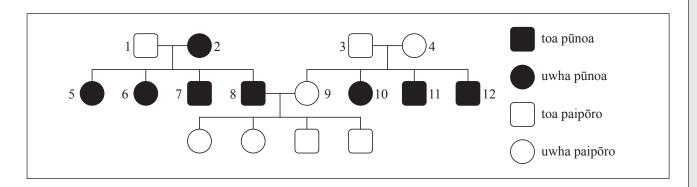
ıgā waha.	
Vhakamāramahia mai he aha i whānau mai ai ngā punua epara me ngā huru pango engari kaua ngā mātānawe.	
	www.wilderness-safaris.com/media/blog/ camp-news/chitabe-leopard-identikits/ copy-of-01-mosadi-mogolo-web.jpg

xplain why the leopard cubs can be born with black coats ut not with scars.	
	www.wilderness-safaris.com/media/blog/ camp-news/chitabe-leopard-identikits/ copy-of-01-mosadi-mogolo-web.jpg



https://nz.pinterest.com/ pin/255297872600783620/ www.mybligr.com/wp-content/uploads/ 2017/02/beautiful-Black-horse-images-picturesphotos-13.jpg

Ko te paipōro he āhuatanga 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		

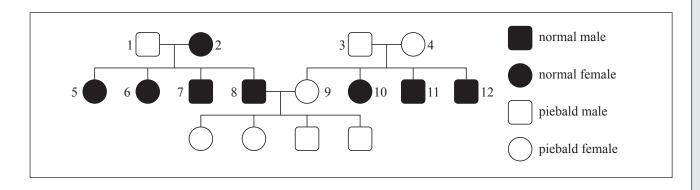
#### **QUESTION TWO**





https://nz.pinterest.com/ pin/255297872600783620/ www.mybligr.com/wp-content/uploads/ 2017/02/beautiful-Black-horse-images-picturesphotos-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		

(b) Ko te hiahia o tētahi kaiwhakatipu hōiho kia puta ko ngā hōiho **tāpua** (paipōro) anake mai i ngā hōiho whakaputa uri e rua. He hōiho paipōro me te pūnoa ō te kaiwhakatipu hōiho hei whakaputa uri.

MĀ TE KAIMĀKA ANAKE

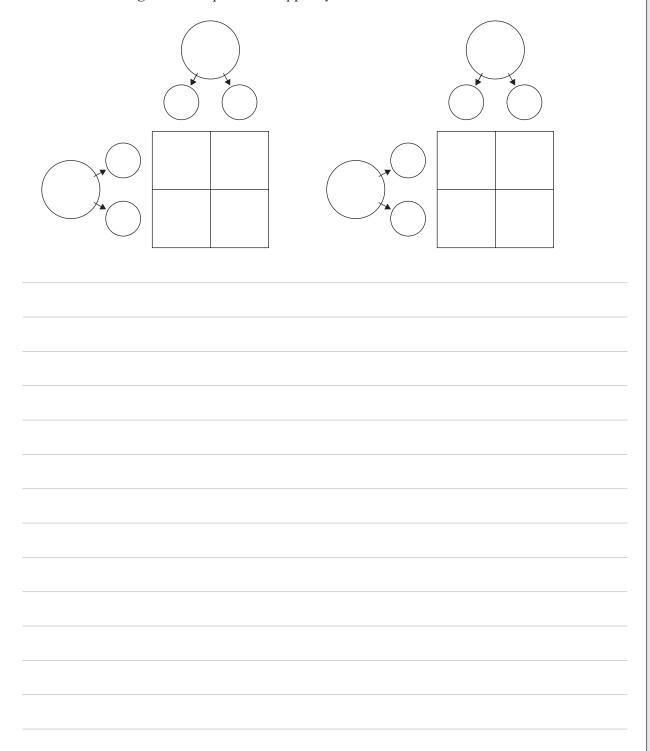
Me pēhea te whakamahi whakawhitinga a te kaiwhakatipu hōiho kia mātua mōhio ai **e whakaputa uri horomata** ngā hōiho e rua?

Whakaaturia ngā whakawhiti mā ngā tapawhā Punnett hei tautoko i tō tuhinga.

(b) A breeder wants to produce only **dominant** (piebald) offspring from a breeding pair of horses. The breeder has piebald and normal horses to breed from.

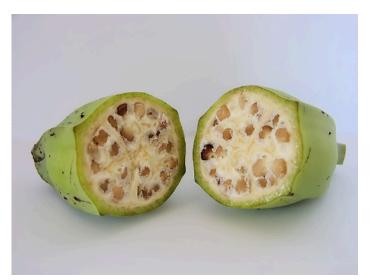
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How could the breeder use crosses to make sure that the pair of horses were **pure breeding**? *Show crosses using Punnett squares to support your answer.* 



### **TŪMAHI TUATORU**

(a)



Ngā panana kōwao, e whakaatu ana i ngā kākano. https://commons.wikimedia.org/w/index.php?curid=1867879



He "rea panana" e tipu ana. www.promusa.org/Banana+sucker

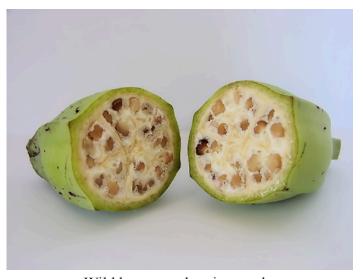
He rahi ngā kākano o ngā panana kōwao, ā, he tōrua te whakaputa uri. He whakaputa uri tōtahi ngā panana māra, mai i ngā hekerua e kīia ana he "rea panana".

He pēhea te puta o ngā tohuhema i ngā rerekētanga mō ngā tipu panana kōwao?

#### **QUESTION THREE**

(a)





Wild bananas, showing seeds. https://commons.wikimedia.org/w/index.php?curid=1867879



A "banana pup" growing. www.promusa.org/Banana+sucker

Wild bananas have large seeds, and reproduce sexually.

Farmed bananas are produced asexually, from suckers called "banana pups".

w does the produ	uction of gametes	resuit in variati	ion for the wild	i Danana piants?	

TAU TŪMAHI	He whārangi anō ki te hiahiatia. Tuhia te (ngā) tau tūmahi mēnā e tika ana.	MĀ TE KAIMĀKA ANAKE

		Extra paper if required.	
NIESTION		Write the question number(s) if applicable.	
QUESTION NUMBER		(с) и орринения	

## 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

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.