

Level 3 Lead Examiner Report 1906

June 2019

Level 3 National in Animal Management

Unit 1: Animal Breeding and Genetics (31644H)





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What is a grade boundary?

A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in external assessments

Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

Grade boundaries for this, and all other papers, are on the website via this link:

http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html

Animal Breeding and Management

Grade Unclassified		Level 3			
Grade	Officiassified	N	P	M	D
Boundary Mark	0	12	24	41	58





Introduction

This is the third time this externally assessed unit has been examined. The context of the task element of the paper was breeding rabbits.

The higher achieving learners applied the information they had researched to the scenario in the paper very well and produced some very pleasing answers. Some of the lower achieving learners appeared to either struggle to apply the information they had researched to the scenario, or had not taken suitable notes in with them. Many of the lower achieving learners had not taken the instruction in the question to make a recommendation of the potential breeds the breeder could use into account, so had not been able to access the higher marks.

Many learners found the genetics section of the paper difficult, even though this is in every paper available for centres to use with their learners.

Introduction to the Overall Performance of the Unit

Overall the paper well, with a pleasing performance at the distinction grade. There was a better performance generally on the questions that were about the practical aspects of breeding as learners seem to find them accessible whereas they appeared to struggle on the more theoretical aspects of genetics.





Individual Questions

1(a) Good Response

Two correct reasons are stated, although the learner has written more than is necessary for a 'state' question and learners should be encouraged not to spend excessive time on these questions.

1 (a) State two reasons why you should provide breeding females with a nesting box.)1a
1 Provides her with a place to build a nest which is a	
natural behaviour before parturition.	
2 It is more hygenic to provide a seperale birthing area	
to the tolking area, and more private for birthing too.	

Poor Response

The learner has been credited for keeping the kits safe, although the rest of the answer is too generic. Learners should limit their answer to single points when answering 'state 'questions. One mark gained.

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1 So that they can start to next whenever they need to, it is a sign that the rabbit may be pregnant.

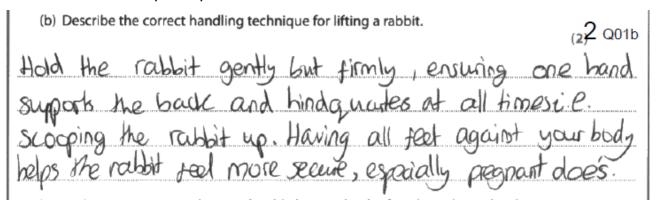
2 So that they can feel comportable during pregnancy and they know they have a safe place for the baby rabbits when they are born.
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1(b) Good Response

Two correct descriptive points are made.



Poor Response

This response is incorrect in parts, and unclear what the leanner actually means in others. Learnbers should be encouraged to match the short answer questions to the number of marks available. No marks gained.

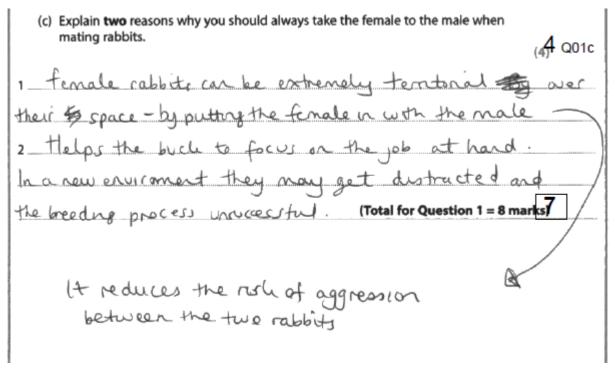
(b) Describe the correct handling technique for lifting a rabbit.	20 Q01b
•	-,
when lifting up the rabbut For handling, you first lift is up to	4
When lifting up the rabbit For handling, you first lift is up to	and
beep one hand on the chest and the other arm/hand ar	
Whe rabbit to secure it.	***************************************





1 (c) Good Response

Two reasons are identified then expanded as are required by the command term 'explain'. This response gained four marks.



Poor Response

The response incorrectly identifies two reasons the doe should be taken to the buck and not the other way around. No marks gained.

(c) Explain two reasons why you should always take the female to the male when mating rabbits. (4)	QO1c
1 SO you can remove the female easily if	-
2 SO the female can chaseles her	



2(a) Response

Four correct characteristics are given, personality was accepted as a euphemism for temperament. Very few poor responses were seen for this question, where they were the learners had repeated characteristics in slightly different terms, e.g. personality, temperament, docility etc.

2	(a) Give rour characteristics you would consider when choosing rabbits to breed from.
1	legerpan a longer healthy typepan of Leoned
	peksonal health - have they had any health isters
2	Sur type - irelading length, colair, thickness
	is it desired by the beser
3	hereditory diseased - will offs pring by likely to
	se healthe of not
4	personality a dosite nature & preferred and
	will likely be passed on
	¥ = (

2(b) Good Response

This response demonstrates accurate knowledge and the learner has presented their understanding clearly and logically. The relevant evidence from the learner's research has been applied and a clear recommendation given as required in the question. A more detailed justification of why some breeds had been rejected would have improved the answer further. This response gained 12 out of 12 marks.



(b) Discuss factors and options Gemma should consider to achieve her aims, taking into account the desirable characteristics of the chosen breed.

Use your research notes to help you make a recommendation.

12)12,02b

The business is based in a small shed mergore he size gime rabbits should be considered larger breads of Plemish and Continental Granks would be unsuitable because the environment is not suitable for them, so a derivable characteristic would be a smaller rabbit bread e.g. Netherland Dwarg.

The rabbits will be sold as pets. smaller rabbits are more popular because of their "cuteness" rather and may require less space. They are easier for children to interact with and probablier man larger breads. This "cuteness" is a switable characteristic and desirable because it hill malle it easier for Genma to sell the rabbits. However, whilst small break are considered cuter they often have longer coats that require maintainence and can cause health problems up overly offing in summer. This will make it budge to break the rabbit and care for heir health.

Coause prep are pets and not show rabbits that long coats are not a recessary or destrable characteristic.

Gemma has close neighbours on both sides. A desirable characteristic would be to have more sociable and less highly strung rabbits that can cope with land noise and





tandling to a pet shop earier than higher strong breet.

White multith or red-eyed are not a definable characteristic because they remind burges of laboratory reithing. This will put buye of and be bad for burness. An option would be loved more common colours e.g. black, hown, gived. Femma should consider genetically screening for rathiktighte broading to cheal their health e.g. cloudy common.

Overall, Gennma should breed a small, healthy, common -coloured, short-haired, piendly rathir flearmendations are tophed top, English top, and the Dutch Pathir, intend of Gients or long-taired Contend Rathir.

(Total for Question 2 = 16 marks) 15





The learner has described some considerations to be taken into account when breeding rabbits such as space, hutches etc, but they have not made a recommendation as to which breed should be chosen. This is required in the question. This response gained three out of 12 marks.

(b) Discuss factors and options Gemma should consider to achieve her aims, taking into account the desirable characteristics of the chosen breed.
Use your research notes to help you make a recommendation. (12)3 Q02b
requirements. Pabbits prefer to the with other rabbits but the
huter should not be overcrowded. Whilst breeding 186616 should
be on their own and they need extra space to next when
pregnant. The hulches should also have protection from the
weather as pregnant rabbits and newborns are extremely vulnerable
This is maybe where the garden shed would be
nzeDr):
Germa will need to ensure that there isn't going to be any
major disription from her neighbors which could frighten
the newborns, make them nervous long-term which isn't
a descrable trait in a pet.
Gemma should also make sure she chooses the right
rabbits to bread. Their parents should have
A good porality history, good health and good appearance



3(a) Good Response

The learner has accurately applies their knowledge of dihybrid crosses to the information provided and calculated the phenotypic probabilities from the possible genotypes formed. This response gained 8 out of 8 marks.

3 When Gemma is looking at the different breeds of rabbits she realises that the same

breed of rabbit can come in various colours and sizes.

Colour and size are controlled by the rabbit's genetics.

The gene for colour has two alleles.

The allele for black colouring is B and is dominant. The allele for brown colouring is b and is recessive.

The gene for size has two alleles.



dd is homozygous recessive and is normal sized.

Dd is heterozygous and is dwarf sized.

DD is homozygous dominant and is a 'peanut', these are stillborn.

Gemma mates a male dwarf brown rabbit with a female dwarf black rabbit, she knows the dwarf black rabbit is heterozygous for coat colour.

(a) Calculate the <u>phenotypic probabilities of the offspring</u> using the dihybrid template.

(8)8 Q03a

BPOM	Mak 66Dd				
6600		5 D	bd	LD.	bd
Female	BD	8600	. BPD9	8600	1360d
BPDY	Bd	BbDd	Bbdd	BbDd	Bbdd
	bD	.pp00	bbDd	. PPDD	PPDG
	Ld	bb0d	. ppgg	. 9P Dg	· bbdd

Phenotyp	oic pro	bability	Black Peanut 2:16
BLOD	2	5 9999	Brown Normal 2:16
bbdd	2		Brown Dwast 4:16
blod	4		Black Dwarf 4:16



The learner has attempted to separate the possible gametes to make the cross but has then got very muddled, This question tended to be answered very well, or very poorly with little in between. It was obvious which learners had learnt how to do dihybrid crosses, and those who were unfamiliar with the concept. A few learners had attempted to use the 9:3:3:1 ratio, but that does not work in this particular case. This response gained no marks.

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	breed of rabbit can come in various colours and sizes

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The gene for colour has two alleles.

The allele for black colouring is B and is dominant. The allele for brown colouring is b and is recessive.

The gene for size has two alleles.

D is for dwarfism and shows incomplete dominance, which means that a rabbit with:

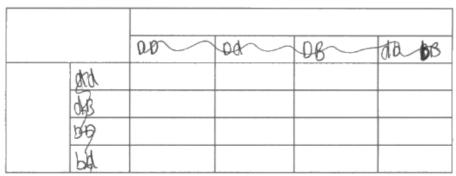
dd is homozygous recessive and is normal sized.

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Gemma mates a male dwarf brown rabbit with a female dwarf black rabbit, she knows the dwarf black rabbit is heterozygous for coat colour.

(a) Calculate the phenotypic probabilities of the offspring using the dihybrid do do do do template.



Phenotypic probability			





3(b) Good Response

One way is identified and expanded accurately. Linking the care to the date of parturition would have improved the answer, e.g. provide privacy as the date nears. This response gained three marks.

```
It ensures that you know the date of conception.

This mean that you can provide the annal with

the appropriate care + nutrition she needs. It also
helps you to estimate a too the day of
partirition
```

Poor Response

The identifications made are accurate for general husbandry, they are not particular to a breeding programme. Keeping records on paper is irrelevant to the context of the question. This response gained no marks.

(b) Explain one way record keeping is used when running a breeding programme. (4) 0 Q038
record keeping is used to keep track of
Healthcare number of Offspring, deathetc.
It can be done on paper and then
all of the paper is put into a folder
and fried away keeping records on
Paper can be good as you can organise
the information and use it easily reasy
to read or understand.



4(a) Good Response

Three points are accurately identified and expanded as required by an explain question. This resposne gained six marks.

1 The doe may get a lit stuck which could lead to the death of the mather + lits if left untreated
2 Young or nexperenced does may bell and eat their young - this is a natural, next cleaning instruct which can occur if they are remnerous
or scared. 3 Apply to find for the form of the form o
Can about or resorb fetures due to nutritional deficiences or disease.





Three points are made but they are not relevant to the care of newborn kits or actions the breeder should take. No marks gained for this response.

1 50Me Kils are born and feer possess no arowth
normane, which makes their survival impossible.
and a coest how have cough adopt whe columns
2 If a nest box has rough edges like splintening
wood, then this could contribute to the doe or
a kit getting mastitis, which is a bacterial infection
of the mammary glands and the offspring may to too we
1 to fight off the infection Decreosing their Gurrival chance
3. Does may kill their young because of neglect or
nerrousness.





4(b) Good Response

Three points acre accurately identified and expanded as required by the command term 'explain' The first two points are not on the mark scheme but were awarded under 'accept any other valid response' as they were not responses commonly seen and were worded in a different way to how other learners had but they were valid responses. This response gained six marks.

Gemma wants to maintain high standards of husbandry for her newborn rabbits.
(b) Explain three actions Gemma should take.
(6 /6 Q04b
1 To odsistate and rate degrafo ensure glove which
are Scented like the nother area & ord when checking an
tate I do not move things, is reeded explace perjuly otherwood
rother can wait / eat her young is she joels they have been targot
2 E rouse nother ES kept away from other eaklite
to reninge sleep and give privacy, is she believe alhees
can see her she may not jud his young at not to
tereal they location to possekle predators
3 E usus mathers natitional needs are met, if
notrient desicient her rik may not be able
to sostain her young and the Kits may die





The points identified in this response are inaccurate as they refer to rabbits in general, or older kits. The question refers to newborn rabbits specifically and the learner has not addressed this. This response gained no marks.

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rebouts and comprey leaves should be added to prevent denydration.

2 rabbuts are sensiture to heat so their hurches should be venticated and should be snaded to prevent to rabbuts from overneating, which could cause many health problems.

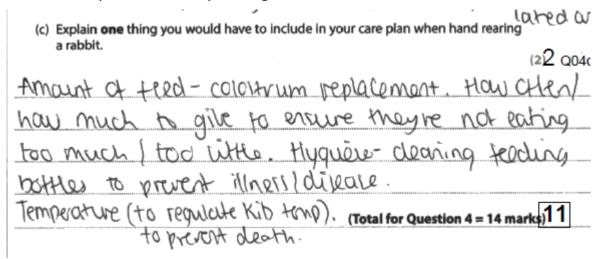
3 Provide chews + tous as the rabbuts are constantly agowing and gould cause infections and health issues, if they become ingrown.
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4(c) Good Response

The learner has identified that the type and amount of feed needs to included in the care plan. This response gained two marks.



Poor Response

The learnrer has made a point about the possible food but has not expanded this to detail either how often or how much to give the kit. One mark gained for this response.

```
The rappits should be fed kitten mulk replacer or a formular of half a cup of evapourated mulk, half a cup of evapourated mulk, half a cup of water, I equ york and I tablesmon of corn gurup. Also nubbing kits with a towel with encourage the kits to breath. (Total for Question 4 = 14 marks 4 9 mm) are
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5(a) Good Response

Two relevant technologies as listed in section C1 of the specification are identified and accurately expanded. Four marks gained for this response.

1 the use of	abjacoat	rseminal	-107 Can b	ومععط
to diversipy	a breeds	gene	parel and	petartid
avoid the	POSSIT	0-	af go	retie/
	19	23.		
2 the use of	Ultra Sound	Scans	allow gor	aquati
4 4	litter Siz			allous
,	preperation			Bar
the kibs birt	sh.			

Poor Response

IVF has been identified but this is used when there are reproductive issues, not to improve breeding success. The second identification has not been addressed. This response gained no marks.

```
(4) U Q05a

1 IVF as the offerm is that the injected into the

Females womb to increase chances of ferticisation

and without risiding a male and female from

fighting as they don't have to make contact with single
```



5(b) Good Response

The effect of gene mutation on the evolution of variation rate is section C4 of the specification. This learner understood that a good mutation will increase the variation as it is selected for whereas a por mutation can have no or a negative effect. Four marks gained for this response.

The effects of genetic mutation on variation in a species depends whether the genetic mutation is useful or not.

If the genetic mutation resolves in an an undesurable that to survival, it is likely the arrival work last or be bred from meaning variation is unchanged. If the brait is desurable, the apposite will happen and people will try to bred the arrival with that mutation creating more of them.

Poor Response

Although the learner understood that mutation can change an animal's phenotype, there is no link to the effect on variation. This response gained one mark.

genetic mutations can cause an animal
to have different coat colours e.g. white
haers and can cause an animal to
have different markings. Genetic mutations can cause different
mutanons can cause different
behanours in an animal





5 (c) Good Response

Two gene interactions are identified and a further descriptive point made. These are taken from section C3 of the specification. This response gained four marks.

(c) Describe two ways genes may interact. (4A Q05c incomplete dominance = allels interact to create
a rew phenotype in the animal
Lethal allels = recession ares is an aring has
two recessive allels of this type it will be stillborn

Poor Response

The leanner seems unfamiliar with the term gene interactions lathoughit is referenced directly in the specification. The have basically described the role of genes. No mark gained for this response.

```
1 genes can be lassed down from parents to offshing which could man that determine whether the offshing have a disease or what colour eyes.

They have
```



6 (a) Good Response

This learner has discussed the use of inbreeding to select for specific desirable traits and then discussed the dangers of this and suggested ways breeders could avoid the worst problems associated with inbreeding. This is a levelled question and the answer demonstrates the qualities required in a level 3 answer.

6 (a) Discuss the use of inbreeding when constructing a mating scheme.

(6) 6 appearance way be used in mating schemes to ensure that a specific distrability gene for a destrict trait is passed onto the expressing. Two is called posture associative mating, breeding animals with semiliar characteristics. Whilst this ensures that the train is passed on for the breeder, interceding construct increases the interceding construct increases the interceding construction distributed distributed to be passed on. These are caused by a reduction in the gene post reducing variation and increasing homotographic recessive the passed on the





The learner has made an isolated point about desirable characteristics but has not gone on to discuss it in any meaningful way. A level 1 answer.

6 (a) Discuss the use of inbreeding when constructing a mating scheme. (6) 1	Q06a
Inbreeding can increase the chances of the offsprung having desireble characteristics, mean that more people will buy them as they are	
descreable.	





6(b) Good Response

This is a levelled discuss question for 12 marks. The learner has discussed the question in the context of rabbits although this was not actually required in the question. The knowledge and understanding demonstrated is accurate, and the points made are relevant. These are put into a well developed and logical discussion.





When breeders select animals such as rabbits for a breeding programme they choose the animals with 'desirable characteristics'.

(b) Discuss the ethical issues of breeding for 'desirable characteristics' in animals, such as rabbits.

(12)1206b Now

Large raphits were once in 'fashion' due to their large and different book & characteristics. Human wanted these large have rabbits as pets - so mae were bred. The trouble with there rabbill to that they have been genetically mutated and over bred to create this large look & doube nature - a large rabbit with large nech I clave would not be and as desirable. This example it unothical due to the rabbit being changed to much that its unable to exhibit notival behaviour rattery - they don't live as long due to over siled hearts & niks to mai nearth, they're more used to homes than arride Another desirable characteristic is a pure white rabbit - Angora This appeause breed were are bred for fur purposes with no care about the rabbit welfare needs. Without traling-most of there rabbills are bling & deaf because of a gene mas has need unknowingly bred without care. These rabbilis now letter become at (Albinos). The netherland downt has been byed for a smaller! +latter tace and head for breed standard purpul This causes then to be more suceptible to stress



and pear as they are very small, their flat face has cauced respiratory problem & surpring. Breeding animals for specific characteristics can be unethical due to me lack of care on the genetic side of it. former appropriation. Weat raphits are so big some a them can barely more they are billed at 8 weeks when they're tryes. The breeder only cares about the income rather than the chimals hearth & welfare Suffering Out breeding larger teeth of pet valinity to prevent unjury to numars causes do rabbits to not be able to chewl gnow and eatlestibit as they normally would - this is very mothical. Show rabbits with larger ears are more succeptible to head tilt and other deep ear intections - but because human think they're cute & will pay money for them, they are continued to breed. Desirable characteritics will alway sell well a make a profit regardless of the complication & health welfare of the animal Robbits can be kept in uncultable enmonment & be given traits that are not healthy or do not give then me her choice at life





The learner has talked about the effects of breeding for desirable characteristics but these are not linked to the ethical considerations other than mentioning that they may not show natural behavious but the point is not expanded.

The ethical issue is that certain preeds who are not desired or do not have desireable characteristics are not as wanted or they may get mistreared because they are not desireable Another issue is that a descreable characteristic for a rabbit may not be a natural behaviour meaning that the need to be able to exhibit natural behaviours is not met as that natural behaviour may not be desireable. Another 155ue 15 that some rabbit breeds may become extinct as they are not desireable breeds so they won't be purchased as much as desireable breeds decreasing theur population as breeders will not choose to breed an undescreable breed because mey will not sell for much money.





Summary

- learners should ensure that their notes are detailed and they are very familiar with them, as they will be using them in an exam situation.
- learners should use their notes and apply them to the scenario they are presented with
- learners should ensure they are familiar with the demands of the command terms used in this paper. These are detailed in the specification.
- In the short answer questions, especially those with the command terms give and state, learners should try to be succinct. Many learners write extensive answers to these, which takes time away from questions requiring a more extended response. Conversely many learners put single points in explain and describe questions where 2 or 4 marks are available.









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