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91156M



Tohua tēnei pouaka mēnā kāore he tuhituhi i roto i tēnei pukapuka

SUPERVISOR'S USE ONLY

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

Koiora, Kaupae 2, 2020

91156M Te whakaatu māramatanga ki ngā tukanga ora e pā ana ki te pūtau

9.30 i te ata Rāapa 2 Hakihea 2020 Whiwhinga: Whā

Paetae	Kaiaka	Kairangi
Te whakaatu māramatanga ki ngā tukanga ora e pā ana ki te pūtau.	Te whakaatu māramatanga hōhonu ki ngā tukanga ora e pā ana ki te pūtau.	Te whakaatu māramatanga matawhānui ki ngā tukanga ora e pā ana ki te pūtau.

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 koe mō ō tuhinga, whakamahia te (ngā) whārangi wātea kei muri o tēnei pukapuka, ka āta tohu ai i te tau tūmahi.

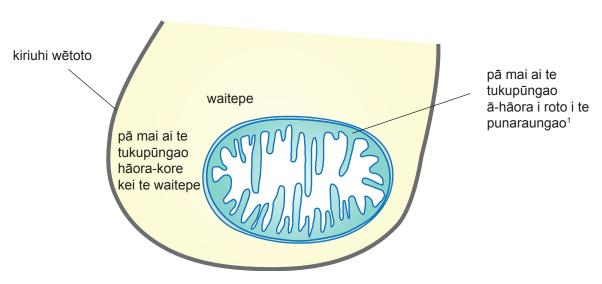
Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–19 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

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

TAPEKE

TŪMAHI TUATAHI: TUKUPŪNGAO Ā-PŪTAU





- (a) Tuhia te whārite kupu mō te tukupūngao ā-hāora.
- (b) Pā mai ai te tukupūngao ā-hāora i roto i te punaraungao, otirā pā mai ai te tukupūngao hāorakore i roto i te waitepe. He kaitāmi te haeanate o te pūmua whākōkī cytochrome c oxidase, he pūmua whākōkī hira tēnei i roto i te tukanga tukupūngao ā-hāora.

Matapakitia he pēhea te pānga o te haeanate ki te tukupūngao hāora-kore, ā-hāora hoki me te whakanaonga o te ATP.

I tō tuhinga:

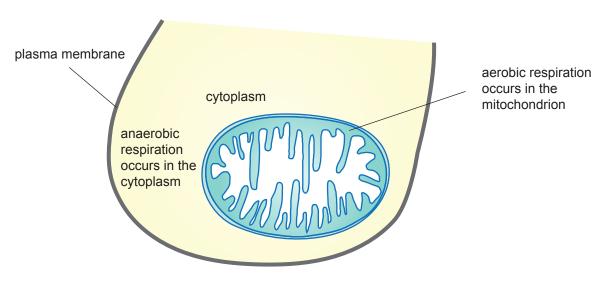
- whakaahuatia te mahi a te pūmua whākōkī
- whakamāramahia he pēhea te tuku a te hanganga o tētahi pūmua whākōkī ki te mahi i ana mahi
- matapakitia he pēhea te whakaawe a ngā kaitāmi pūmua whākōkī i te mahi a te pūmua whākōkī me ngā tauhohenga koiora.

¹ pata pūngao

He wāhi anō mō tō tuhinga mō tēnei tūmahi kei te whārangi 4.

QUESTION ONE: CELLULAR RESPIRATION





- (a) Write the word equation for aerobic respiration.
- (b) Aerobic respiration occurs in the mitochondria, while anaerobic respiration occurs in the cytoplasm. Cyanide is an inhibitor of the enzyme cytochrome c oxidase, an important enzyme in the aerobic respiration process.

Discuss how cyanide would affect both anaerobic and aerobic respiration, and the production of ATP.

In your answer:

- describe the function of an enzyme
- explain how an enzyme's structure allows it to carry out its function
- discuss how enzyme inhibitors affect enzyme function and biological reactions.

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There is more space for your answer to this question on page 5.
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There is more space for your answer to this question on page 5.

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TŪMAHI TUARUA: TE AHOTAKAKAME ME TE NEKENEKE O NGĀ MATŪ

MĀ TE
KAIMĀKA
ANAKE

Ka taea e ngā tipu me ngā ika wai māori te miti wai me ngā haurehu memeha mai i te wai tonu ki roto i ngā pūtau.				
Mā	ātāpuna: https://www.britannica.com/plant/ Mātāpuna: https://microdok.com/what-is-a-cell/ Elodea			
(a)	Whakamāramahia mai he pēhea te uru o te wai ki ngā pūtau tipu, ngā pūtau kīrehe HOKI.			
(b)	Whakamāramahia mai te take ka pakaru mai pea ngā pūtau kararehe i te rautanga ki te wai māori, engari kaua ngā pūtau tipu.			

QUESTION TWO: PHOTOSYNTHESIS AND MOVEMENT OF MATERIALS

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USE ONLY	

Freshwater aquatic plants and animals are able to absorb water and dissolved gases directly from the water into their cells.				
G				
Sourc	e: https://www.britannica.com/plant/Elodea	Source: https://microdok.com/what-is-a-cell/		
(a)	a) Explain how water enters both plant AND animal cells.			
(b)	Explain why animal cells may burst when pla	aced in fresh water, but plant cells will not.		

MĀ TE KAIMĀKA ANAKE

2.7		WI 1 1			
Ng	gā pūtau <i>Elodea</i> i rō wai mai i te kōrere (x 400) Mātāpuna: www.britannica.com/plant/Elodea	Whakaahua o te pūkāriki, pūmāota rānei Mātāpuna: https://vk.com/prepsatchembio			
	Matapakitia he pēhea te mahi tahi a ngā hanganga i roto i te pūtau tipu kia tino whaihua ai te ahotakakame.				
Me	whakauru ki roto i tō tuhinga:				
•	te whārite kupu mō te ahotakakame				
•	tētahi whakamāramatanga mō te pānga o te t	akotoranga o te pūkāriki ki te ahotakakam			
•	tētahi kōrero e pēhea nei e tino whaihua ai te me te kōrero hoki mō ngā wāhanga ā-tūrama				
	me te korero noki mo nga wananga a-turame	The figa wananga turama-kore.			
		He wāhi anō mō tō tuhinga mō			
		tēnei tūmahi kei te whārangi 10.			

	Elodea cells in tapwater (× 400) Source: www.britannica.com/plant/Elodea	Diagram of a chloroplast Source: https://vk.com/prepsatchembio
)is(cuss how the structures within the plant of	cell work together to maximise photosynthesis.
ı y	our answer include:	
	the word equation for photosynthesis	
	an explanation of the effect of chlorop	last location on photosynthesis
	a discussion of how the structure of the with reference to the light-dependent a	e chloroplast maximises photosynthesis, and light-independent phases.

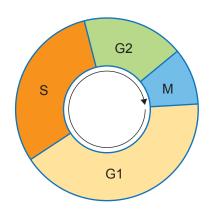
KAIMĀKA ANAKE
ANARE
1

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TŪMAHI TUATORU: HURIHANGA PŪTAU, TĀRUATANGA PĪTAUIRA, ME TE WHĀŪ **PŪIRA (MAITOHI)**

E kīia ana te hurihanga koiora o tētahi pūtau ko te hurihanga pūtau. E whakamāramahia ana i raro ko ngā wāhanga G1, S, me te G2. Kei roto ano te whāu pūira i te hurihanga pūtau.

Hurihanga pūtau



Whakamāramatanga

- G1 tipu o te pūtau me ngā mahi a te pūtau
- tāruatanga pītauira
- G2 tipu o te pūtau me te whakariterite mō te whāū pūira
- M whāū pūira

He mea urutau mai i: https://teachmephysiology.com/basics/cell-growth-death/cell-cycle/

Matapakitia te take he aha i tino hiahiatia ai te whāū pūira me te tāruatanga pītauira hei tautoko i ngā mahi whānui a te pūtau me te tipu o te rauropi.

I tō tuhinga, me kōrero mō ngā tauira tauwhāiti me te whakauru mai:

- he whakaahuatanga o te whāinga o te tāruatanga pītauira
- he whakamāramatanga he aha te take me tino mātua tārua te pītauira i mua i te whāū pūira

he matapakinga he pēhea te pānga o te hurihanga pūtau ki te tipu o tētahi rauropi.

he whakamāramatanga o te kaupapa o te whāu puira ME te rahinga putau

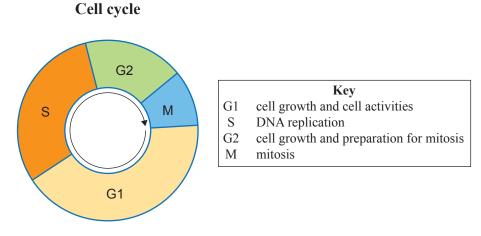
	 	_	

He wāhi anō mō tō tuhinga mō tēnei tūmahi kei te whārangi 14.

QUESTION THREE: CELL CYCLE, DNA REPLICATION, AND MITOSIS

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The life cycle of a cell is called the cell cycle. Stages G1, S, and G2 are described below. Mitosis is also part of the cell cycle.



Adapted from: https://teachmephysiology.com/basics/cell-growth-death/cell-cycle/

Discuss why mitosis and DNA replication are necessary to support both the overall functioning of the cell, and the growth of the organism.

In your answer, refer to specific examples and include:

- a description of the purpose of DNA replication
- an explanation of why the DNA must be replicated before mitosis
- an explanation of the purpose of mitosis AND cell size

a discussion of how the cell cycle affects the growth of an organism.				
			Thoro is more	e space for your

answer to this question on page 15.

MĀ TE KAIMĀKA ANAKE

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

MĀ TE
KAIMĀKA
VNVKE

		Extra paper if required.	
QUESTION NUMBER		Write the question number(s) if applicable.	
NUMBER			

ASSESSOR'S USE ONLY

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

MĀTE
KAIMĀKA
ANAKE

	Extra paper if required.	
QUESTION	Write the question number(s) if applicable.	
QUESTION NUMBER	. , , , , ,	

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English translation of the wording on the front cover

Level 2 Biology 2020

91156 Demonstrate understanding of life processes at the cellular level

9.30 a.m. Wednesday 2 December 2020 Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of life processes at the cellular level.	Demonstrate in-depth understanding of life processes at the cellular level.	Demonstrate comprehensive understanding of life processes at the cellular level.

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 space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–19 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.