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education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P2

SEPTEMBER 2025

MARKS: 150

TIME: 2½ HOURS

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your ANSWER BOOK.
3. Start the answers to each question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. ALL drawings should be done in pencil and labelled in blue or black ink.
7. Draw diagrams or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You may use a non-programmable calculator, protractor and a compass.
11. Write neatly and legibly.

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SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A-D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 D.

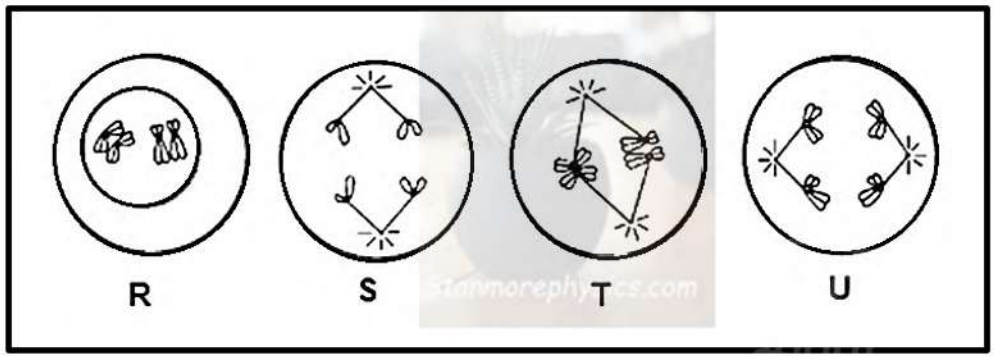
1.1.1 DNA and RNA are examples of…

A enzymes.
B nucleic acids.
C amino acids.
D proteins.

1.1.2 Which of the following human structures will contain a diploid chromosome number?

A Gametes
B Gonosomes
C Somatic cells
D Autosomes

1.1.3 Identify the phases that ensures genetic variation among individuals of the same species?



A R and T
B S, T and U
C R, S, T and U
D R only

1.1.4 Inheritance of multiple alleles in genetics refers to…

A one allele that influences more than one characteristic.
B two alleles that influence two characteristics.
C more than two alleles that influence two characteristics.
D more than two alleles that influence one characteristic.

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1.1.5 When two plants, one heterozygous for a characteristic and the other homozygous recessive are crossed, the expected ratio is:

A 3: 1
B 1: 3
C 1: 1
D 1: 2

1.1.6 For a particular characteristic, the offspring inherits …

A both alleles from the mother.
B one allele from the mother and one allele from the father.
C the alleles from either the mother or the father randomly.
D both alleles from the father.

1.1.7 Limbs of different species show similar structure but has different functions.

A Comparative embryology
B Modification by descent
C Biogeography
D Genetics

1.1.8 Organisms with similar characteristics that are able to interbreed and produce fertile offspring.

A Population
B Community
C Family
D Species

1.1.9 What is the type of variation where characteristics falls into distinct categories?

A Continuous
B Discontinuous
C Height
D Intelligence

1.1.10 Which of the following laws is used to explain Lamarckism?

A Survival of the fittest
B Inheritance of alleles
C Use and disuse
D Gradualism (10 x 2) **(20)**

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1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.10) in the ANSWER BOOK.

1.2.1 The sugar molecule presents in a nucleotide of RNA

1.2.2 The bond that forms between amino acids in a protein molecule

1.2.3 The phase during which single chromosome strands become replicated chromosomes

1.2.4 Splitting of cytoplasm during telophase of meiosis

1.2.5 A sex-linked disorder that affects the photoreceptors in the eye

1.2.6 A cross between a white fowl and a black fowl produce a white and black speckled chicken

1.2.7 An organism's entire hereditary information, encoded either in DNA or RNA

1.2.8 Type of evolutionary evidence that focusses on tools, jewellery and rituals that gives insight into how early humans lived

1.2.9 A network of caves in South Africa where most human fossils has been found

1.1.10 Having a long jaw that gives the face a sloped appearance (10 x 1) **(10)**

1.3 Indicate whether each of the statements in COLUMN I apply to **A ONLY**, **B ONLY**, **BOTH A AND B or NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B** or **none** next to the question number (1.3.1 to 1.3.3) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Location of extra nuclear DNA in plant cells only	A: Mitochondria B: Nucleus
1.3.2	Mutation can occur in:	A: Gametes B: Somatic cells
1.3.3	During natural selection the surviving organisms have:	A: Favourable characteristics B: Desirable characteristics

(3 x 2) **(6)**

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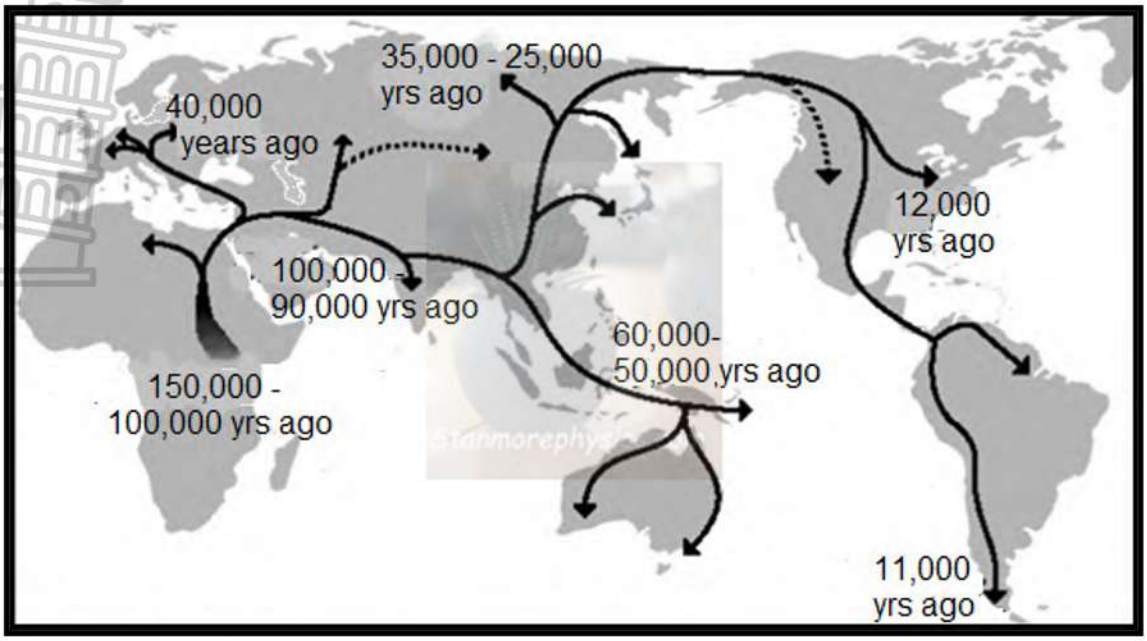
1.4 The map below shows the possible migration patterns of humans across the world.



1.4.1	Identify the theory represented by the map above.	(1)
1.4.2	Where did human life begin according to this map?	(1)
1.4.3	Who were the first species to migrate from the point of origin?	(1)
1.4.4	How long ago did humans appear in Europe?	(1)
1.4.5	Which continent was the most recent to be occupied by humans?	(1)
1.4.6	Which genera never migrated to other continents?	(2)
		(7)

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1.5 In a certain type of pigeon, the allele for red eye colour (**R**) is dominant over the allele for black eye colour (**r**), and the allele for grey feathers (**G**) is dominant over allele for white feathers (**g**).

A heterozygous red-eyed pigeon with white feathers is crossed with a black-eyed, heterozygous grey feather pigeon.

1.5.1 State the genotype of the parents. (4)

1.5.2 Give:

(a) The recessive characteristic of EACH gene. (2)

(b) ALL the possible genotypes of the gametes produced by a pigeon with black eye colour and grey feathers. (1)
(7)

TOTAL SECTION A: 50

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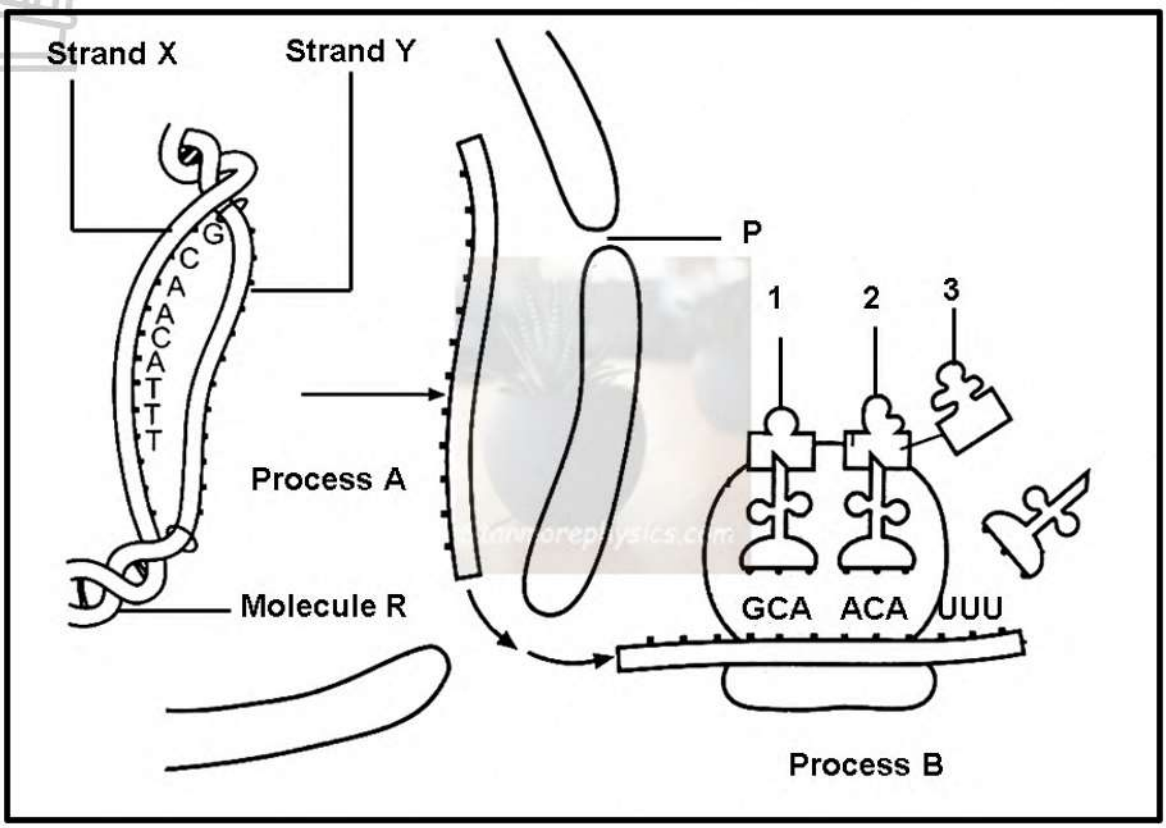
SECTION B

QUESTION 2

2.1 The diagram below represents two stages of protein synthesis. (The sequence of the nitrogenous bases in strand **X** is read from the top to the bottom)



2.1.1 State the function of structure **P** during process **A**. (1)

2.1.2 Strand **Y** acts as a template during process **A**.

Describe what is meant by a template. (1)

2.1.3 Give the sequence of the first base triplets on strand **Y**. (1)

2.1.4 Describe TWO differences between the process at **A** and **B**. (4)

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2.1.5 The table below shows some tRNA anticodons with their corresponding amino acids.

tRNA anticodons	Amino acid
AAA	Phenylalanine
ACA	Threonine
CCA	Glycine
CGU	Alanine
UCU	Cysteine
GCA	Arginine
UGU	Cysteine

Use the table below to determine which amino acids are attached to tRNA molecules.

(a) **1** (1)

(b) **3** (1)

2.1.6 A mutation caused the second base triplets on strand **Y** to change from **TGT** to **TCT**.

Explain what effect this mutation has on the protein formed. (4)
(13)

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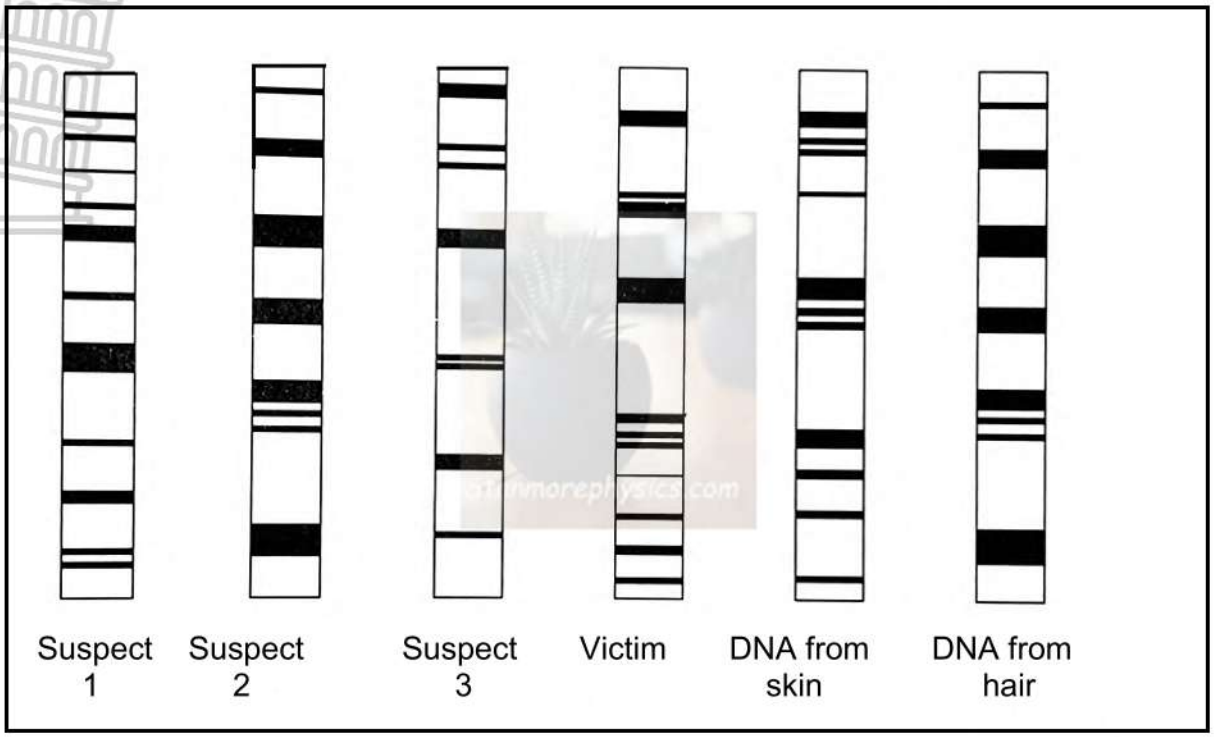
2.2 An old woman was robbed, stabbed and left to die. Samples of blood were taken from the three suspects, crime scene and the victim to compare their DNA.



2.2.1 Identify the technique used. (1)

2.2.2 Which of the three suspects was present in the crime scene? (1)

2.2.3 Explain your answer to QUESTION 2.2.2. (2)

2.2.4 Explain why it cannot be concluded that the DNA from the hair and the skin of the victim were from the same person. (2)

2.2.5 Give TWO other uses for this technique. (2)
(8)

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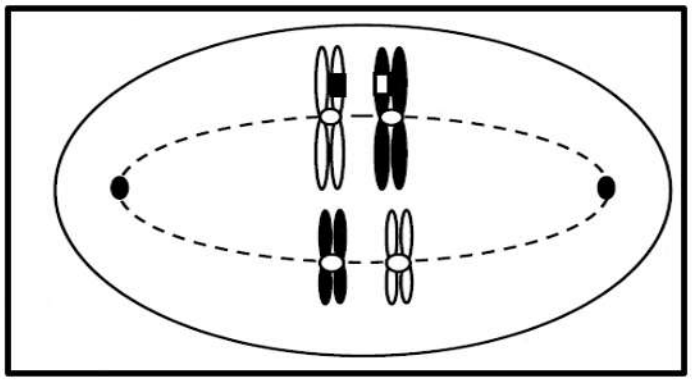
2.3 The diagram represents a cell undergoing meiosis.

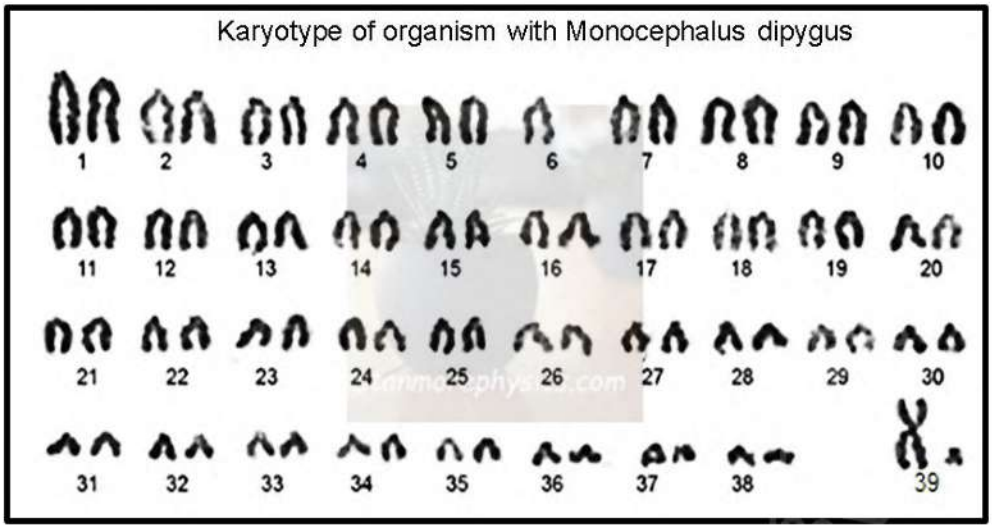


2.3.1 Identify the phase represented in the diagram above. (1)

2.3.2 Describe how the events taking place in the phase following the phase identified in QUESTION 2.3.1 differs during meiosis I and meiosis II. (2)

2.3.3 Draw a fully labelled diagram to represent ONE of the resulting cells at the same phase during meiosis II as represented in the diagram above. (4)
(7)

2.4 Monocephalus dipygus is a condition caused by a mutation. It results in the organism having duplicated organs, extra limbs and extra toes on their limbs.



2.4.1 Identify the gender of this organism. (1)

2.4.2 Does this karyotype belong to a *Homo sapien*? (1)

2.4.3 Give a reason for your answer in QUESTION 2.4.2 (2)

2.4.4 Name and describe the mutation as displayed in the karyotype above. (4)
(8)

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2.5 Scientists investigated the use of stem cells to repair damaged hearts. The stem cells were injected into the ventricle's muscle tissue.

2.5.1 Name ONE source of stem cells. (1)

2.5.2 Explain why stem cells were used to repair the damaged heart. (3)

2.5.3 Explain why using stem cells from the same person is better than using stem cells from a donor. (2)
(6)

2.6 A man with blood group **AB** and a woman who is heterozygous for blood group **B** plan to have children.

2.6.1 How many alleles for blood group does an individual inherit? (1)

2.6.2 Explain why group **AB** is an example of co-dominance. (2)

2.6.3 Explain how it is possible for a man with blood **AB** and a woman with blood group **B** to have a child with blood group **A**. (5)
(8)
[50]

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QUESTION 3

3.1 Machado-Joseph is a rare genetic condition that affects the nervous system. This condition is caused by an autosomal dominant allele and results in lack of control of motor-coordination, reflexes and eye movements. Symptoms of this condition are only visible after the age of 40.

3.1.1 Describe what is meant by an autosomal dominant allele. (2)

3.1.2 Suggest why the late development of the symptoms makes it difficult to reduce the number of people born with this condition? (2)

3.1.3 A man who is heterozygous for this condition has a child with a woman who is homozygous recessive.

Use a genetic cross to show the percentage chance of having a child with Machado-Joseph condition.

Use the letter **D** for the dominant allele and **d** for the recessive allele. (6)
(10)

3.2 Read the passage below.

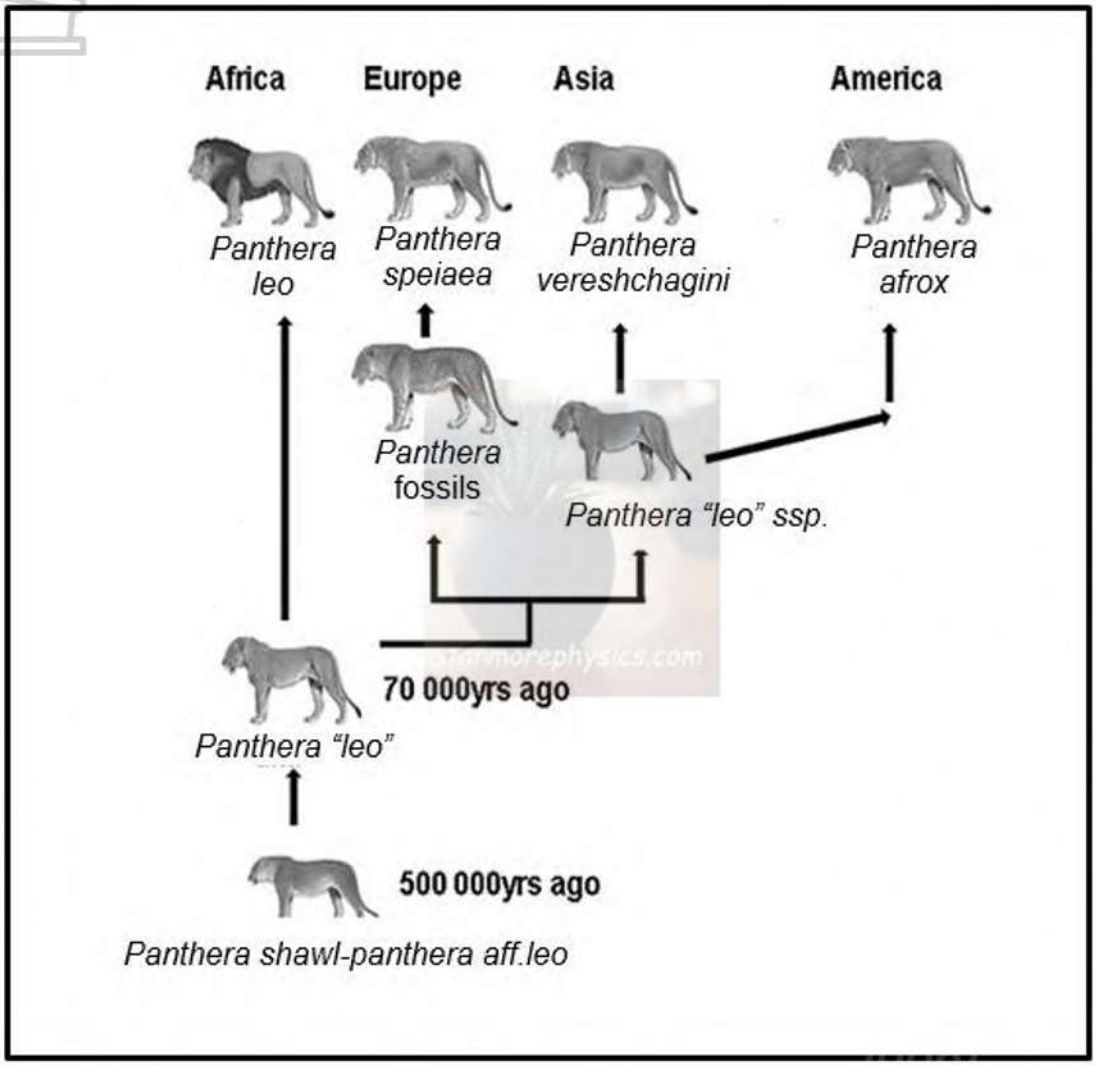
Scientists created genetically modified (GM) adult male mosquitoes. The GM mosquitoes carried a gene from bacteria. The gene causes the death of offspring before they become adults/sexually mature. Since one male mate with many females, this allele is carried to many eggs. Anopheles mosquitoes causing malaria die out without the use of insecticide. As a result, scientists are considering releasing millions of adult male GM mosquitoes into the wild which might help in the fight against malaria.

3.2.1 Describe how the scientists produced the genetically modified adult male mosquitoes. (3)

3.2.2 Suggest ONE advantage of creating the GM adult male mosquitoes. (1)

3.2.3 Describe ONE way in which the process of cloning is different from genetic engineering. (2)
(6)

3.3 Scientists have conducted studies into the DNA of lions to reveal the evolutionary history of living and extinct lion species.
The study concluded that extinct and modern lions shared an ancestor some 500 000 years ago and that the main lineages of modern lions diverged some 70 000 years ago.



3.3.1 Name the super continent the common ancestors *Panthera shawl* and *Panthera leo* lived on. (1)

3.3.2 Explain the formation of all modern lion species from the common ancestor *Panthera "leo".* (7)
(8)

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3.4 Orchid flowers are full of tricks to attract insects. Some resemble the shape and even pheromone smell of a female insect to attract the male insects. When they try to mate with this "female" they get covered in pollen.

Bee orchid petal resembling a female bee

3.4.1 Identify the reproductive isolating mechanism used by this orchid above. (1)

3.4.2 State TWO other reproductive isolating mechanisms used by organisms to ensure successful reproduction. (2)

3.4.3 Orchids sometimes needs to evolve quickly to match evolution of the insects they want to attract to make sure their "tricks" are efficient.

Which evolutionary theory best describes this phenomenon? (1)

3.4.4 Describe the theory named in QUESTION 3.4.3 (2)
(6)

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3.5 Attention deficit hyperactivity disorder (ADHD) may have evolved in hunter-gatherer societies because it was advantageous for foragers (people gathering plant material for food). Traits that are commonly associated with the condition, such as impulsivity, might have encouraged some foragers to move on from areas with decreasing resources to areas with more resources sooner than those without the condition.

- 506 people were recruited to play an online foraging game. 43% of participants had ADHD symptoms.
- The players were instructed to collect as many berries as they could in 8 minutes by hovering their mouse cursor over bushes.
- They were given the choice to either stay at a bush or to try their luck by leaving for another, which may have more or fewer berries. Moving to a new bush caused them to lose time, so the players had to balance the benefits of potentially getting more berries with the time lost due to moving on.
- Those with ADHD symptoms spent about 4 seconds less hovering over any given bush compared with those without signs of the condition, which resulted in the ADHD group collecting an average of 602 berries compared with 521.

3.5.1 Design an investigative question for this simulation. (2)

3.5.2 Name TWO planning steps with regards to the participants for this investigation. (2)

3.5.3 Calculate the number of participants showing ADHD symptoms. (2)

3.5.4 Draw a table to record the results obtained. (5)

3.5.5 Identify the type of graph best suited to represent the given data. (1)
(12)

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3.6 November 2024 marked the 50-year anniversary of the discovery of the fossil known as Lucy. She was about three-million-years old with a small body and brain but were able to walk upright. They also found that she had wisdom teeth in her jaw which meant she was an adult despite her small size.

3.6.1 To which specie does Lucy belong? (2)

3.6.2 In which region was Lucy found? (1)

3.6.3 What is the term used for the ability to walk upright? (1)

3.6.4 Lucy was the most complete fossilized skeleton found at that time. List THREE features you would expect to find in her skeleton causing scientist to conclude that she walked upright. (3)

3.6.5 After Lucy there were many more species found with the ability to walk upright. Give the scientific name of the species that directly translates to "upright man". (1)
(8)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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GRADE 12

LIFE SCIENCES P2

SEPTEMBER 2025

MARKING GUIDELINES

(AMENDED)

MARKS: 150

These marking guidelines consist of 13 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks is reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit relevant part.

4. **If comparisons are asked for and descriptions are given**
   Accept if differences / similarities are clear.

5. **If tabulation is required but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotation when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions but the wrong number is given it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable accept the answer provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept provided it is accepted at the provincial memo discussion meeting

14. **If only letter is asked for and only name is given (and vice versa)**
    Do not credit.

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15. **If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately

16. Be sensitive to the **sense of an answer, which may be stated in a different way.**

17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct.

19. **Changes**
No changes must be made to the marking guidelines without consulting the Provincial Internal Moderator.

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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	A✓✓		
	1.1.4	D✓✓		
	1.1.5	C✓✓		
	1.1.6	B✓✓		
	1.1.7	B✓✓		
	1.1.8	D✓✓		
	1.1.9	B✓✓		
	1.1.10	C✓✓	(10 x 2)	**(20)**

1.2	1.2.1	Ribose✓sugar		
	1.2.2	Peptide✓bond		
	1.2.3	Interphase✓		
	1.2.4	Cytokinesis✓		
	1.2.5	Colour blindness✓		
	1.2.6	Codominance✓		
	1.2.7	Genome✓		
	1.2.8	Cultural✓ evidence		
	1.2.9	Cradle of human kind✓		
	1.2.10	Prognathism✓	(10 x 1)	**(10)**

1.3	1.3.1	None✓✓		
	1.3.2	Both A and B✓✓		
	1.3.3	A only✓✓	(3 x 2)	**(6)**

1.4	1.4.1	Out of Africa✓ hypothesis		(1)
	1.4.2	In Africa✓		(1)
	1.4.3	*Homo erectus*✓		(1)
	1.4.4	40 000 years ago✓		(1)
	1.4.5	South America✓		(1)
	1.4.6	Ardipithecus✓ Australopithecus✓	Any order	(2) **(7)**

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1.5 1.5.1 Rrgg✓✓
rrGg✓✓ (4)

1.5.2 (a) black eyes✓ and white feathers✓ (2)

(b) rG
rg ✓ (1)
(7)

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

2.1 2.1.1 Allows the mRNA to move out of the nucleus to the ribosomes✓/cytoplasm (1)

2.1.2 A part of a DNA molecule that acts as a pattern for the building of mRNA✓/another DNA molecule

OR

The part of DNA that codes for a protein✓ (1)

2.1.3 CGT✓ (1)

2.1.4
- Process A/**Transcription** taking place in the nucleus✓
- Process B/**Translation** taking place in the cytoplasm✓

- Process A/**Transcription** produces mRNA✓
- Process B/**Translation** produces amino acid chain/polypeptide/protein✓

- Process A/**Transcription** starts with DNA✓
- Process B/**Translation** starts with mRNA✓

- Process A/**Transcription** does not use tRNA✓
- Process B/**Translation** use tRNA✓

- Process A/**Transcription** there are no amino acids joined together by peptide bond✓
- Process B/**Translation** amino acids are joined together by peptide bond✓

- Process A/**Transcription** has codons as base triplets✓
- Process B/**Translation** has anticodons as base triplets✓

(Mark first TWO only) Any (2 x 2) (4)

2.1.5 (a) Alanine✓ (1)
(b) Phenylalanine✓ (1)

2.1.6
- The codon ACA changed to AGA✓
- The anticodon/tRNA sequence UGU changed to UCU✓
- Both anticodons UCU and UGU code for the same amino acid cysteine✓
- thus, the type of protein formed will not change/remain the same✓ (4)

(13)

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2.2	2.2.1	DNA profiling✓		(1)
	2.2.2	Suspect 2✓		(1)
	2.2.3	- Eight/all of the DNA profile bands from suspect 2 are identical✓to/match/correspond with the DNA profile bands from the hair✓		(2)
	2.2.4	The DNA profile from the hair and from the skin shows completely different banding patterns✓✓/the DNA profile bands for hair and the skin are not the same		(2)
	2.2.5	- Proof of paternity✓ - Finding long lost relatives✓/tracing missing persons - Establishing family relations✓ - Identifying dead bodies✓/person/animals/organisms - Identifying fossils✓ - Identification/diagnosing of genetic disorders✓/genetic counselling - Finding matching tissues for organ transplants✓ **(Mark first TWO only)**	Any 2	(2) **(8)**

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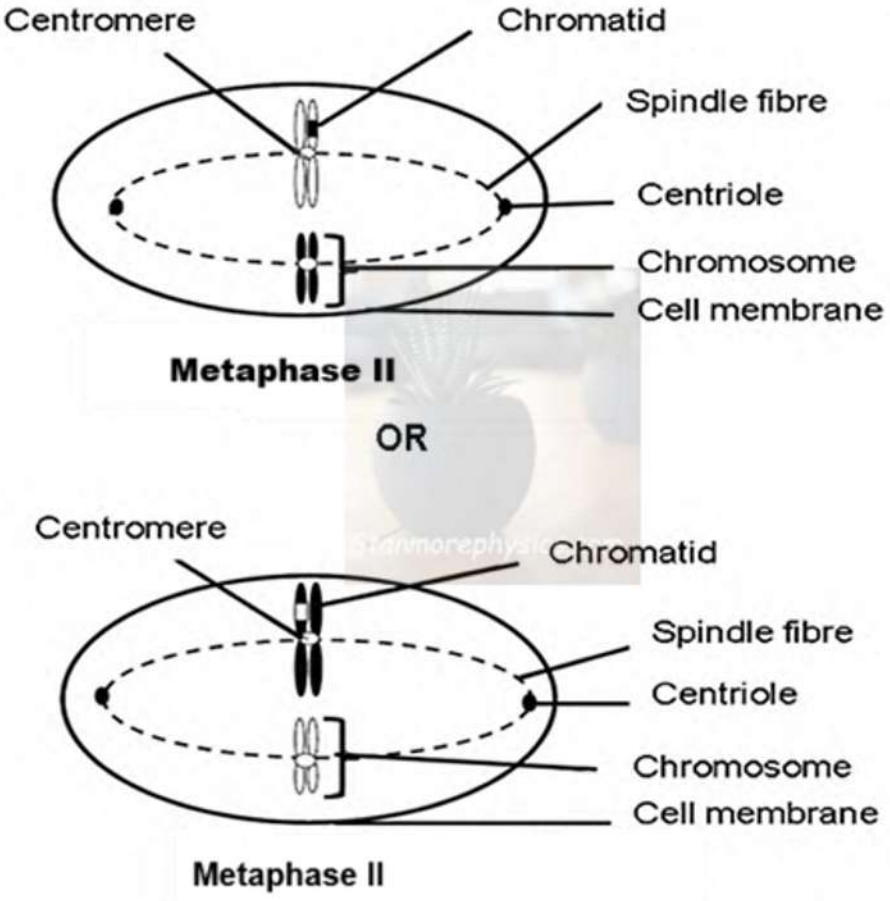
2.3 2.3.1 Metaphase I✓ (1)

2.3.2 Anaphase I/meiosis I – Homologous chromosome pairs separate✓/ Chromosomes move to opposite poles
Anaphase II/ meiosis II – Chromosomes separate✓/ Chromatids move to opposite poles (2)

2.3.3



Description	Mark allocation
Caption (**C**)	1
TWO chromosomes drawn at the equator (**D**)	1
Shading, shape and size of chromosomes (**S**)	1
Any ONE correct label (**L**)	1

(4)
(7)

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2.4 2.4.1 Male✓ (1)

2.4.2 No✓ (1)

2.4.3 It has 39 chromosome pairs✓ instead of 23 chromosome pairs✓/ it has 78 chromosomes instead of 46 (2)

2.4.4 **Chromosomal✓***/chromosome mutation
- There is a change in the number of chromosomes✓
- There is only ONE chromosome✓/one less chromosome/one chromosome short
- Instead of two✓
- on chromosome pair number 6✓/six *__Compulsory__ + Any 3 (4)

(8)

2.5 2.5.1
- Embryo✓/embryonic stem cell/foetal tissue
- Umbilical cord✓/cord blood
- Bone marrow✓

(Mark first ONE only) Any 1 (1)

2.5.2
- Stem cells are undifferentiated✓
- and have the potential to develop into any type of cell✓
- to replace affected/defective cells causing a disorder✓ (3)

2.5.3
- Cells have the same DNA✓/genes/alleles
- same antigens✓/tissue type/blood group
- less risk of rejection✓/not rejected
- no immune response by immune system✓/no need to take immunosuppressants✓
- No risk of infection/disease spread✓

(Mark first TWO only) Any 2 (2)
(6)

2.6 2.6.1 2✓/Two (1)

2.6.2
- Both alleles / I^A and I^B are equally dominant✓
- whereby both alleles express themselves in the phenotype✓ in the heterozygous condition (2)

2.6.3
- The man has an allele for blood group A✓/ is I^AI^B
- The woman is heterozygous✓/ is I^Bi for blood group B
- The child inherits the I^A✓/dominant allele from the father
- and the i✓/recessive i from the mother
- Therefore, the child will be heterozygous✓ for blood group A/the genotype will be I^Ai /the genotype I^A masks i (5)

(8)
[50]

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QUESTION 3

3.1 3.1.1
- A form of a gene✓
- that is carried on chromosome 1-22✓and
- is always expressed in the phenotype✓ of an individual
- in the homozygous dominant or heterozygous✓ condition

Any 2 (2)

3.1.2
- The couples had already reproduced children✓
- Before symptoms appear✓/before knowing they have the disease/do not know have the disease
- because it is hard to diagnose before symptoms appear✓ Any 2 (2)

3.1.3 P_1 Phenotype Man with Machado- Joseph x Woman without Machado-Joseph✓

Genotype Dd x dd✓

Meiosis

G/Gametes D , d x d , d✓

Fertilisation

F_1 Genotype Dd, Dd, dd, dd✓

Phenotype 2 with Machado-Joseph; 2 without Machado-Joseph
50%✓* with Machado-Joseph

P_1 and F_1✓
Meiosis and fertilisation✓ ***compulsory mark + Any 5**

OR

P_1 Phenotype Man with Machado-Joseph x Woman without Machado - Joseph✓

Genotype Dd x dd✓

Meiosis

Fertilisation

Gametes	d	d
D	Dd	Dd
d	dd	Dd
1 mark for correct gametes 1 mark for correct genotype		

F_1 Phenotype 2 with Machado-Joseph; 2 without Machado-Joseph
50%✓* with Machado-Joseph

P_1 and F_1✓
Meiosis and fertilisation✓ ***compulsory mark+ Any 5** (6)
(10)

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3.2 3.2.1
- A gene was cut/removed from the bacterial DNA✓/plasmid
- and inserted into the chromosome/transfer gene to the chromosome /DNA of a mosquito✓
- to produce/create the desired adult male mosquitoes✓ (3)

3.2.2
- Anopheles mosquito die out without the use of insecticides✓
- Fewer mosquitoes biting or spreading Malaria✓
- Fewer people get/die from Malaria✓
- Lower medical costs✓ /less health care needed
- Better economically for developing✓/tropical countries

(Mark first ONE only) Any 1 (1)

3.2.3
- Cloning: process of making (genetically) identical organisms✓
- Genetic engineering: process whereby genes coding for the desired characteristic are inserted into an organism✓ (2)

(6)

3.3 3.3.1 Pangea✓ (1)

3.3.2
- The common ancestor *Panthera "leo"* became separated due to continental drift✓*/ by oceans
- onto Gondwanaland and Laurasia✓
- they split into four groups/populations✓
- There is now no gene flow✓ between the four populations.
- Since each population may be exposed to different environmental conditions✓/the selection pressure may be different
- natural selection occurs independently✓ in each of the four populations
- such that the individuals of the four populations become very different✓ from each other
- genotypically and phenotypically✓.
- Even if the four populations were to mix again ✓ they will not be able to interbreed✓
- The four populations are now different species namely *Panthera leo, Panthera speiaea, Panthera vereshchagini, Panthera afrox*✓*

*** 2 compulsary marks + any 5** (7)

(8)

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3.4 3.4.1 Plant adaptation to different pollinators✓ (1)

3.4.2
- Breeding at different times of the year✓
- Species-specific courtship behaviour✓
- Infertile offspring✓
- Prevention of fertilisation✓
- Habitat isolation✓

(Mark first TWO only) Any 2 (2)

3.4.3 Punctuated equilibrium✓ (1)

3.4.4
- Evolution involves long periods of time where species do not change✓ / change gradually through natural selection
- This alternates with short periods of time where rapid changes occur✓ through natural selection
- during which new species may form in a short period of time.✓

Any 2 (2)
(6)

3.5 3.5.1 Is having ADHD advantages for foraging?✓✓

OR

Does ADHD have an effect on foraging?✓✓

OR

What effect does ADHD have on foraging?✓✓ (2)

3.5.2
- Obtain informed consent/permission from participants✓
- Decide on sample size to be used✓
- Decide on recruiting method✓
- How will ADHD information be obtained from participants✓

(Mark first TWO only) Any 2 (2)

3.5.3 $506 \times \frac{43}{100}$ ✓ = 217,58 Thus 218✓ participants

OR

506 x 43%✓ = 217,58 Thus 218 ✓participants (2)

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3.5.4

Number of berries collected by different groups of participants

Groups of participants	Number of berries gathered
With ADHD	602
Without ADHD	521

Description	Mark allocation
Caption - results representing both variables (**C**)	1
Table drawn (**T**)	1
Labels - Rows =independent Column= dependent (**L**)	1
Data - correct data captured for each independent (**D**)	2

(5)

3.5.5 Bar✓ graph/ pie chart (1)
(12)

3.6 3.6.1 *Australopithecus*✓ *afarensis*✓ (2)

3.6.2 Ethiopia✓/Great Rift Valley/East Africa (1)

3.6.3 Bipedalism✓/ Bipedal (1)

3.6.4
- Foramen magnum is in a more forward position✓
- S-shaped vertebral column✓
- Short and wide pelvis✓ (3)

3.6.5 *Homo erectus*✓ (1)
(8)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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