Name:

# Nayland College

# Year 10 Science

**GENETICS practice Test**

**Time allowed: 1 period**

**Instructions:**

Read all questions carefully

Complete all answers in the spaces provided

If extra space is needed use the final page.

|  |  |  |
| --- | --- | --- |
| **Achievement Criteria** | *For Assessor’s use only* |  |
| **Achievement** | **Achievement with Merit** | **Achievement with Excellence** |
| **Overall Level of Performance** | | |

1. In the bear, white ears (w) is recessive to brown ears (W).
2. What is the **genotype** of a bear with white ears?

1. What is the **phenotype** of the bear with Ww?

1. In the grid provided, predict the **phenotype** results of a cross between **heterozygous brown eared bear**  and a **white** **eared bear**.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

Phenotype results:

1. In cats, long hair is the result of a dominant gene (L), and short hair is the result of the recessive gene (l). A long haired female cat is mated with a short haied male, and produces a litter of 3 long haired and 5 short haied kittens.
2. Give the **genotype** of each parent. female male
3. In theory, how many of the 8 kittens produced were expected to be long haired?

1. The gene for long hair is said to be DOMINANT. Explain what this means.

1. Albinism, the total lack of pigment in the skin is due to a recessive gene. A man and a woman plan to marry and wish to know the probability of having any albino children. Use punnet squares to show what you would tell them if:

An African Albino

1. The man and woman are both normal but both have fathers who are albino

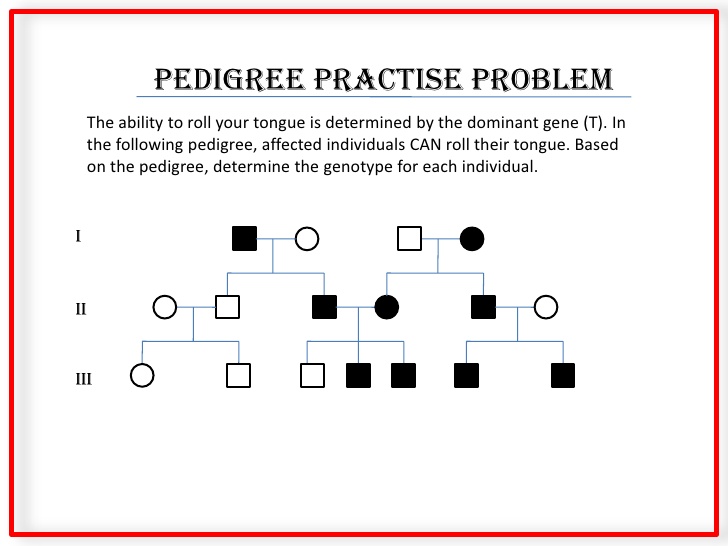
Use (a) for albino and (A) for non-albino

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

1. The man is albino and the woman is normal from a family with no known albinos in it.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

1. The family tree shows people who can roll their tongues in a family.



black = tongue roller white = not a tongue roller

Square = male circle = female

Which individual (circle on the tree) shows that NOT being able to tongue roll is a recessive trait? Why?

**Scientific Information**

A normal human body cell has 46 chromosomes in its nucleus.

Sperm cells and egg cells are made during a process called MEIOSIS.

A zygote is formed when a sperm cell joins with an egg cell.

1. Complete the table

|  |  |
| --- | --- |
| A Number of chromosomes in the sperm |  |
| B Number of chromosomes in the egg |  |
| C Process of egg and sperm joining |  |
| D Number of chromosomes in the zygote |  |

MEIOSIS

egg

C

Human body cells

46

sperm

B

A

D

zygote

46