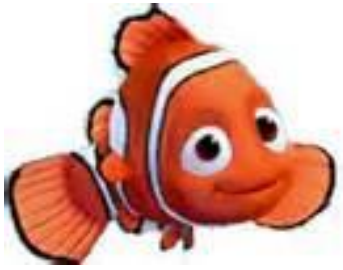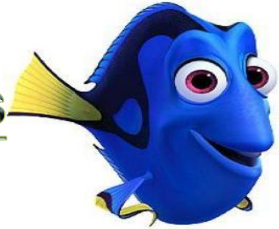Name: _____          Date: _____

# Finding Nemo Genetics

1.  Use the information in the table of Nemo's traits to write the phenotype for each item:

| Trait | Dominant Gene | Recessive Gene |
|-------|---------------|----------------|
| Color | Orange (G) | Red (g) |
| Body Shape | Round (R) | Oval (r) |
| Pattern | Striped (T) | Spotted (t) |
| Fin Shape | Curved (E) | Flat (e) |

(a) **Rr** _____          (e) **Ee** _____

(b) **TT** _____          (f) **rr** _____

(c) **ee** _____          (g) **GG** _____

(d) **gg** _____          (h) **tt** _____

2.  Use the information above to write the **genotype** (or genotypes) for each phenotype:

(a)  Oval body - _____          (e)  Curved fin - _____

(b)  Spotted pattern - _____          (f)  Orange color - _____

(c)  Red color - _____          (g)  Flat fin - _____

(d)  Striped pattern - _____          (h)  Oval body - _____

3.  For each genotype below, indicate whether it is heterozygous **(He)** or homozygous **(Ho)**.

   **Ee** _____          **GG** _____          **tt** _____          **Rr** _____          **rr** _____

4.  Which of the genotypes listed above would be considered purebred?

   _____

5.  Determine the **genotypes** for each using the information in the table above:

(a)  Heterozygous curved fin - _____          (c)  Homozygous orange - _____

(b)  Purebred striped body - _____          (d)  Hybrid round body - _____

6.  After Nemo was rescued by his father and taken back to the ocean, he met a girl fish named Sheila and fell in love.   Use your knowledge of genetics to answer the questions below.
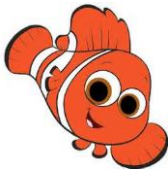
(a)  If Sheila's father is homozygous round shaped and her mother is oval shaped, what is her genotype?  Complete the Punnett Square to show the possible genotypes for Sheila.

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

What is Sheila's genotype?  _____

(b)  Nemo's body is oval shaped.  What is his genotype?  _____

(c)  Complete the Punnett Square to show the possibilities that would result if Nemo and Sheila had children.

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

(d)  List the possible genotypes for the children:

_____

(e)  What is the probability that their children will have rounded bodies?       _____%

(f)  What is the probability that their children will have oval bodies?       _____%

7.  Nemo's friend, Dory, recently married a handsome fish named Charlie.  Dory is considered a purebred for her blue color (**B**), which is dominant over green (**b**).  If Charlie is a green fish, what color would their children be?
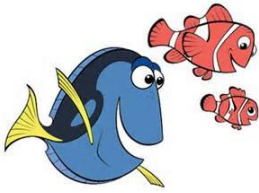
(a)  List the genotypes for each:  Dory - _____       Charlie - _____

(b)  Complete the Punnett Square to show the possible offspring.

(c)  Which color is more likely, blue or green?  Explain.

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

(d)  Would the children be considered purebred?  Explain.

8.  Nemo's father, Marlin, is so proud of his son and his new wife, Sheila, because they are expecting a baby.  He already knows that there is a 50% chance of the baby having a round body, but he is also hoping that the baby will have a spotted pattern (a recessive trait), just like Sheila!  If Nemo is heterozygous for his striped pattern, what is the probability that the baby will be spotted too?  Create a Punnett Square to help you answer this question.

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

Probability that the baby will be spotted:  _____ out of _____ or _____%

9.  Dory has a triangular fin that is flat (a recessive trait).  Her new husband, Charlie, also has a flat fin.  Would it be possible for their children to have a regular curved fin?  Why or why not?  Create a Punnett Square to help you answer this question.

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

10.  If Dory desperately wanted children with curved fins, what genotype would Charlie have to have to give her a 100% chance of creating curved fin babies?  Create a Punnett Square to help you answer this question.

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

Charlie's genotype:  _____

11.  Nemo is heterozygous for his orange color.  His father, Marlin, is red (a recessive trait).  Nemo's mother died before he was born, but he would like to know if his mother was red or orange and what her genotype could have been.

(a)  What was Nemo's mother's phenotype?  How do you know?  Create two Punnett Squares to help you explain your answer.

Nemo's mother's phenotype:  _____
Explanation:

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

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

(b)  What are the two possible genotypes of Nemo's mother's color?  Which genotype would have given her and Marlin the best chance of Nemo being orange?