DIPLOID and HAPLOID WORKSHEET

Complete the following table of chromosome number in various species. Find the pattern using the information provided.

<table>
<thead>
<tr>
<th>Species Name</th>
<th># of chromosomes in diploid cells</th>
<th># of chromosomes in haploid cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>46</td>
<td>23</td>
</tr>
<tr>
<td>House Fly</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>monkey</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Bat</td>
<td>44</td>
<td>22</td>
</tr>
<tr>
<td>King Crab</td>
<td>208</td>
<td>104</td>
</tr>
<tr>
<td>Goat</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Rice</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Armadillo</td>
<td>62</td>
<td>32</td>
</tr>
<tr>
<td>Chicken</td>
<td>78</td>
<td>39</td>
</tr>
<tr>
<td>Leopard frog</td>
<td>26</td>
<td>13</td>
</tr>
</tbody>
</table>

1. Describe the pattern you saw in the data.

   The diploid cell has twice as many chromosomes as the haploid cell.

2. Mathematically, how could you represent this pattern?

   \[ 2 \times \text{haploid number} = \text{diploid number} \]

3. What do you think diploid means? Explain your answer using information from the data table.

   Two sets of chromosomes

4. What do you think haploid means? Explain your answer using information from the data table.

   One set of chromosomes
STOP! Wait for class notes to continue!

5. What cells in living organisms are diploid? **Somatic cells: blood cells, muscle cells, etc.**

6. What cells in living organisms are haploid? **Gametes: sex cells-sperm and oocum**

7. What does the symbol 2n represent? **Diploid cells, they have twice the chromosomes of haploid cells**

8. What does the symbol n represent? **Haploid cells, they have one set of chromosomes**

9. The 2n number for dogs is 78. How many chromosomes would you find in a dog’s blood cell? **78**

10. How many chromosomes would you find in a dog’s sperm cell? **39**

11. If the sperm cell of a fruit fly has 4 chromosomes, then the number of chromosomes in each body cell is:
   - a) 2
   - b) 4
   - c) 6
   - d) 8
   - e) 16

12. Of the following cells, the only one to have the haploid number of chromosomes is:
   - a) skin
   - b) muscle
   - c) nerve
   - d) blood
   - e) ovum

13. Put these parts of cells from the human body in order, from smallest (1) to biggest (4):
   - Gene
   - Nucleus
   - DNA
   - Chromosome
   - 2
   - 4
   - 1
   - 3

The picture on the right is of a **human** karyotype. Use the karyotype to answer the following questions.

14. How many pairs of chromosomes does this person have? **23**

15. Is this person a male or female? **Male** How do you know?
   - **X and Y chromosome indicates a male**

16. How many chromosomes are in a human’s body cells? **44**

17. How many chromosomes are in a human’s sex cells? **2**

The picture on the right is of a **rat** karyotype. Use the karyotype to answer the following questions.

18. Is this rat a male or female? **Female** How do you know?
   - **X and X chromosome indicates female**

19. How many chromosomes are in a rat’s body cells? **38**

20. How many chromosomes are in a rat’s sex cells? **2**