

Name _____

Date _____

Warm-Up: Mendel and Meiosis

Examine the table. Then answer the questions.

Chromosome Numbers of Some Common Organisms

| Organism | Body Cell ($2n$) | Gamete (n) |
|--------------|--------------------|----------------|
| Human | 46 | 23 |
| Garden pea | 14 | 7 |
| Fruit fly | 8 | 4 |
| Tomato | 24 | 12 |
| Dog | 78 | 39 |
| Chimpanzee | 48 | 24 |
| Leopard frog | 26 | 13 |
| Corn | 20 | 10 |

1. What is the diploid number of chromosomes in corn?

2. What is the haploid number of chromosomes in corn?

3. Is the chromosome number related to the complexity of the organism?

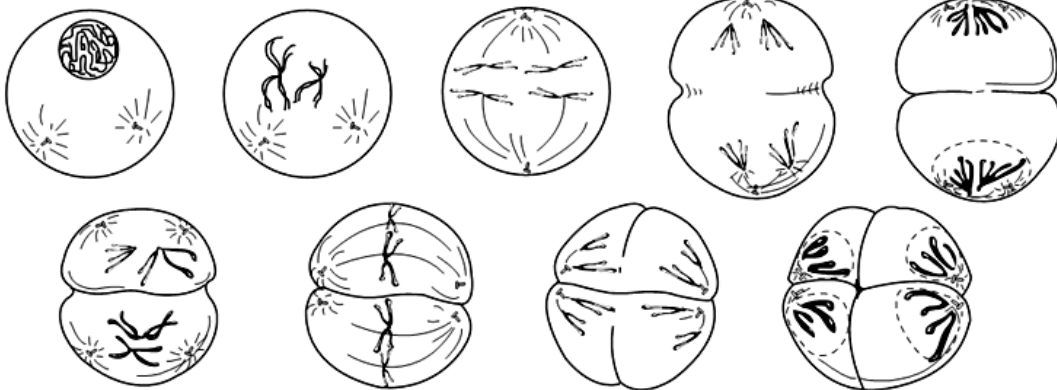
4. How many pairs of chromosomes do humans have?

5. What process maintains a constant number of chromosomes within a species?

In your textbook, read about the phases of meiosis.

Label the diagrams below. Use these choices: Metaphase I, Metaphase II, Interphase, Telophase I, Telophase II, Anaphase I, Anaphase II, Prophase I, Prophase II.

6. _____ 7. _____ 8. _____ 9. _____ 10. _____



11. _____ 12. _____ 13. _____ 14. _____

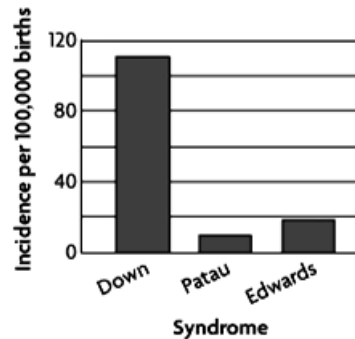
Interpreting Bar Graphs

Model

The bar graph below contains data about the frequency of some genetic disorders in the human population. Each of the disorders listed is the result of nondisjunction, the failure of two chromosomes to separate properly during meiosis. This results in one extra chromosome or one less chromosome being passed on to the offspring.

For each syndrome on the x-axis, the bar extends vertically on the y-axis to represent the incidence per 100,000 births. For example, out of 100,000 births, 111 children are born with Down syndrome.

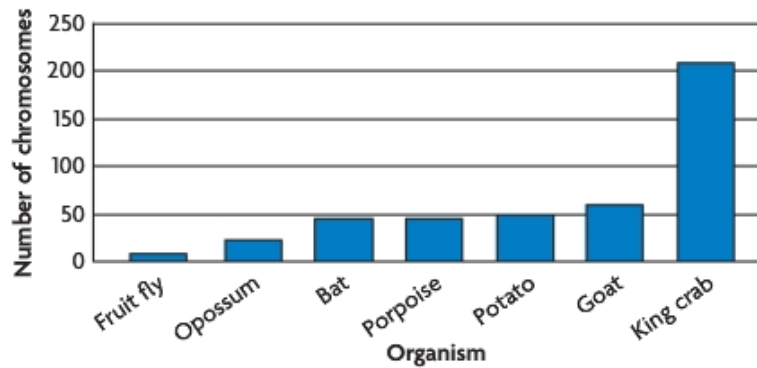
GRAPH 1. FREQUENCY OF GENETIC DISORDERS



Source: U.S. National Library of Medicine

The bar graph below contains data about the diploid number of chromosomes in different organisms.

GRAPH 2. DIPLOID NUMBER OF CHROMOSOMES IN VARIOUS ORGANISMS



Source: Rutgers University

1. **Analyze.** Which organism has the greatest number of chromosomes? The least?
2. **Evaluate.** Does chromosome number appear to correlate to the type of organism? Explain. (3 pts)
3. **Hypothesize.** Do you think there is an upper limit to chromosome number? Explain. (3 pts)