

G11 Biology: Class 3 Homework

1. List three advantages of asexual reproduction. **[3 marks]**
2. When is the production of genetically identical offspring a disadvantage? Explain your reasoning. **[3 marks]**
3. Describe the added “costs” of sexual reproduction for an organism. **[3 marks]**
4. Describe the key event involving chromosomes that take place during the following portions of the cell cycle in mitosis and sketch a diagram. **[12 marks]**

Event	Description	Diagram
Interphase		
Prophase		

Metaphase		
Anaphase		
Telophase		
Cytokinesis		

5. Outline the key steps involved in cloning Dolly the sheep. **[4 marks]**
6. How has the use of genetic engineering and cloning benefitted people suffering from diabetes? **[3 marks]**

7. How do each of the following contribute to genetic variation in offspring? **[6 marks]**

a. Crossing over

b. Random assortment of homologous chromosomes

c. Fertilization

8. Complete the following table. **[15 marks]**

	Human	Earthworm	Hedgehog	Broccoli
Before Meiosis				
Chromosome number (haploid or diploid)	46			
Number of pairs of homologous chromosomes			45	
After Meiosis I				
Chromosome number (haploid or diploid)		18		
After Meiosis II				
Chromosome number (haploid or diploid)				9
Number of pairs of homologous chromosomes	0			

9. How many different arrangements of chromosomes are possible in gametes if the cell at the beginning of meiosis has 10 chromosomes? **[2 marks]**

10. How can it be beneficial for an organism to produce only one large egg during oogenesis and have three polar bodies that die? **[2 marks]**

11. How can it be beneficial for males to produce very large numbers of very small sperm? **[2 marks]**

12. Why do you think there are more types of trisomy disorders than monosomy disorders? **[2 marks]**

13. Examine the karyotype below:



a) What is the gender of the individual? **[1 mark]**

b) Could this be the karyotype of a human sperm cell? Explain your reasoning? **[2 marks]**

c) What evidence is there of non-disjunction? **[1 mark]**