Quiz #1   Name:

1. A couple are both heterozygous for two autosomal recessive diseases: cystic fibrosis (CF) and phenylketonuria (PKU). What is the probability that their first child is a girl with both CF and PKU? Explain your answer.

The cross: C/c; P/p x C/c; P/p
F1: 9/16 C/-; P/- (healthy); 3/16 c/c; P/- (CF); 3/16 C/-; p/p (PKU); 1/16 c/c; p/p (both CF and PKU)
The answer: 1/2 (for a girl) * 1/16 (both CF and PKU) = 1/32

2.A. In an organism in which 2n=4, what is the total number of chromatids present during metaphase I of meiosis? Draw a diagram showing how the chromosomes are arranged during this stage.

Eight chromatids: two per each of the four chromosomes. The homologs are paired in the equatorial plane

2B. Draw a diagram illustrating metaphase II in the same organism.

Quiz #1   Name:

1. A couple are both heterozygous for two autosomal recessive diseases: cystic fibrosis (CF) and phenylketonuria (PKU). What is the probability that their first child is a son with either CF or PKU? Explain your answer.

The cross: C/c; P/p x C/c; P/p
F1: 9/16 C/-; P/- (healthy); 3/16 c/c; P/- (CF); 3/16 C/-; p/p (PKU); 1/16 c/c; p/p (both CF and PKU)
The answer: 1/2 (for a boy) * [either CF or PKU] = 1/2 * [3/16 (CF) + 3/16 (PKU)] = 3/16

2B. In an organism in which 2n=4, what is the total number of chromatids present during anaphase I of meiosis? Draw a diagram showing how the chromosomes are arranged during this stage.
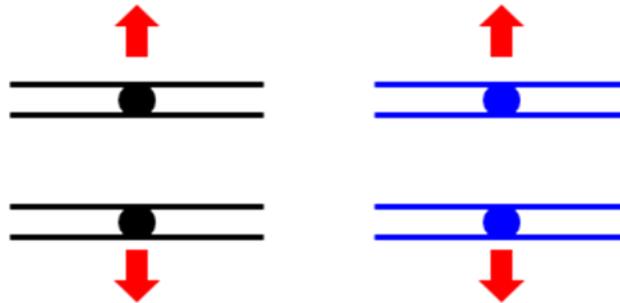
Eight chromatids: two per each of the four chromosomes
(the cell has not divided yet, all chromatids are still contained within the original cell). The homologs are disjoining.

2B. Draw a diagram illustrating anaphase II in the same organism.