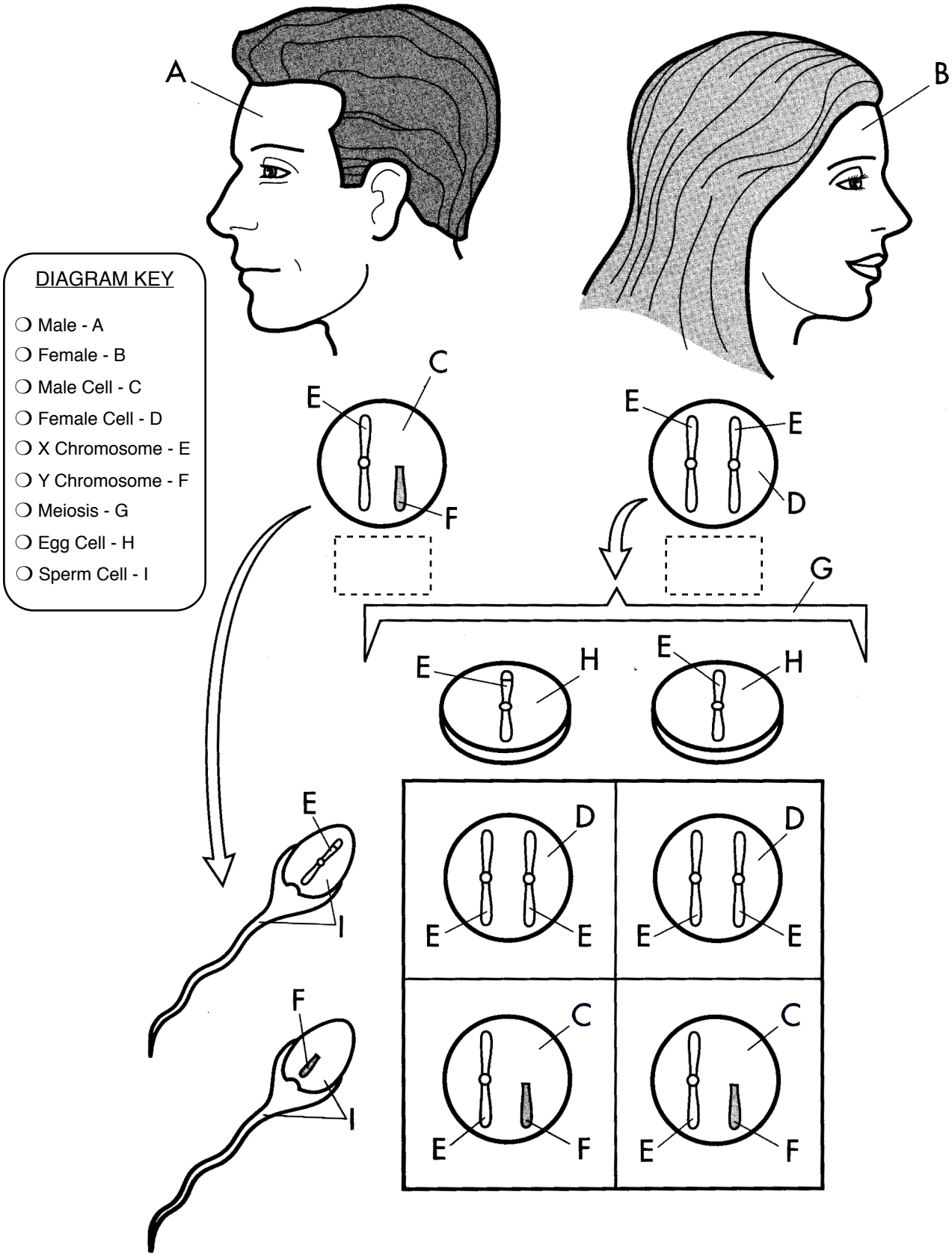
Genetics Name:

Male or Female? Period:



7.2d; adapted from The Princeton Review Biology Coloring Book (1998) by I. Edward Alcamo

Genetics Name:

Male or Female? Period:

Follow the instructions below to color-code the diagram and answer the questions. You can use Chapter 6, Section 3 of your book to help you.

By now, you have learned that DNA is passed from parents to offspring during sexual reproduction. This happens when sex cells (egg and sperm) combine to make a zygote. Each sex cell was created through meiosis, so each one carries half of the normal number of chromosomes. This means that for humans, whose body cells have 46 chromosomes (23 pairs), each of their sex cells carry a set of 23 single chromosomes. When the contents of the sex cells combine to make a zygote with 23 pairs of chromosomes, one special pair controls whether you come out of your mother a boy (A) or a girl (B).

• Let's take a look at how chromosomes determine your sex. Start by coloring the chromosomes in the cells underneath the heads A and B. For any X chromosomes (E), use green ☐, and for any Y chromosomes (F), use orange ☐. In the dashed boxes underneath these cells, write an X under any green chromosomes (E) and a Y under any orange chromosomes (F) ☐. This will tell you the genotype of the sex chromosomes.

What is the genotype for males? _____ What is the genotype for females? _____

• Now you will color inside of the cells, but ***around*** the chromosomes. Do not cover the chromosomes with a different color! Color the inside of the male cell (C) light blue ☐. Color the inside of the female cell (D) pink ☐.

There are _____ sex chromosomes in the male cell.

There are _____ sex chromosomes in the female cell.

• The regular cells must go through a process to become sex cells.

This process is called _____ .

• Color the line G and the arrows above it and to the left of it purple ☐. This will show that this process has occurred.

Sex cells have now been created. For males, the sex cell is called _____, and for females, the sex cell is called an _____ . Each sex cell now has just _____ chromosome which will be used to determine the sex of the offspring.

• In the sex cells (H and I) color any X chromosomes (E) green ☐, and any Y chromosomes (F) orange ☐. Color around the chromosomes to make the egg (H) pink ☐, and the sperm (I) light blue ☐.

• Next, look inside the Punnett square. Color any X chromosomes (E) green ☐, and any Y chromosomes (F) orange ☐.

In the Punnett square, each cell now has _____ chromosomes, which are used to determine the sex of the offspring.

• Look at the possible cells that have been predicted inside the Punnett square. Once again, you will color inside of the cells, but ***around*** the chromosomes. Do not cover the chromosomes with a different color! Color the inside of the male cells (C) light blue ☐. Color the inside of the female cells (D) pink ☐.

Of the _____ possible trait combinations, _____ are female and _____ are male.

Any cell formed with an _____ genotype will create a male offspring.

Any cell formed with an _____ genotype will create a female offspring.