1. At the end of a meal in a restaurant, Elsie wants to have pie à la mode (pie topped with ice cream) for dessert. There are 4 flavors of ice cream—chocolate (C), vanilla (V), strawberry (S), and coffee (F)—and there are 2 kinds of pie—apple (A) and cherry (H). She is allergic to the combination strawberry/cherry and has to avoid it.

   (a) Draw a tree diagram to find how many choices Elsie has by following the steps below.

      (i) Describe the task corresponding to the problem.

      (ii) Break the task from (i) into steps.

      (iii) Draw the tree diagram corresponding to the steps in (ii).

   (b) Use the tree diagram from (a) to list all the choices.
2. How many even two-digit numbers can be formed from the digits 2, 4, 8, and 9 with no repetitions allowed? Remember that a number is even when the units digit is even.

(a) Break the task of choosing a two digit even number with these digits into the following steps

   Step 1: Choose the tens digit.
   Step 2: Choose the units digit.

Draw a tree diagram that corresponds to the steps above and count the number of possible two-digit even numbers on the given digits. Explain why the Counting Principle cannot be used in this case.

(b) Break the task of choosing an two digit even number with these digits into the following steps

   Step 1: Choose the units digit.
   Step 2: Choose the tens digit.

Use the Counting Principle to count the possibilities.