Schools and things - OOP Jae and Josh

The TDSB wants to make a new high school so that Mackenzie can be not overpopulated. However, this school, like any other school, needs certain elements to it. The TDSB has a top-secret stack of papers called the “High School Template.” These papers are specifications for what a school needs. For example, it says that a typical high school needs science classrooms, math classrooms, computer classrooms, gyms, washrooms, and offices for the staff. It also says that it needs teachers with certain traits to teach each of those subjects. However, any high school in the TDSB would contain one single library and one main office.

This is a typical school. This standard school has 1 gym, 1 computer classroom, 1 math classroom, 1 science lab, 4 washrooms, 1 office, and 1 library.

This is a School template.
    A typical school would have:
    A certain number of gyms
    A certain number of computer labs
    A certain number of math classes
    A certain number of science labs
    A certain number of washrooms
    A certain number of offices
    A certain number of libraries

    A typical school will
        Have 1 gym
        Have 1 office
        Have 1 library

```
public class School {
    int numGyms;
    int numCompClass;
    int numMathClass;
    int numLabs;
    int numWashrooms;
    int numOffices;
    int numLibrary;

    public School()
    {
        numGyms = 1;
        numOffices = 1;
        numLibrary = 1;
```

```
        }

}
```

After deciding what the school would look like, the TDSB has to decide what is in each classroom. Any typical classroom has to have 30 desks, 30 chairs, 1 smart board, and 2 blackboards. Again, the TDSB would refer to their secret classroom template, which would contain all this. However, this would be boring, since every classroom would look the same. Thus, the TDSB has subtemplates of the main template type. These determine if a classroom has AC and/or has windows.

This is the classroom template, and a typical classroom would

- Have a certain number of desks
- Have a certain number of chairs
- Have a certain number of smartboards
- Have a certain number of chalkboards
- May or may not have windows
- And may or may not have AC

A typical classroom would
- have 30 desks
- have 30 chairs
- have 1 smartboard
- have 2 chalkboards
- have windows

A special classroom would
- have 30 desks
- have 30 chairs
- have 1 smartboard
- have 2 chalkboards
- may or may not have windows

Another special classroom would
- have 30 desks
- have 30 chairs
- have 1 smartboard
- have 2 chalkboards
- may or may not have windows
- may or may not have AC’s

```
public class Classroom {
        int desks;
```

```
        int chairs;
        int numSmartBoards;
        int numChalkBoards;
        boolean hasWindows;
        boolean hasAC;


        public Classroom(){
                desks = 30;
                chairs = 30;
                numSmartBoards = 1;
                numChalkBoards = 2;
                hasWindows = true;
        }

        public Classroom(boolean windows){
                desks = 30;
                chairs = 30;
                numSmartBoards = 1;
                numChalkBoards = 2;
                hasWindows = windows;
        }

        public Classroom(boolean windows, boolean ac){
                desks = 30;
                chairs = 30;
                numSmartBoards = 1;
                numChalkBoards = 2;
                hasWindows = windows;
                hasAC = ac;
        }
}
```

Some classrooms also have other things in them that are specific to the subject. For example, computer classrooms need computers and AC in them.

This is the computer room template which is based on the classroom template. A computer room, besides everything a normal classroom would have, would

- Have a certain number of computers

- A typical computer room would have
  - 30 computers
  - The rest of the contents in a regular classroom

```
        A special computer room would
                Have any number of computers

        Another special computer room would
                Have any number of computers
                May or may not have AC

public class CompRoom extends Classroom {
        int numComputers;

        public CompRoom () {
                super ();
                numComputers = 30;
        }

        public CompRoom (boolean windows) {
                super (windows);
                numComputers = 30;
        }

        public CompRoom (boolean windows, boolean ac) {
                super (windows, ac);
                numComputers = 30;
        }
}
```

t

Unfortunately, every TDSB school has a certain number of portables. We cannot tell if they're an advantage to have, but regardless, we have them anyways. Depending on how the TDSB feels, they may have as many portables as they want at a school. To set this, they edit their portable template to suit their wants.

```
This is the school template. In every school
        There are a certain number of portables in a school
        …
        We can set the number of portables, to a number that is applied to this school
                Then we set the number of portables to the number


public class School {
        int numPortables;
        …
        public void setNumPortables (int x     ) {
```

```
            numPortables = x;
        }
        ...
}
```

Of course, schools also need washrooms. Schools need male washrooms, female washrooms, as well as gender neutral washrooms. Expert architects that work for the TDSB have created a rule of thumb that there should be one of each kind of washroom for every ten classrooms.

```
This is the school template. In every school
        There are a certain number of classroms in a school
        …
        We can find the number of washrooms in this school by
            Returning the value of the number of classrooms / 10

public class School {
        …
        public int getNumWashrooms () {
            return numClassrooms / 10;
        }
        …
}
```