// Logic Flow Charts (part 1)

Logic Flow Charts are a great way to sketch out how you want a circuit or chunk of code to act once it is completed. This way you can figure out how the whole project will act without getting distracted or confused by little details like electricity or programming. It's kind of like a game plan that a coach will put together before a game.

There are four major pieces that you will use over and over again when creating Logic Flow Charts. The four Logic Flow pieces are represented by a circle, a square, a diamond and lines connecting all the circles, squares and diamonds.

The **circle** is used to represent either a starting point, or a stopping point. This is easy to remember since you start every single Logic Flow Chart with a circle containing the word Start or Begin. Often you will end a Logic Flow Chart with an End or Finish circle, but sometimes there is no end to the chart and it simply begins again. This is the case with any circuits that never turn off, but are always on and collecting data.

The **square** is used to represent any action which has only one outcome. For example, when a video game console is turned on it always checks to see what video game is in it. It does this every time after it starts up and it never checks in a different way. This kind of action is represented by the square, it never changes and there is always only one outcome.

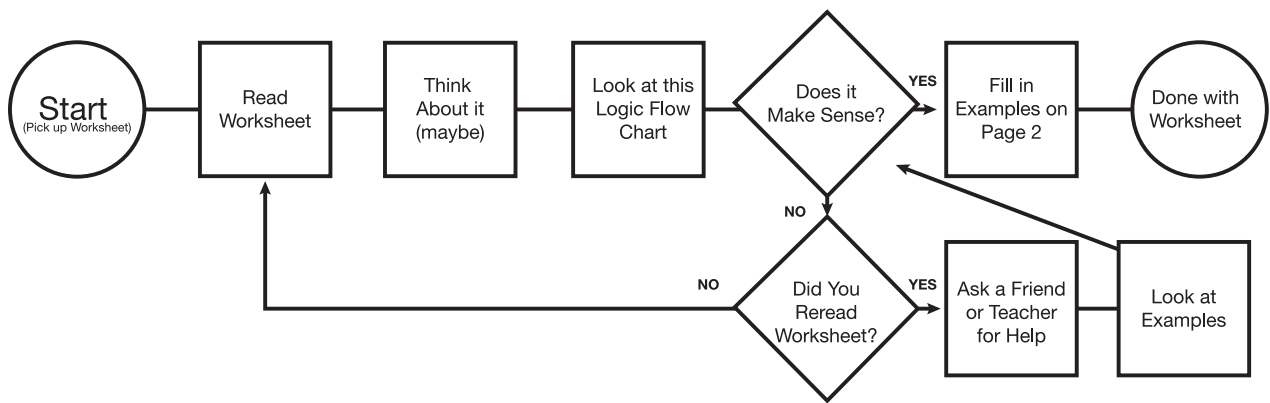The **diamond** is used to represent a question or actions with more than one possible outcome. For example, once your video game has loaded there is often a menu with a bunch of options. This would be written in a Logic Flow Chart as a diamond with something like the words "Start Up Menu" written inside of it. Each action the user can take from this menu would be represented by lines coming off the diamond leading to another square, diamond, or circle. Maybe our example Logic Flow Chart would have three options leading away from the "Start Up Menu" diamond, one line to start a new game, one to continue a saved game and another for game settings. In the Logic Flow Chart each option is written beside the line leading away from the diamond. It is possible to have as many options as you like leading away from a diamond in a Logic Flow Chart.

The **lines** in a Logic Flow Chart connect all the different pieces. These are there so the reader knows how to follow the Logic Flow Chart. The lines often have arrows on them and lead to whichever piece (circle, square, diamond) makes the most sense next. The lines usually have explanation of what has happened when they lead away from diamonds, so the reader knows which one to follow. Often some of these lines will run to a point closer to the beginning of the Logic Flow Chart. For example, the "Save Game" option might lead back to the "Start Up Menu" diamond, or it might lead straight to "Save and Quit." It's up to you, you're the one making the Logic Flow Chart! All it has to do is make sense to you. Use the first Logic Flow Chart on the next page to help figure out how to use a Logic Flow Chart. Look at the second example, then complete the remaining Logic Flow Chart examples.
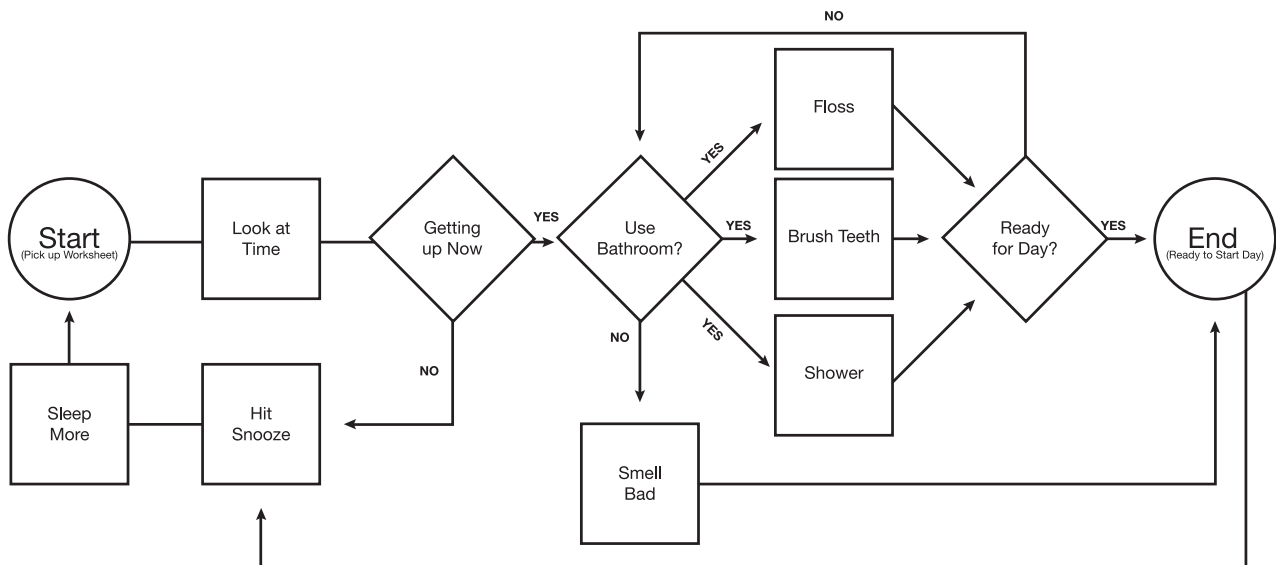
// Logic Flow Charts (part 2)

Circles represent either start or end. Squares represent actions with one outcome. Diamonds represent a question or action with multiple possible outcomes.
Lines and arrows represent logical paths between the circles, squares and diamonds.

Example 1:

Start
(Pick up Worksheet)

Read Worksheet

Think About it (maybe)

Look at this Logic Flow Chart

Does it Make Sense? — **YES** →

Fill in Examples on Page 2

Done with Worksheet

NO

Did You Reread Worksheet? — **YES** →

Ask a Friend or Teacher for Help

Look at Examples

NO

Example 2:

NO

Start
(Pick up Worksheet)

Look at Time

Getting up Now — **YES** →

Use Bathroom? — **YES** →

Floss

Brush Teeth

Ready for Day? — **YES** →

End
(Ready to Start Day)
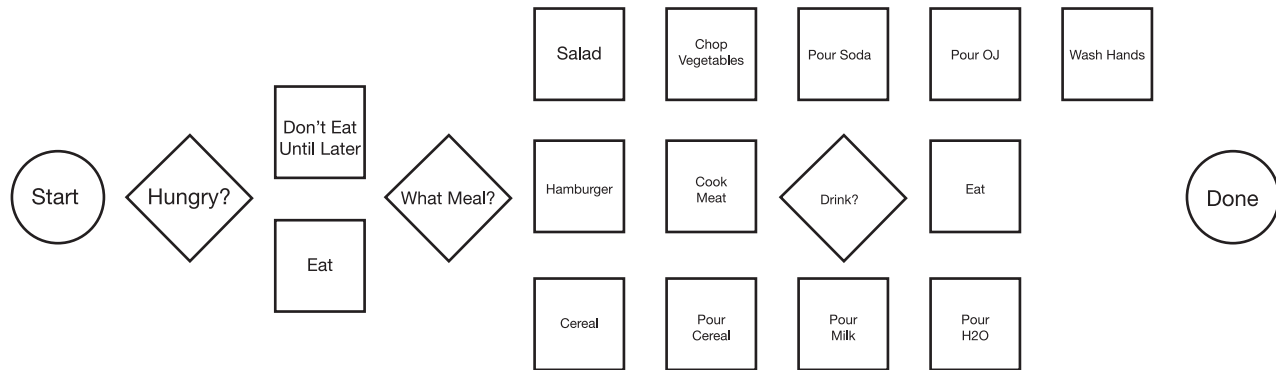
Shower

Smell Bad

NO

YES

NO

Sleep More

Hit Snooze

// Logic Flow Charts (part 3)

Example 3:

Fill in the lines and arrows. There is no right answer, but it must make sense.

		Salad	Chop Vegetables	Pour Soda	Pour OJ	Wash Hands
Start	Hungry?	Don't Eat Until Later / Eat	What Meal?	Hamburger	Cook Meat	Drink?	Eat	Done
		Cereal	Pour Cereal	Pour Milk	Pour H2O	

Example 4:

Fill in the lines and text. Write outside of the boxes as necessary or use the back of the worksheet.