General-Purpose Diagrams

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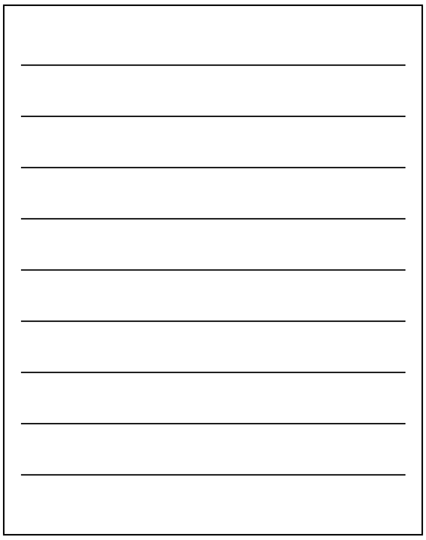
grid provides a lot of general support for arranging graphical elements. The main purpose for this is of course to allow for the production of flexible statistical graphics. However, these capabilities are also very useful for producing general diagrams.

A very simple example is the problem of dividing a page into 10 "lines" (I needed to do this to provide lined paper for my son to begin practicing printing).

The following code uses a grid layout to divide the page into 10 equally-sized regions, then draws a horizontal line at the bottom of each region. It's pretty basic stuff, but something like this is very natural in grid and surprisingly painful in other graphical software.

```
> push.viewport(viewport(layout = grid.layout(10, 1)))
> for (i in 1:9) {
+     push.viewport(viewport(layout.pos.row = i))
+     grid.lines(x = c(0, 1), y = 0)
+     pop.viewport()
+ }
> pop.viewport()
```



A slightly more complex example involves creating a calendar. Here we make use of both "lines" and "null" units in a grid layout to fix the size of the heading row, and "mm" units to position the date labels within each day cell.

I have used the date/time functions in base to generate a series of dates (from Sunday Nov 3 2002, for 4 weeks).

```
> dates <- seq(ISOdate(2002, 11, 2), by = "day", length = 4 * 7)
> day <- c("Sunday", "Monday", "Tuesday", "Wednesday", "Thursday",
+     "Friday", "Saturday")
```

Now we generate a grid, draw the heading in a loop first, then do each of the days in another loop.

```
> push.viewport(viewport(layout = grid.layout(5, 7, heights = unit(rep(1,
+     5), c("lines", rep("null", 4))))))
> for (i in 1:7) {
+     push.viewport(viewport(layout.pos.row = 1, layout.pos.col = i))
+     grid.rect()
+     grid.text(day[i], gp = gpar(fontface = "bold"))
+     pop.viewport()
+ }
> for (i in 1:7) {
+     for (j in 1:4) {
+         index <- (j - 1) * 7 + i
+         push.viewport(viewport(layout.pos.row = j + 1, layout.pos.col = i,
+             ))
+         grid.rect()
+         grid.text(paste(months(dates, abbrev = TRUE)[index],
+             as.POSIXlt(dates)$mday[index]), x = unit(1, "mm"),
+             y = unit(1, "npc") - unit(1, "mm"), just = c("left",
+                 "top"), gp = gpar(fontsize = 8))
+         pop.viewport()
+     }
+ }
> pop.viewport()
```

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Nov 3	Nov 4	Nov 5	Nov 6	Nov 7	Nov 8	Nov 9
Nov 10	Nov 11	Nov 12	Nov 13	Nov 14	Nov 15	Nov 16
Nov 17	Nov 18	Nov 19	Nov 20	Nov 21	Nov 22	Nov 23
Nov 24	Nov 25	Nov 26	Nov 27	Nov 28	Nov 29	Nov 30