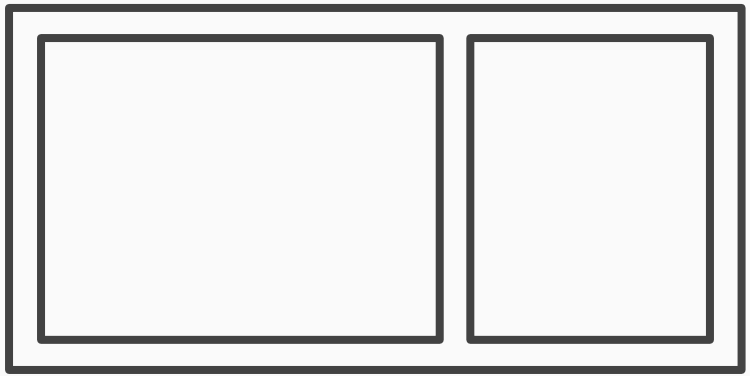
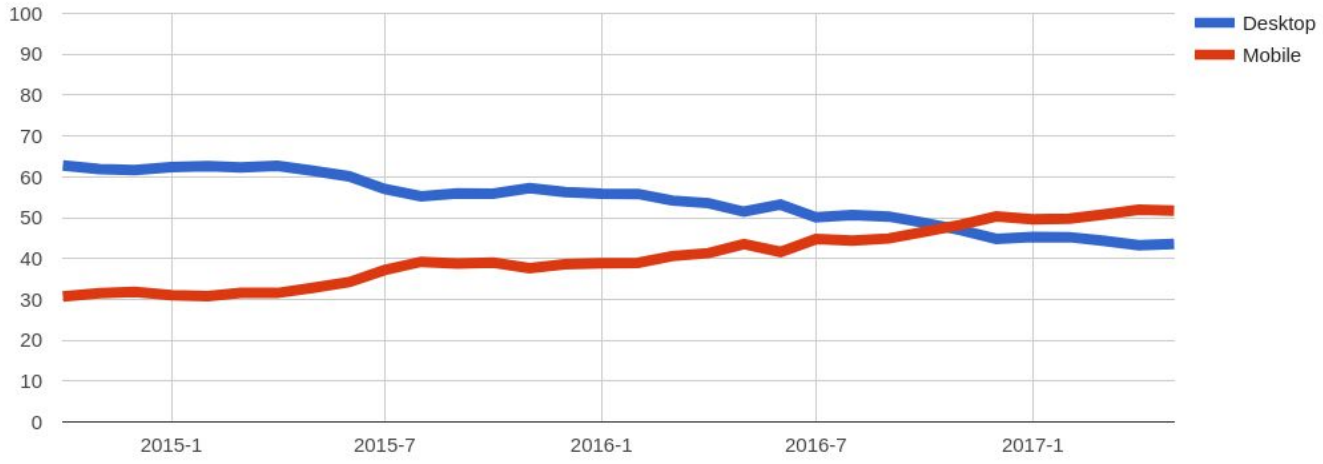
Responsive design

Responsive design

1. Create a new page **layout.html**
2. Create a **container** with a **content** and a **sidebar**
3. Position the sidebar alongside the content
4. Style all the elements: give them a fixed width and a fixed margin
    a. give the container at least 600px width
    b. give colors to the elements!
5. Try to resize the window. What happens?



Why responsive design?



Mobile design vs responsive

Mobile

Building a separate website commonly on a new domain solely for mobile users.

(e.g.: mobil.bvg.de)

Responsive

Building a website suitable to work on every device and every screen size.

(e.g.: www.bvg.de)

responsive

react quickly and positively to any change

Why responsive design?

- Continuous and fluid change based on different factors (viewport width)
- Design that dynamically adapts to different browser and device viewports, changing layout and content along the way

viewport

the visible portion of the entire document

Flexible layouts

- Building the layout of a website with a flexible grid, capable of dynamically resizing to any width
- Use percentage instead of px

$$\frac{\text{element width}}{\text{container width}} \times 100$$

Flexible layout

1. In your example change all the widths to flexible widths, i.e.: relative to the container's

Example:

- Width of container: 630px
- Margin: 10px
- 10px / 630px = 0.0158730
- New margin: 1.5873%

Relative viewport units

- **`vw`** : Viewport width
- **`vh`** : Viewport height
- **`vmin`** : Minimum of the viewport height and width
- **`vmax`** : Maximum of the viewport height and width

Relative viewport units

Give the elements width using the viewport units

- **`vw`** : Viewport width
- **`vh`** : Viewport height
- **`vmin`** : Minimum of the viewport height and width
- **`vmax`** : Maximum of the viewport height and width

Min and max width and height

For even more control within a flexible layout, you can also leverage the min/max properties:

- `min-width`
- `max-width`
- `min-height`
- `max-height`

Min and max width and height

The container should have a responsive width, but it should also never be:

- smaller than 300px
- wider than 600px

```
* {
  box-sizing:
  border-box;
}
```

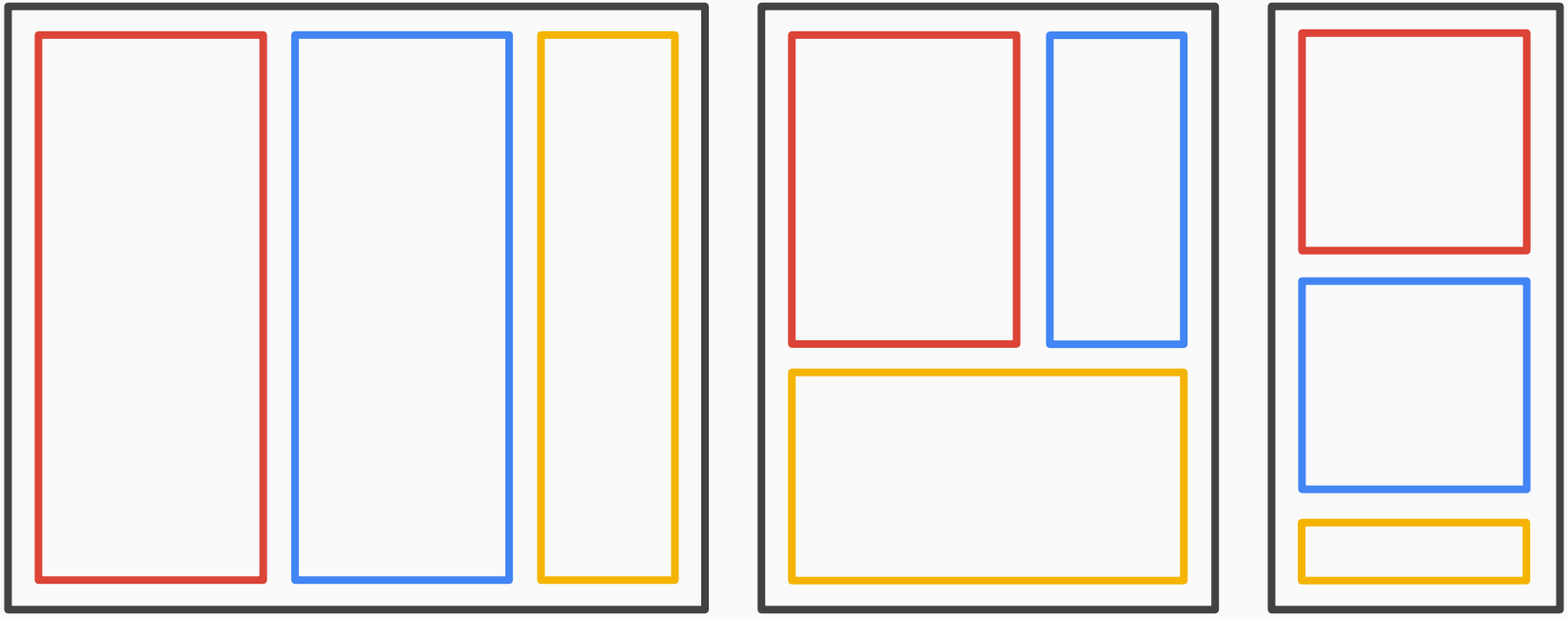
```
html {
  box-sizing:
  border-box;
}

* {
  box-sizing: inherit;
}
```

Still not mobile friendly

Problem: how to use the space in the best way possible, no matter the viewport?

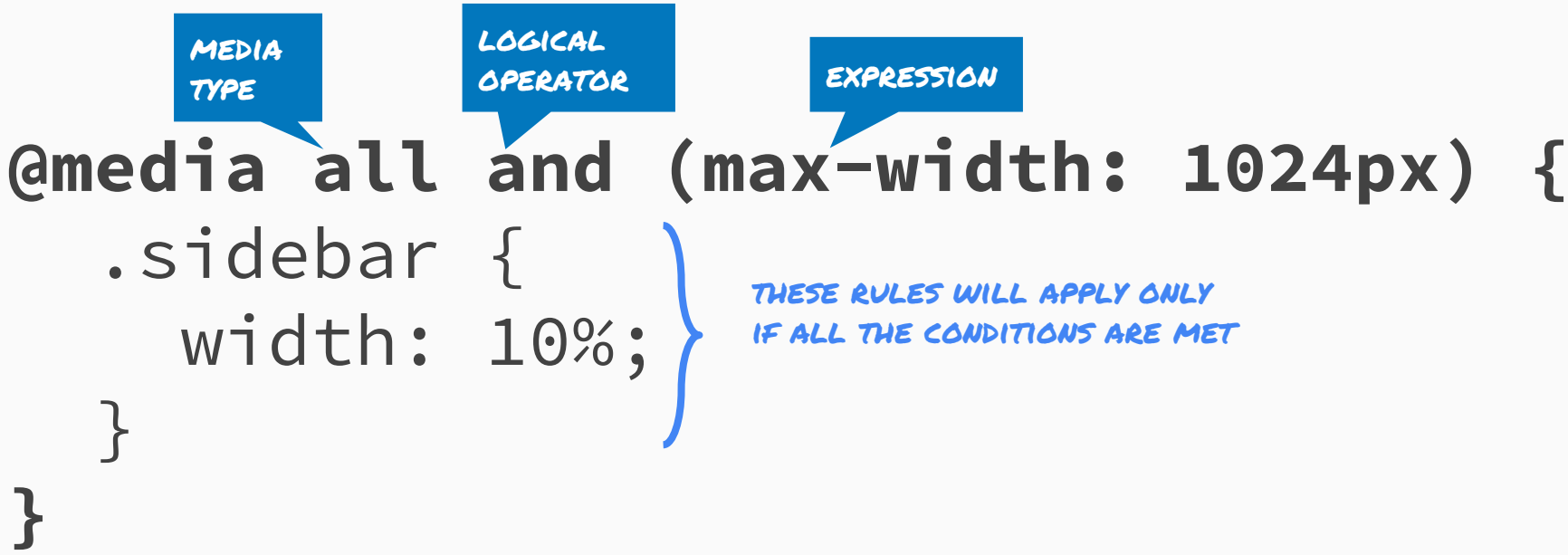
Still not mobile friendly

1. Add a third element in the container
    a. don't forget to add a background
2. Fill the columns of your layout
    a. add a couple of paragraphs to the articles (Lorem Ipsum)
    b. add a random list in the sidebar with at least 10 points
3. Resize your window
4. What happens?



Media queries

- The @media rule, introduced in CSS2, made it possible to define different style rules for different media types (print, screen, tv…)
- CSS3: Instead of looking for a type of device, they look at the capability of the device:
  - width and height of the viewport
  - width and height of the device
  - orientation (is the tablet/phone in landscape or portrait mode?)
  - resolution


MEDIA TYPE
LOGICAL OPERATOR
EXPRESSION
@media all and (max-width: 1024px) {
.sidebar {
width: 10%;
}
}
THESE RULES WILL APPLY ONLY
IF ALL THE CONDITIONS ARE MET

Media type

```
@media all and (max-width: 1024px)
```

- all, screen, print, tv, speech, 3d-glasses…
- Should a media type not be specified the media query will default the media type to screen.

Expression

```
@media all and (max-width: 1024px)
```

- min-height, max-height
- min-width, max-width
- orientation: landscape, portrait
- resolution
- MQ Level 4: pointer, hover, scripting...

Logical operator

```
@media all and (max-width: 1024px)
```

- and
- or (,)
- not
- more than one condition:
  - example: between 640px and 1024px

    ```
    @media all and (min-width: 640px) and (max-width: 1024px)
    ```

breakpoint

Browser width that has a media query declaration to change the layout once the browser is within the declared range

Breakpoints

```
@media all and (max-width: 1024px)
```