Graduating to Grid

An Event Apart Chicago 2018
@rachelandrew

And there was great rejoicing.

https://wpdev.uservoice.com/forums/257854-microsoft-edge-developer/suggestions/6514853-update-css-grid

8,737
votes

Vote

Update CSS Grid

Update the IE implementation of Grid Layout to match the current spec. The current implementation from the IE 10 days is outdated.

mnsth shared this idea · October 02, 2014 · Flag idea as inappropriate…

CSS Grid Layout - CR

Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Usage % of all users

Global 84.14% + 3.42% = 87.56%

unprefixed: 84.14%

Current aligned | Usage relative | Date relative | Show all

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	Samsung Internet
			63									
		58	64									
2 11	16	59	65	11	50	11.2	all	62	37	64	57	6.2
	17	60	66	11.1	51	11.3						
		61	67	TP	52							
			68									

Notes | Known issues (2) | Resources (13) | Feedback

What’s it like being in the middle of a launch of a big new CSS feature?

It involved a lot of email.

Grid is:

- **Exciting** - a real game changer
- **Confusing** - it doesn’t seem to do what I thought it would
- **Scary** - there are so many new properties to learn!

“Q. How do you feel when you see a new CSS feature announced?”

–Me, in a survey question

“Excited but also worried about falling behind.”

–Survey response

“Excited, until I share it with colleagues and they pick it apart”

–Survey response

“Oh no, a new way to have inconsistencies between web browsers.”

–Survey response

“Tired.”

–Survey response

I **can’t** tell you **what to do.**

I **can** help you develop the skills to **make those decisions yourself**.

I want **you** to be the amazing CSS layout person on your team.

You need to **understand** CSS.

Understanding CSS is not about learning every property and value by heart.

(my main skill is “can use a search engine”)

Core ideas that help CSS layout make **sense**.

Cascading Style Sheets

Inheritance - which properties will inherit values from their parent.

Specificity - which rule wins when two things could apply to the same element.

Cascade and inheritance

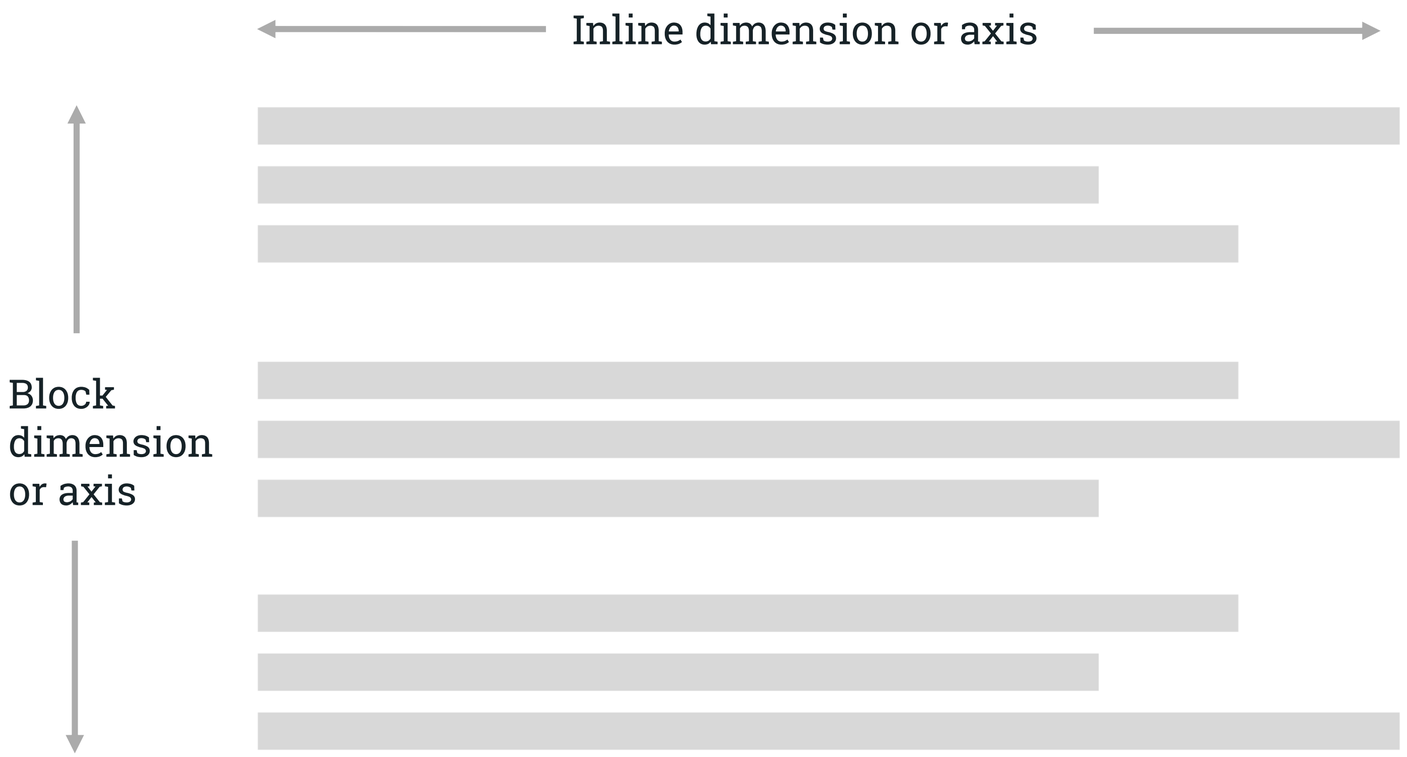
Previous Overview: Introduction to CSS Next

In a previous article, we got into the various CSS selectors. At some point in your work, you'll find yourself in the situation where multiple CSS rules will have selectors matching the same element. In such cases, which CSS rule "wins", and ends up being the one that is finally applied to the element? This is controlled by a mechanism called the Cascade; this is also related to inheritance (elements will take some property values from their parents, but not others.) In this article we will define what the cascade is, what specificity is, what importance is, and how properties inherit from different rules.

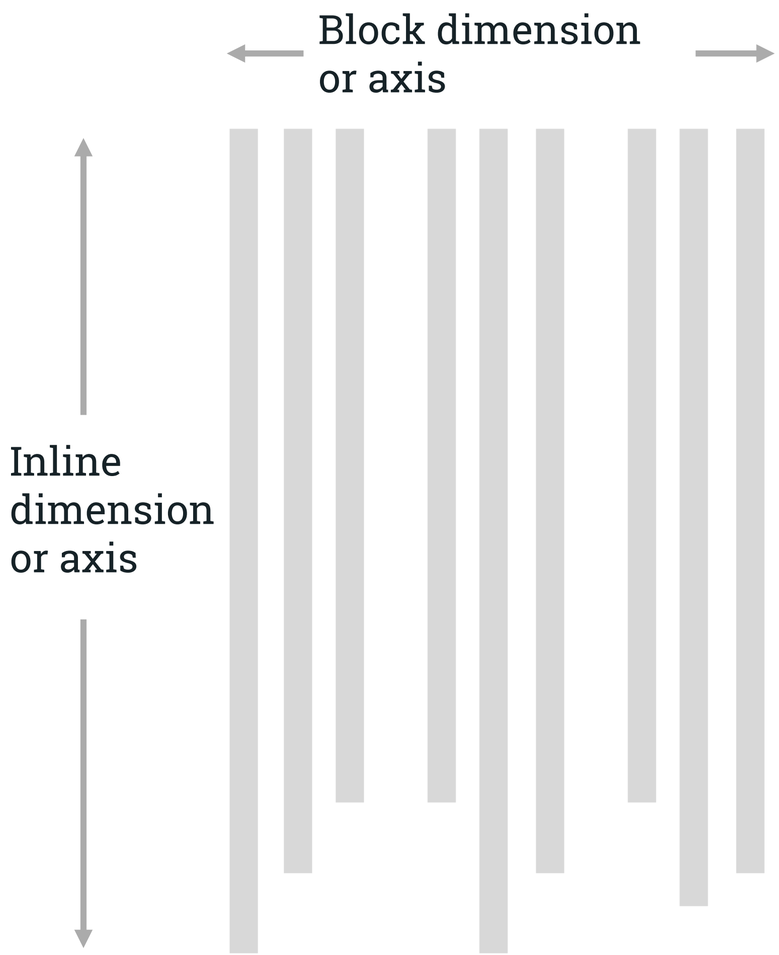
Prerequisites:	Basic computer literacy, basic software installed, basic knowledge of working with files, HTML basics (study Introduction to HTML), and an idea of How CSS works (study the previous articles in this module.)
Objective:	To learn about the cascade and specificity, and how

Block and inline **dimensions**

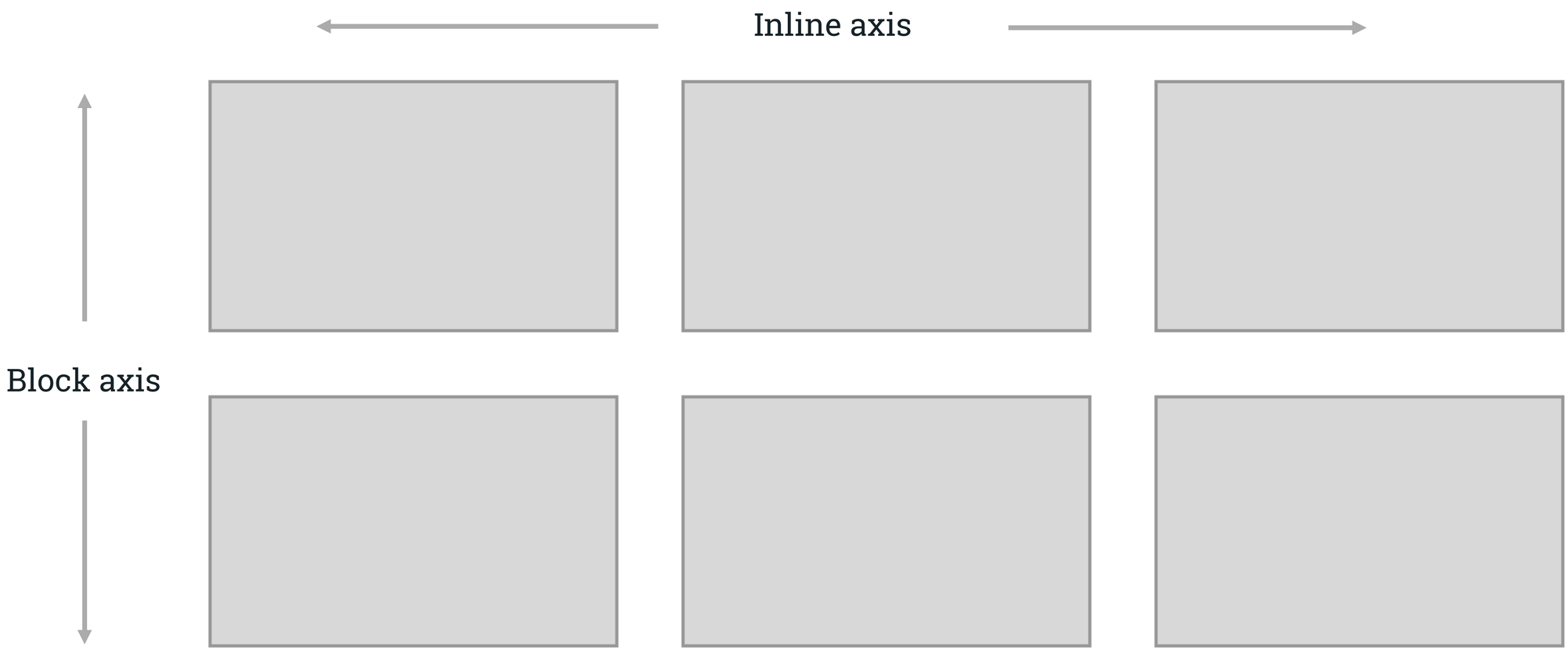
Horizontal Writing Mode



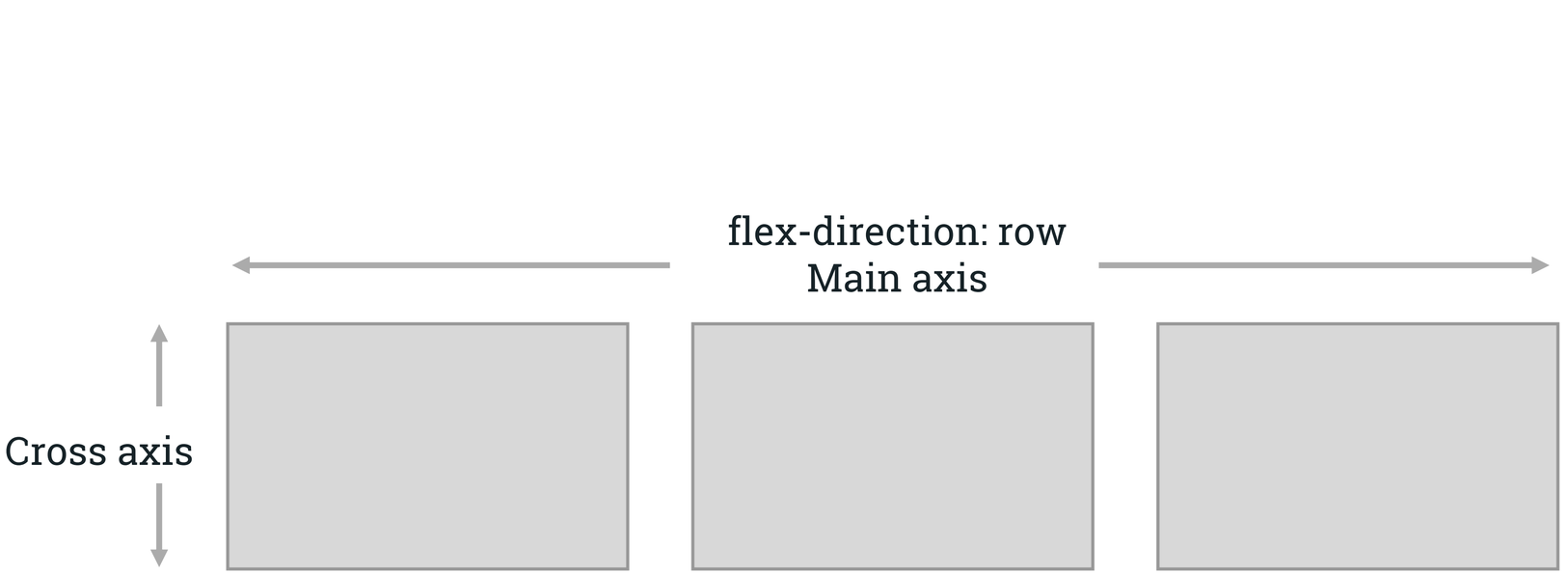
Vertical Writing Mode

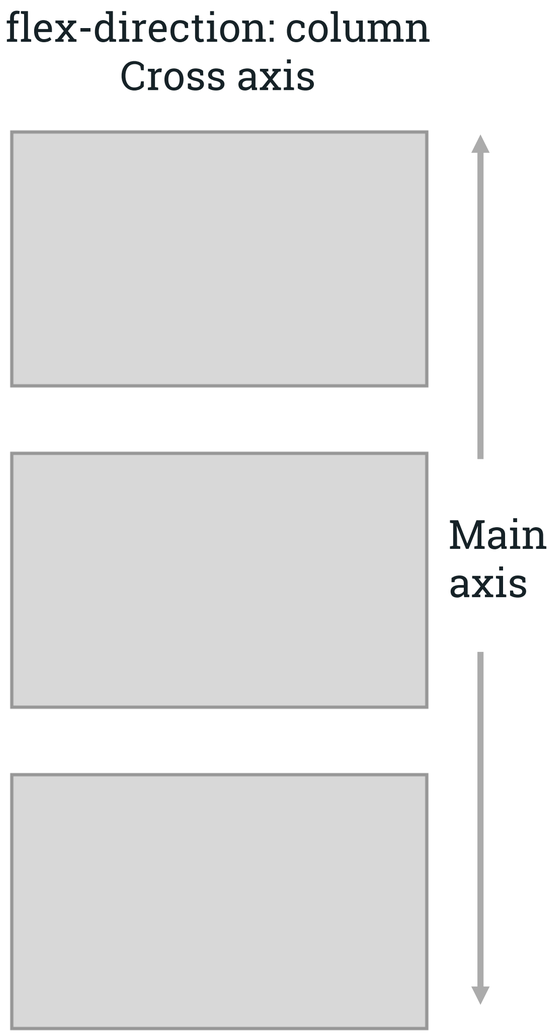


Grid Layout in Horizontal Writing Mode



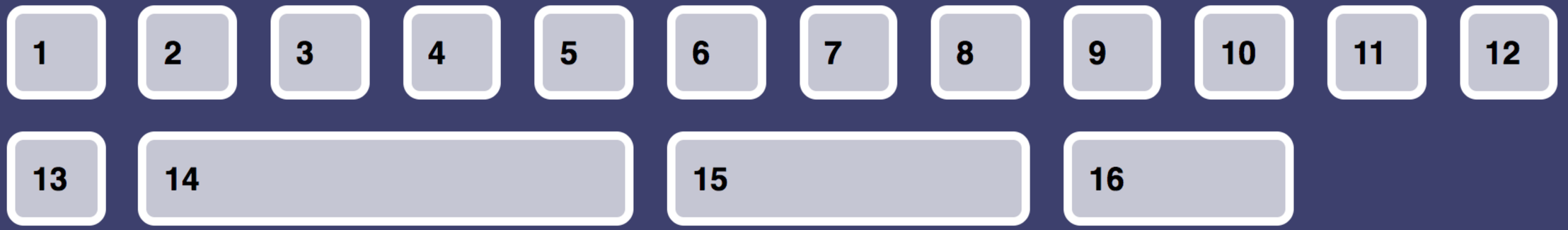
Flex Layout in Horizontal Writing Mode

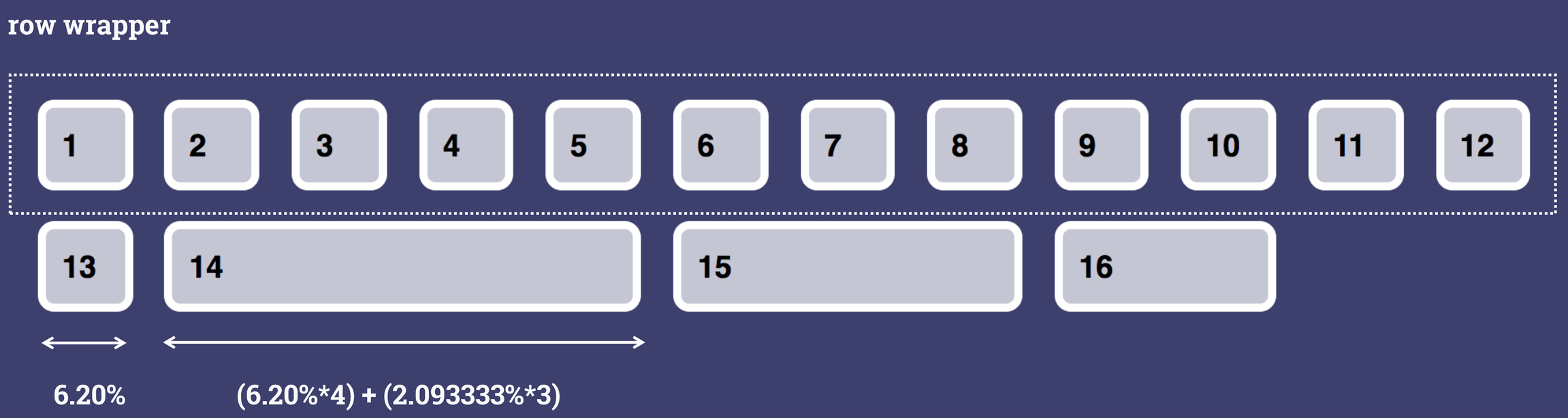




Sizing Matters

https://codepen.io/rachelandrew/pen/ZXMwdB




row wrapper
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
6.20%
(6.20%*4) + (2.093333%*3)

https://codepen.io/rachelandrew/pen/ZXMwdB

```
.col {
  margin-bottom: 1em;
  margin-left: 2.093333%;
  width: 6.20%;
  float: left;
}
```

Percentages!

```
.row::after {
  content: "";
  display: block;
  clear: both;
}
```

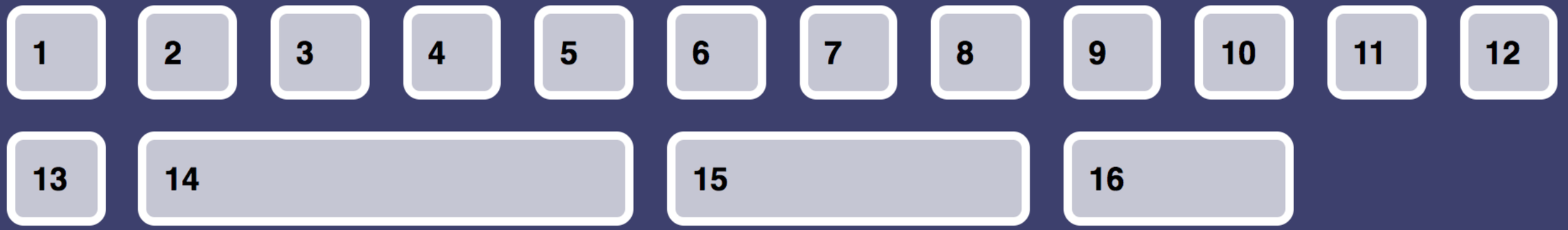
Clearing!

```
.col.span2 { width: calc((6.20%*2) + 2.093333%); }

.col.span3 { width: calc((6.20%*3) + (2.093333%*2)); }

.col.span4 { width: calc((6.20%*4) + (2.093333%*3)); }
```

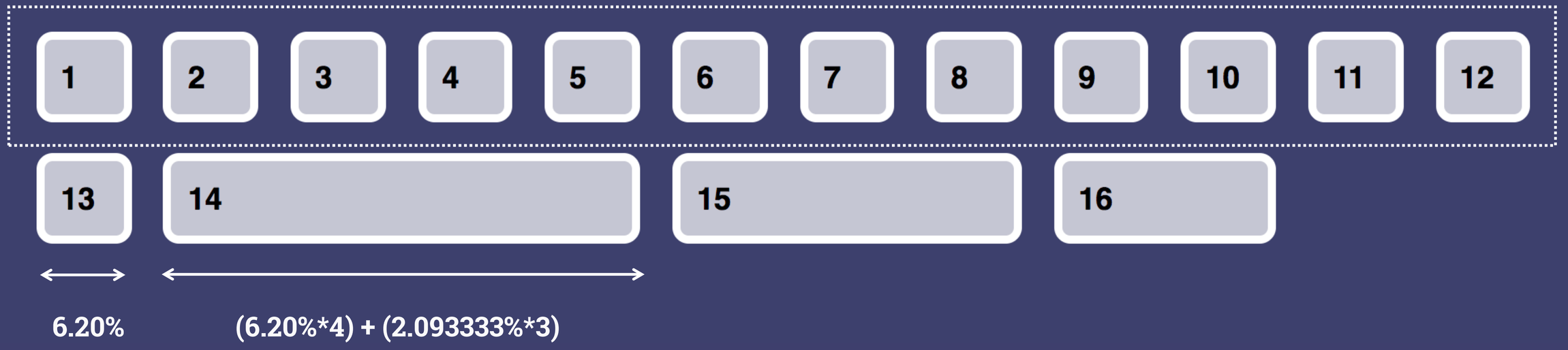
Fun math!

Percentages

- Ugly
- Easy to understand
- If they total more than 100% bad things happen.
- Can be converted from an ideal pixel size using a straightforward calculation.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Row wrapper as flex container



https://codepen.io/rachelandrew/pen/eGPPaZ

```
.wrapper .row {
  display: flex;
  flex-wrap: wrap;
}

.col {
  padding: 10px;
  margin-bottom: 1em;
  margin-left: 2.093333%;
  width: 6.20%;
  flex: 0 0 auto;
}

.col.span2 { width: calc((6.20%*2) + 2.093333%); }

.col.span3 { width: calc((6.20%*3) + (2.093333%*2)); }

.col.span4 { width: calc((6.20%*4) + (2.093333%*3)); }
```

Percentages!

Inflexible flex items!

Fun math!

Past layout methods create the **appearance** of a grid, by lining things up.

CSS Intrinsic and Extrinsic Sizing

https://drafts.csswg.org/css-sizing-3/

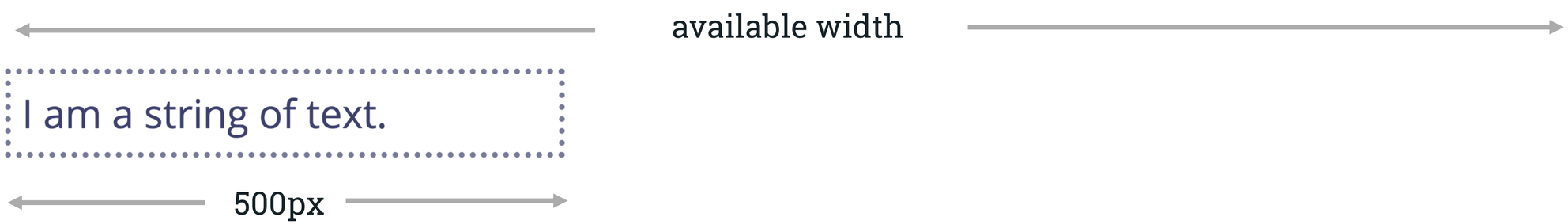
https://codepen.io/rachelandrew/pen/rGqQNM/

```
/* html */
<div class="box">
  I am a string of text.
</div>

/* css */
.box {
  padding: 10px;
  border: 5px dotted rgba(255,255,255,.7);
  margin-bottom: 2em;
}
```


available width
I am a string of text.

https://codepen.io/rachelandrew/pen/rGqQNM/

```
.box {
  width: 500px;
}
```


available width
I am a string of text.
500px

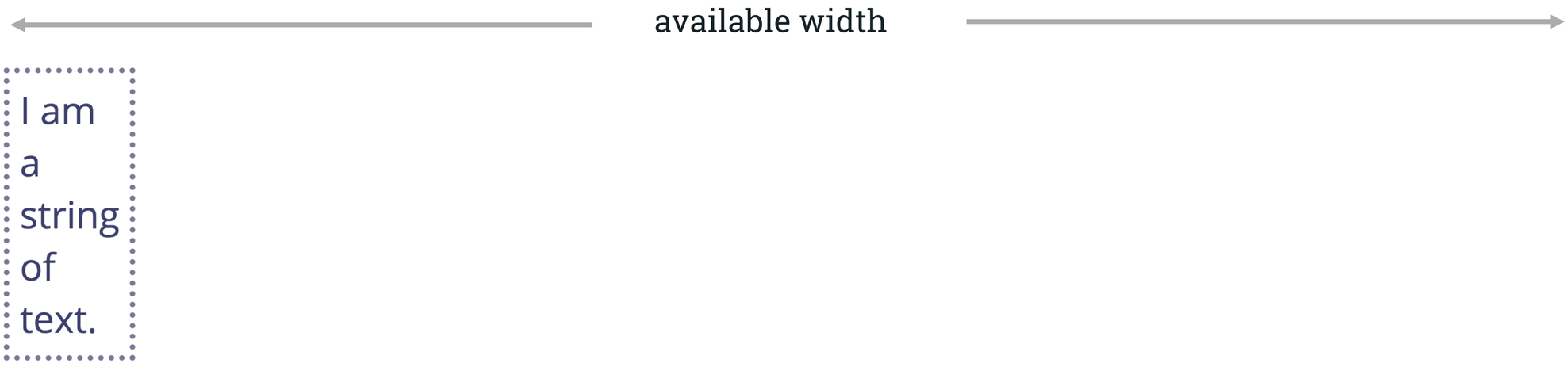
max content

min content

https://codepen.io/rachelandrew/pen/rGqQNM/

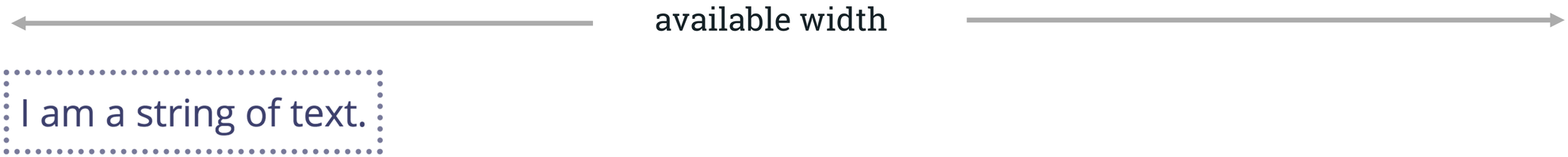
```
.box {
  width: min-content;
}
```

https://codepen.io/rachelandrew/pen/rGqQNM/



https://codepen.io/rachelandrew/pen/rGqQNM/

```
.box {
  width: max-content;
}
```

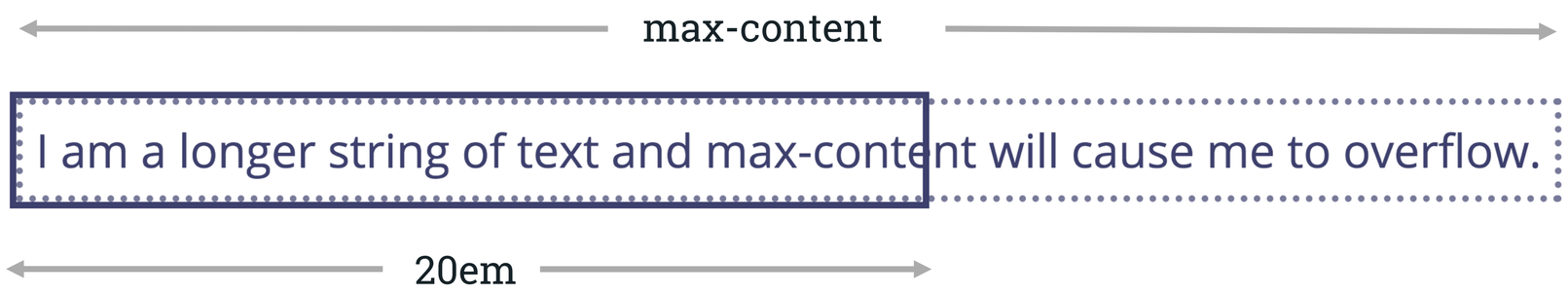

available width
I am a string of text.
max-content

https://codepen.io/rachelandrew/pen/rGqQNM/

```
<div class="fixed-width">
  <div class="box">
    I am a longer string of text and max-content
will cause me to overflow.
  </div>
</div>
```

https://codepen.io/rachelandrew/pen/rGqQNM/

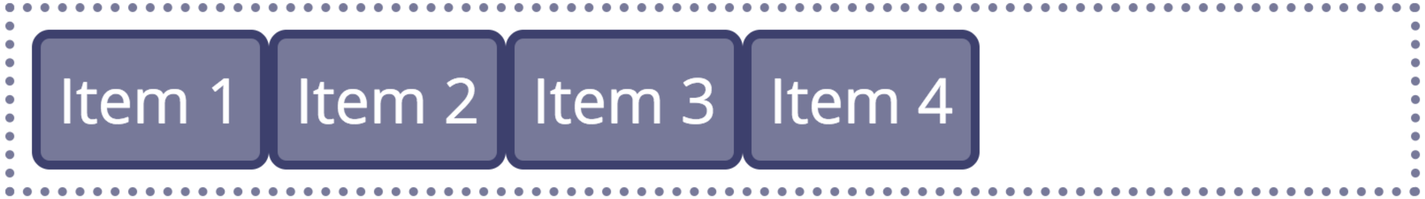
```
.fixed-width {
  width: 20em;
  border: 5px solid rgb(255,255,255);
  margin-bottom: 2em;
}

.box {
  width: max-content;
}
```


max-content
I am a longer string of text and max-content will cause me to overflow.
20em

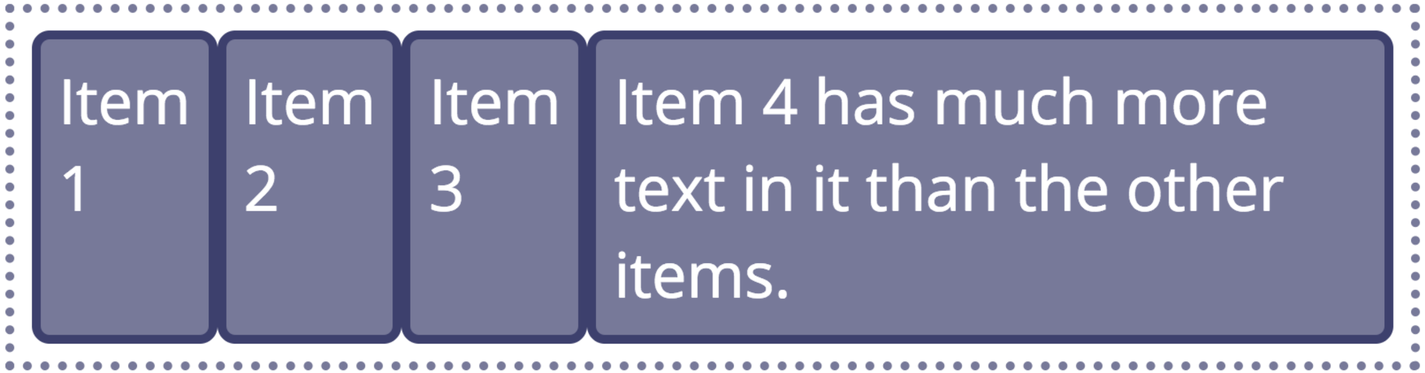
https://codepen.io/rachelandrew/pen/KXGbQo/

```
<div class="box">
  <div>Item 1</div>
  <div>Item 2</div>
  <div>Item 3</div>
  <div>Item 4</div>
</div>
```

Items start by trying to display at max-content size.



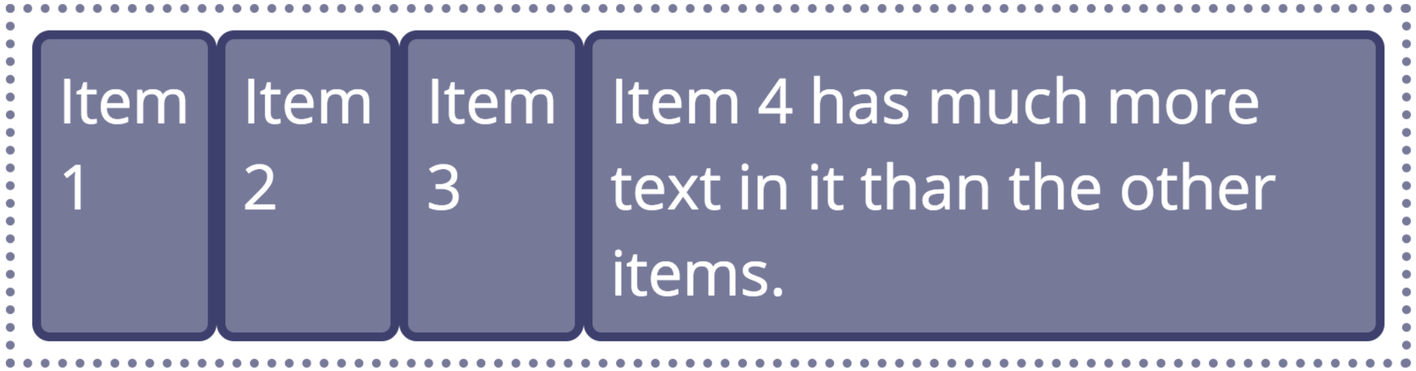
Space is reduced according to the flex-basis. In this case the size of the content.



`flex: 1 1 auto;`

Items can grow and shrink so stretch to fill the container.

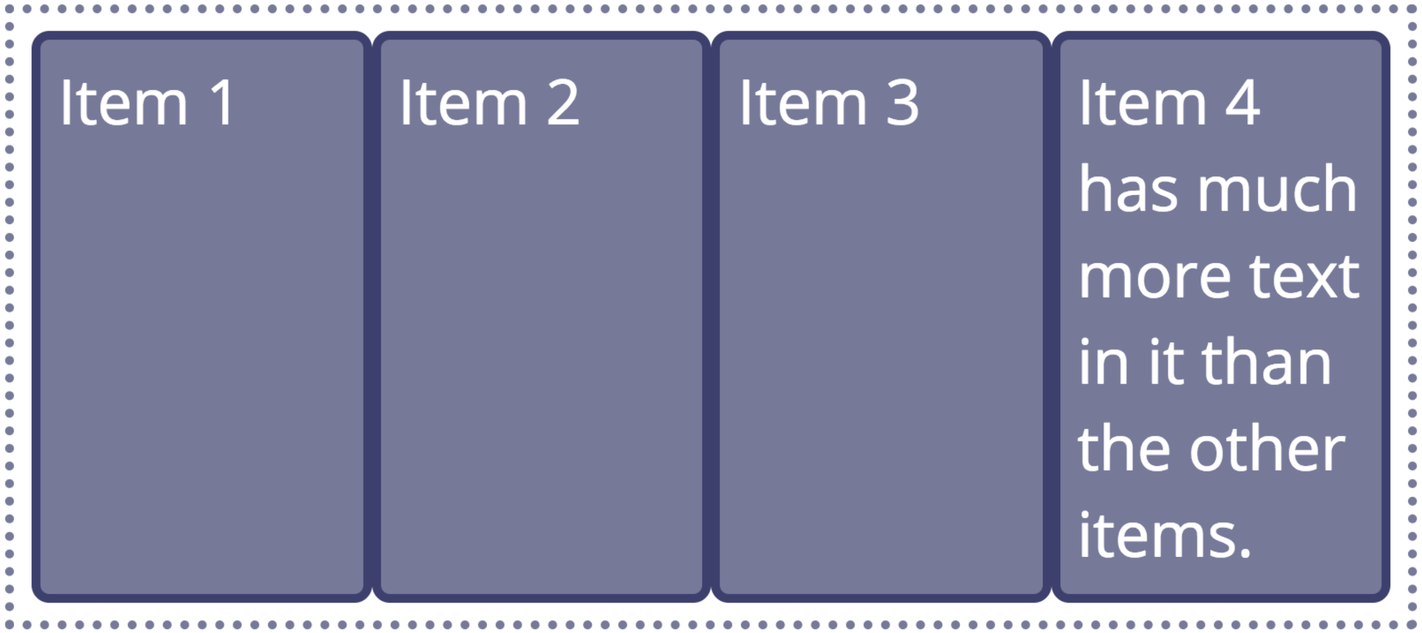
With no extra space, items shrink as before.



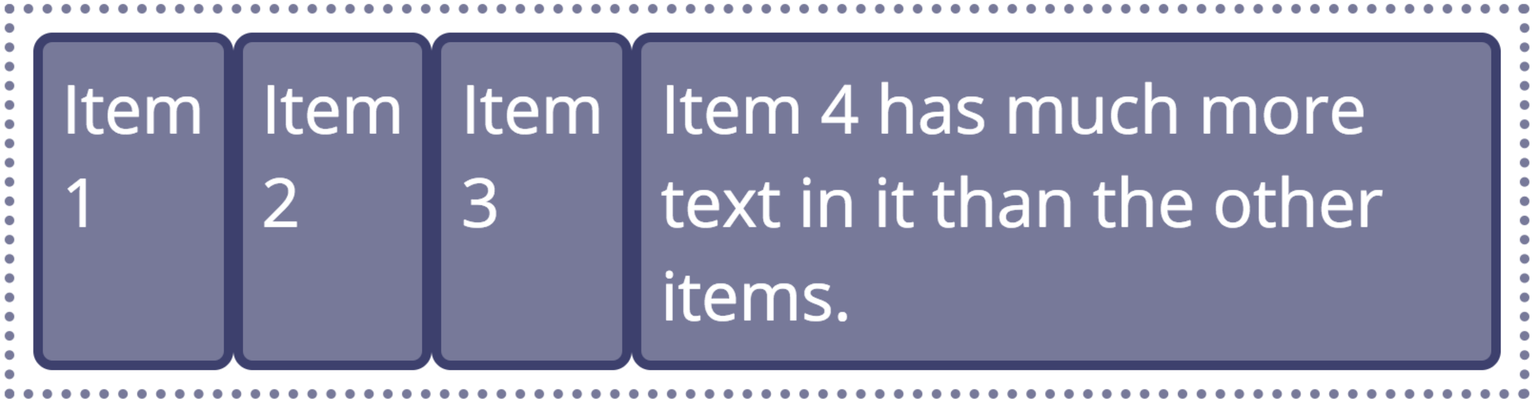
```
flex: 1 1 0;
```

Items can grow and shrink so stretch to fill the container.

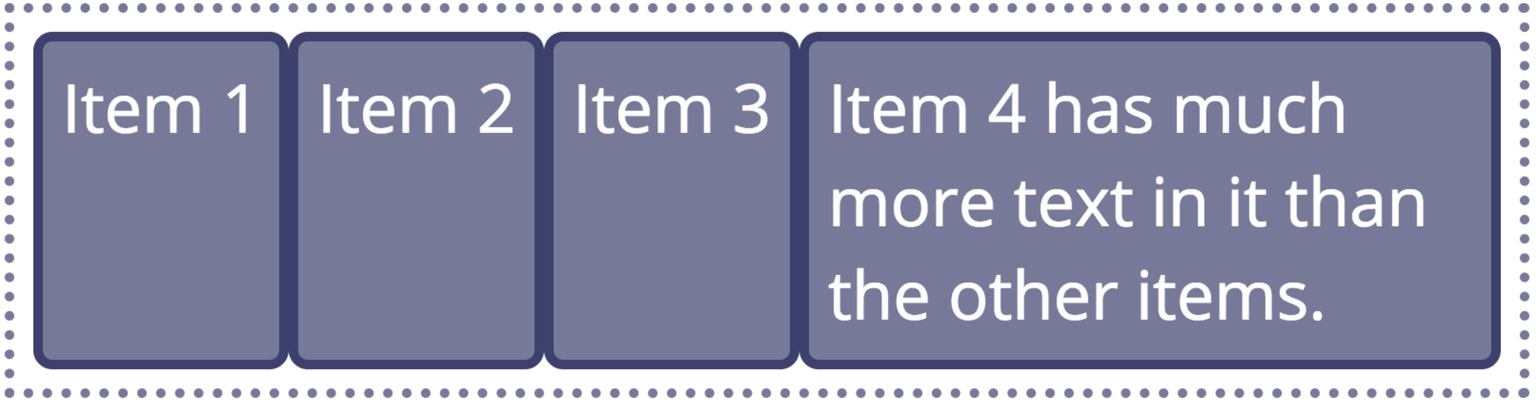
With a flex-basis of 0 space is distributed from 0, making equal columns.



Flex items at min-content size



Grid items at max-content size

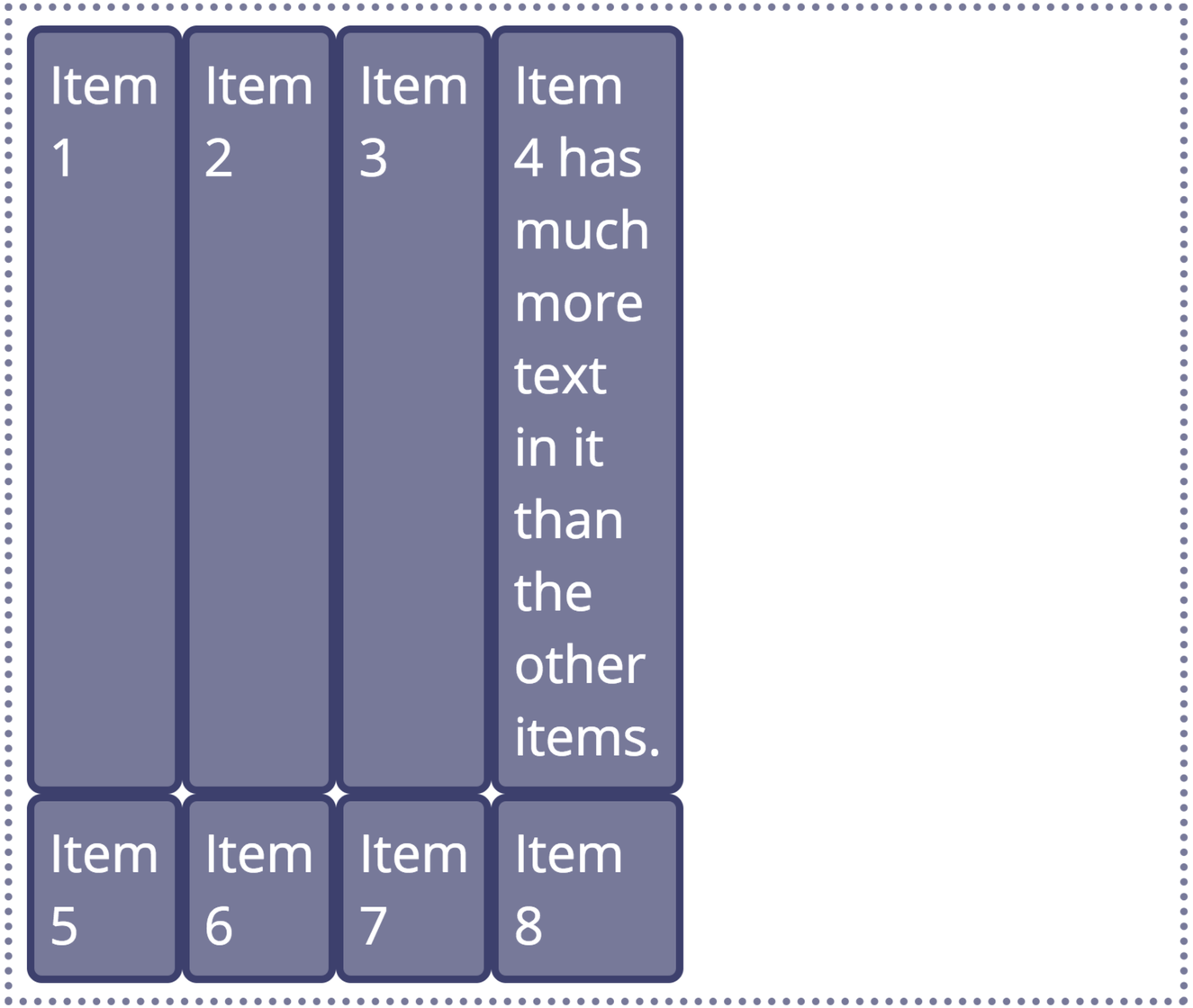


Flexbox is starting from **max-content** and taking space away. Grid starting at **min-content** and adding space.

https://codepen.io/rachelandrew/pen/bomZVP/

```
.grid {
  display: grid;
  grid-template-columns: repeat(4, min-content);
}
```

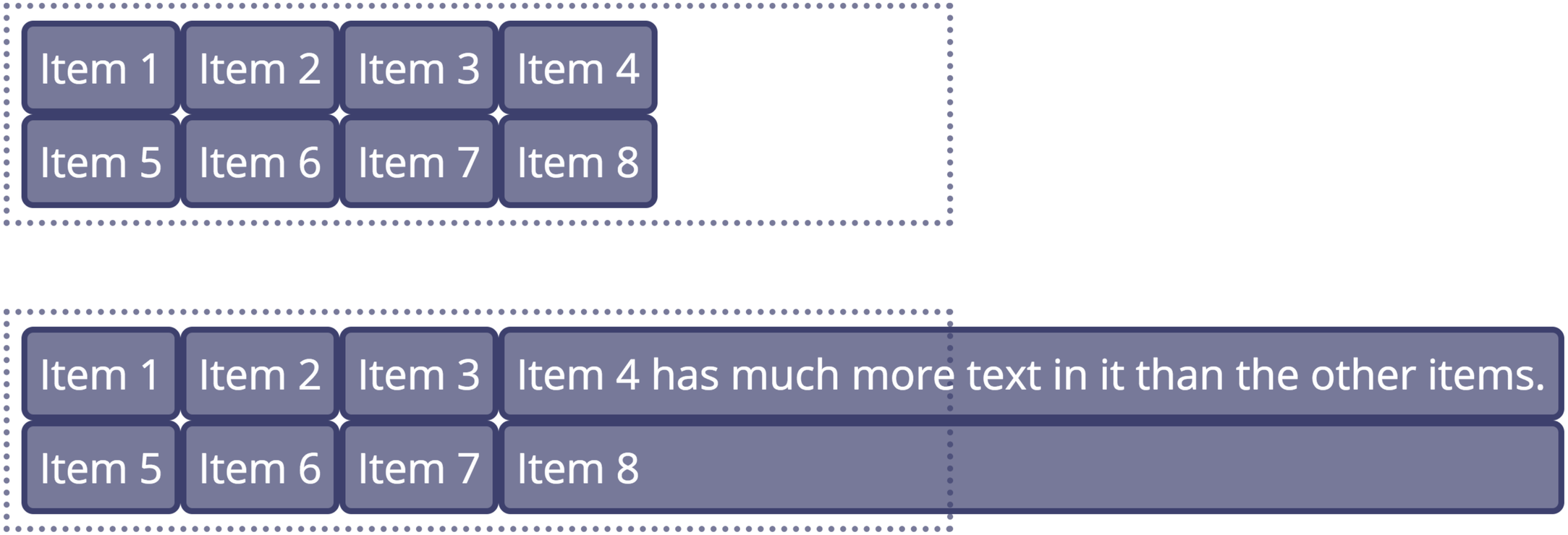
min-content


Item 1
Item 2
Item 3
Item 4 has much more text in it than the other items.
Item 5
Item 6
Item 7
Item 8

https://codepen.io/rachelandrew/pen/bomZVP/

```
.grid {
  display: grid;
  grid-template-columns: repeat(4, max-content);
}
```

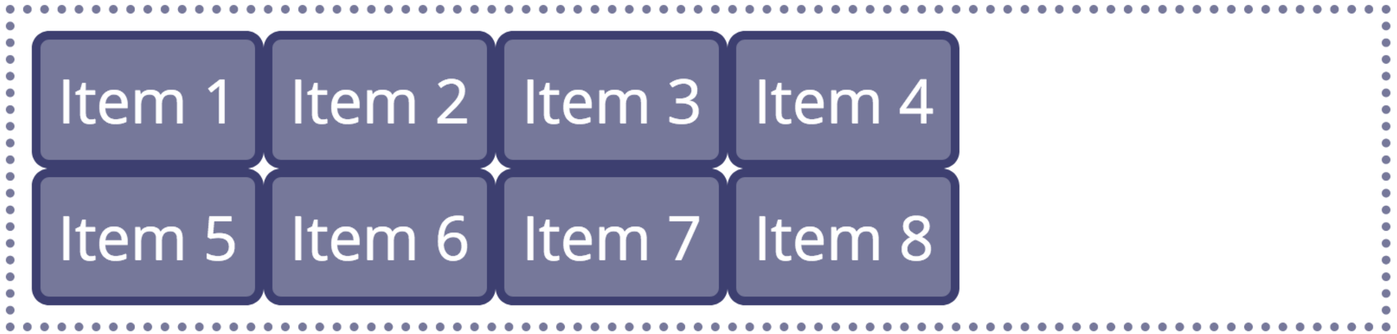
max-content

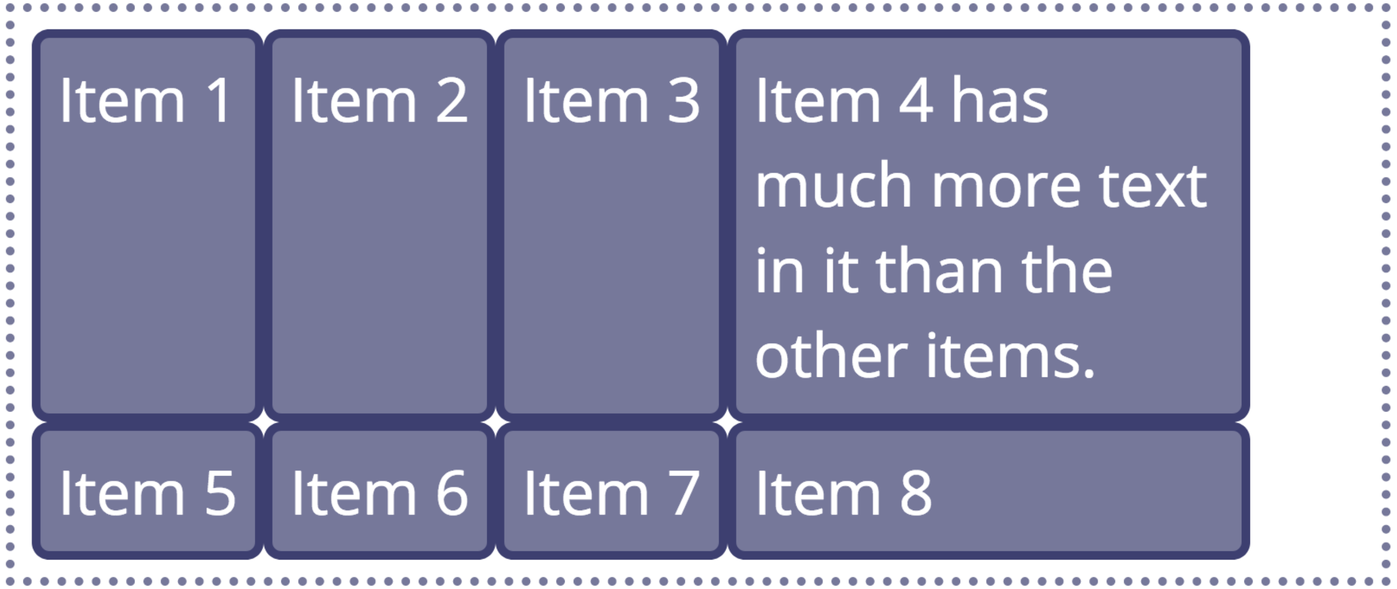

Item 1
Item 2
Item 3
Item 4
Item 5
Item 6
Item 7
Item 8
Item 1
Item 2
Item 3
Item 4 has much more text in it than the other items.
Item 5
Item 6
Item 7
Item 8

https://codepen.io/rachelandrew/pen/Oxqgqo

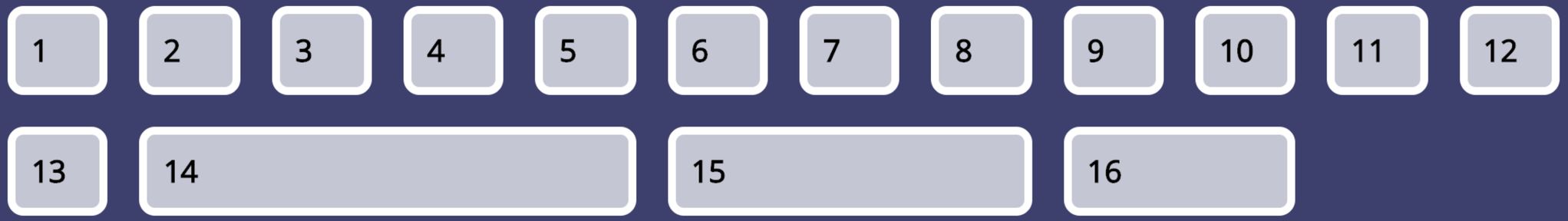
```
.grid {
  display: grid;
  grid-template-columns: repeat(4, fit-content(15ch));
}
```

fit-content(15ch)

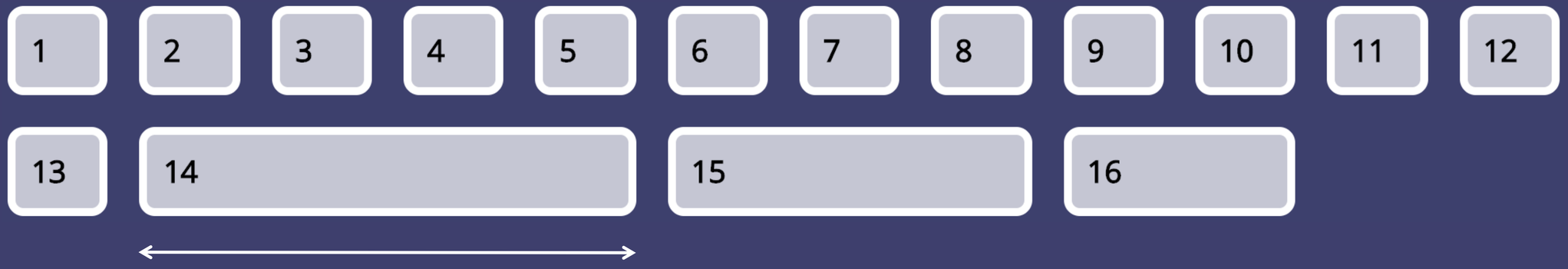




https://codepen.io/rachelandrew/pen/ZXPJbQ



grid-template-columns: repeat(12, minmax(0,1fr));



grid-column: auto / span 4;

https://codepen.io/rachelandrew/pen/ZXPJbQ

```
.wrapper {
  display: grid;
  grid-template-columns: repeat(12, minmax(0,1fr));
  grid-gap: 20px;
}

.col.span2 {
  grid-column: auto / span 2;
}
.col.span3 {
  grid-column: auto / span 3;
}
.col.span4 {
  grid-column: auto / span 4;
}
```

https://codepen.io/rachelandrew/pen/ZXPJbQ

```
.wrapper {
  display: grid;
  grid-template-columns: repeat(12, minmax(0,1fr));
  grid-column-gap: 2.093333%;
  grid-row-gap: 20px;
}
.col.span2 {
  grid-column: auto / span 2;
}
.col.span3 {
  grid-column: auto / span 3;
}
.col.span4 {
  grid-column: auto / span 4;
}
```

“In the end, we discovered that a column-based grid wasn’t actually needed. Since Grid allows you to create a custom grid to match whatever layout you have, we didn’t need to force it into 12 columns. Instead, we created CSS Grid objects for some of the common layout patterns in the designs.”

–Rebuilding Slack.com

We now near the confines of the clouds, and dip swiftly into the thickest of them; we experience a decided chill, and hear the rustling of the collapsing balloon, which is now but one-third full, but cannot see it, so dense is the mass of vapour. One, two, three, or more minutes pass, and we are still in the cloud. How thick it must be, considering the rapidity of the descent!

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300px

We now near the confines of the clouds, and dip swiftly into the thickest of them; we experience a decided chill, and hear the rustling of the collapsing balloon, which is now but one-third full, but cannot see it, so dense is the mass of vapour. One, two, three, or more minutes pass, and we are still in the cloud. How thick it must be, considering the rapidity of the descent!

120px

We now near the confines of the clouds, and dip swiftly into the thickest of them; we experience a decided chill, and hear the rustling of the collapsing balloon, which is now but one-third full, but cannot see it, so dense is the mass of vapour. One, two, three, or more minutes pass, and we are still in the cloud. How thick it must be, considering the rapidity of the descent!

https://codepen.io/rachelandrew/pen/RLOxMB

```
.media {
  display: grid;
  grid-template-columns: fit-content(300px) 1fr;
  grid-gap: 20px;
}
```

Chapter Six: Ascents by Messrs Glaisher and Coxwell

We now come to that point in our subject where it is appropriate to give more detailed and graphic accounts of the recent doings of aeronauts. An extremely interesting description of a scientific balloon ascent is given by the celebrated aeronaut, Mr Glaisher, in a pamphlet, from which we shall make a few extracts. (See Note 1.) His description is illustrative of the subject of ballooning, and contains the salient points of several ascents.

He asks us to imagine the balloon somewhat more than half inflated, eager for flight, with only one link connecting it with earth, namely, a rope attached to an instrument, called a liberating iron catch. When all the ballast, instruments, etcetera, were placed in the car, Mr Coxwell brought the balloon to a nice and even balance, so that the addition of twenty pounds would have prevented it from rising.

As the moment for departure drew near, friends became impatient, and every one anxiously watched the final arrangements, which were made by Mr Coxwell, on whom was laid the important duty of letting go. His hand was on the catch, his countenance was fixed, and his expression stern, as he gazed up into the heavens. He was waiting for the right moment, for the sky was partially cloudy, and it was necessary to wait until the balloon was midway between the cloud that had just passed and the next that was approaching, so that the aeronauts might have a clear sky, and be able to see the earth they were about to quit for a time. Nor was this all; he knew that in every wind, however strong it might be, there are periods of calm. If he could start in one of these he would avoid much rotatory motion. The deciding, therefore, of the exact moment for making a fair start was not so easy a matter as one might suppose.

Some one at this critical time, with the characteristic eagerness of poor human nature to “put its finger in the pie,” cried out “Now!” and another shouted “Pull!” but Mr Coxwell, regardless of every one, decided for himself; and, just when the wind lulled and the sun shone bright, and the balloon stood proudly erect, he pulled the trigger and they were free.

But they were more than free. They were suddenly in profound repose, for—however high the wind may be, however agitated the balloon, swaying to and fro with sudden and violent action, despite the efforts of many hands that endeavour to restrain it,—no sooner do aeronauts quit their hold of earth, than, in an instant, all agitation ceases and they are in perfect stillness, without any sense of motion whatever; and this freedom continues throughout the entire flight—except, indeed, when they sink so low as to come into contact with mother earth, when the serenity of their flight is terribly and violently interrupted, as shall be seen in the case of another balloon voyage hereafter to be described.

Chapter Six: Ascents by Messrs Glaisher and Coxwell

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https://codepen.io/rachelandrew/pen/jGRzzv/

```
.panel {
  display: grid;
  grid-gap: 1px;
  grid-template-columns: 1fr 1fr 3fr;
  grid-template-rows:
    minmax(100px, auto)
    minmax(50px, auto)
    minmax(250px, auto)
    minmax(50px, auto)
    minmax(150px, auto);
}
```

Min 50px
Max auto

Chapter Six: Ascents by Messrs Glaisher and Coxwell

We now come to that point in our subject where it is appropriate to give more detailed and graphic accounts of the recent doings of aeronauts. An extremely interesting description of a scientific balloon ascent is given by the celebrated aeronaut, Mr Glaisher, in a pamphlet, from which we shall make a few extracts. (See Note 1.) His description is illustrative of the subject of ballooning, and contains the salient points of several ascents.

He asks us to imagine the balloon somewhat more than half inflated, eager for flight, with only one link connecting it with earth, namely, a rope attached to an instrument, called a liberating iron catch. When all the ballast, instruments, etcetera, were placed in the car, Mr Coxwell brought the balloon to a nice and even balance, so that the addition of twenty pounds would have prevented it from rising.

As the moment for departure drew near, friends became impatient, and every one anxiously watched the final arrangements, which were made by Mr Coxwell, on whom was laid the important duty of letting go. His hand was on the catch, his countenance was fixed, and his expression stern, as he gazed up into the heavens. He was waiting for the right moment, for the sky was partially cloudy, and it was necessary to wait until the balloon was midway between the cloud that had just passed and the next that was approaching, so that the aeronauts might have a clear sky, and be able to see the earth they were about to quit for a time. Nor was this all; he knew that in every wind, however strong it might be, there are periods of calm. If he could start in one of these he would avoid much rotatory motion. The deciding, therefore, of the exact moment for making a fair start was not so easy a matter as one might suppose.

Min 50px
Max auto

Min 50px
Max auto

Chapter Six: Ascents by Messrs Glaisher and Coxwell

We now come to that point in our subject where it is appropriate to give more detailed and graphic accounts of the recent doings of aeronauts. An extremely interesting description of a scientific balloon ascent is given by the celebrated aeronaut, Mr Glaisher, in a pamphlet, from which we shall make a few extracts. (See Note 1.) His description is illustrative of the subject of ballooning, and contains the salient points of several ascents.

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Some one at this critical time, with the characteristic eagerness of poor human nature to “put its finger in the pie,” cried out “Now!” and another shouted “Pull!” but Mr Coxwell, regardless of every one, decided for himself; and, just when the wind lulled and the sun shone bright, and the balloon stood proudly erect, he pulled the trigger and they were free.

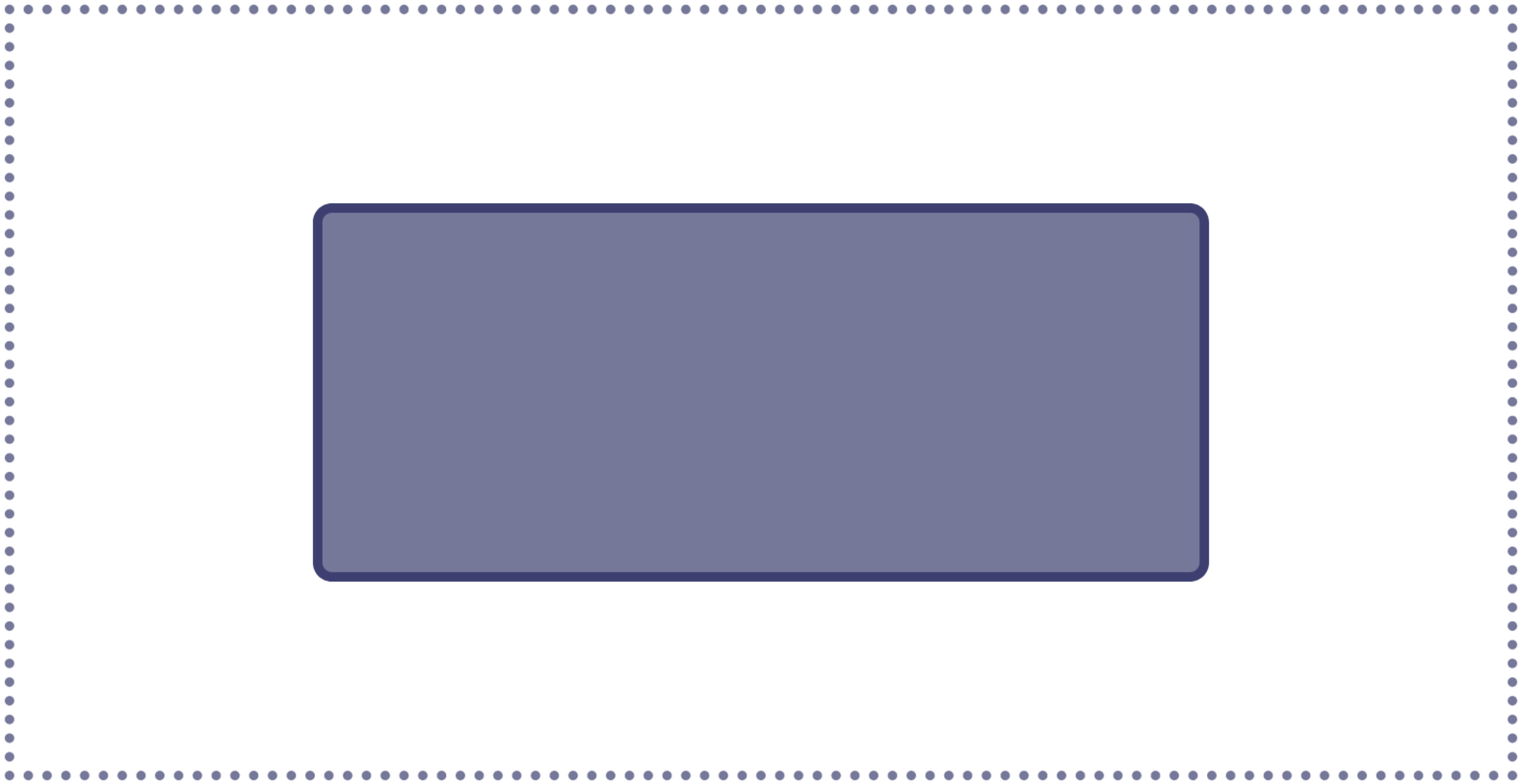
But they were more than free. They were suddenly in profound repose, for—however high the wind may be, however agitated the balloon, swaying to and fro with sudden and violent action, despite the efforts of many hands that endeavour to restrain it,—no sooner do aeronauts quit their hold of earth, than, in an instant, all agitation ceases and they are in perfect stillness, without any sense of motion whatever; and this freedom continues throughout the entire flight—except, indeed, when they sink so low as to come into contact with mother earth, when the serenity of their flight is terribly and violently interrupted, as shall be seen in the case of another balloon voyage hereafter to be described.

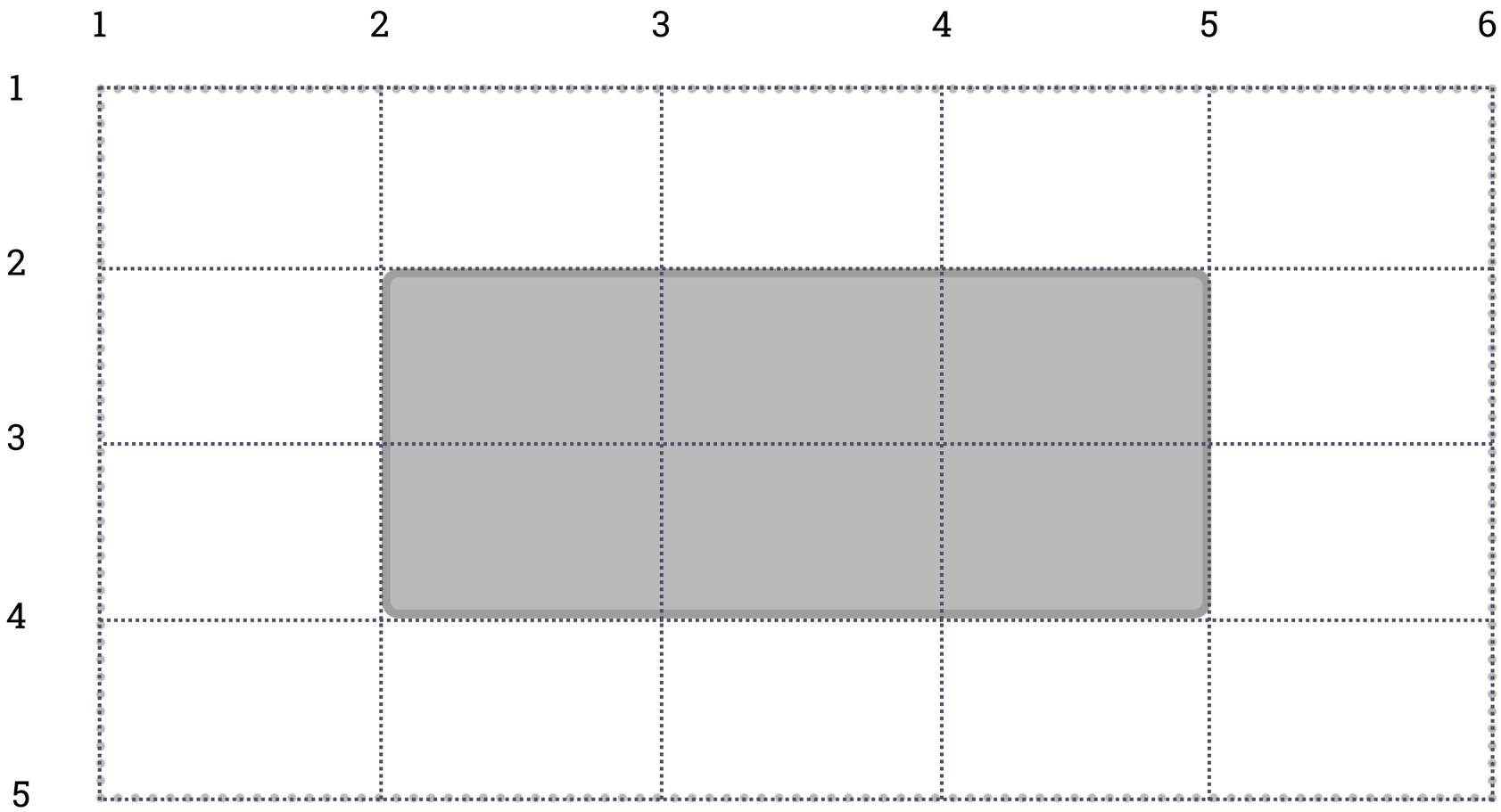
This is not exciting. But it will let you do exciting things.

Why so **complicated**?

More capability & flexibility means more to learn

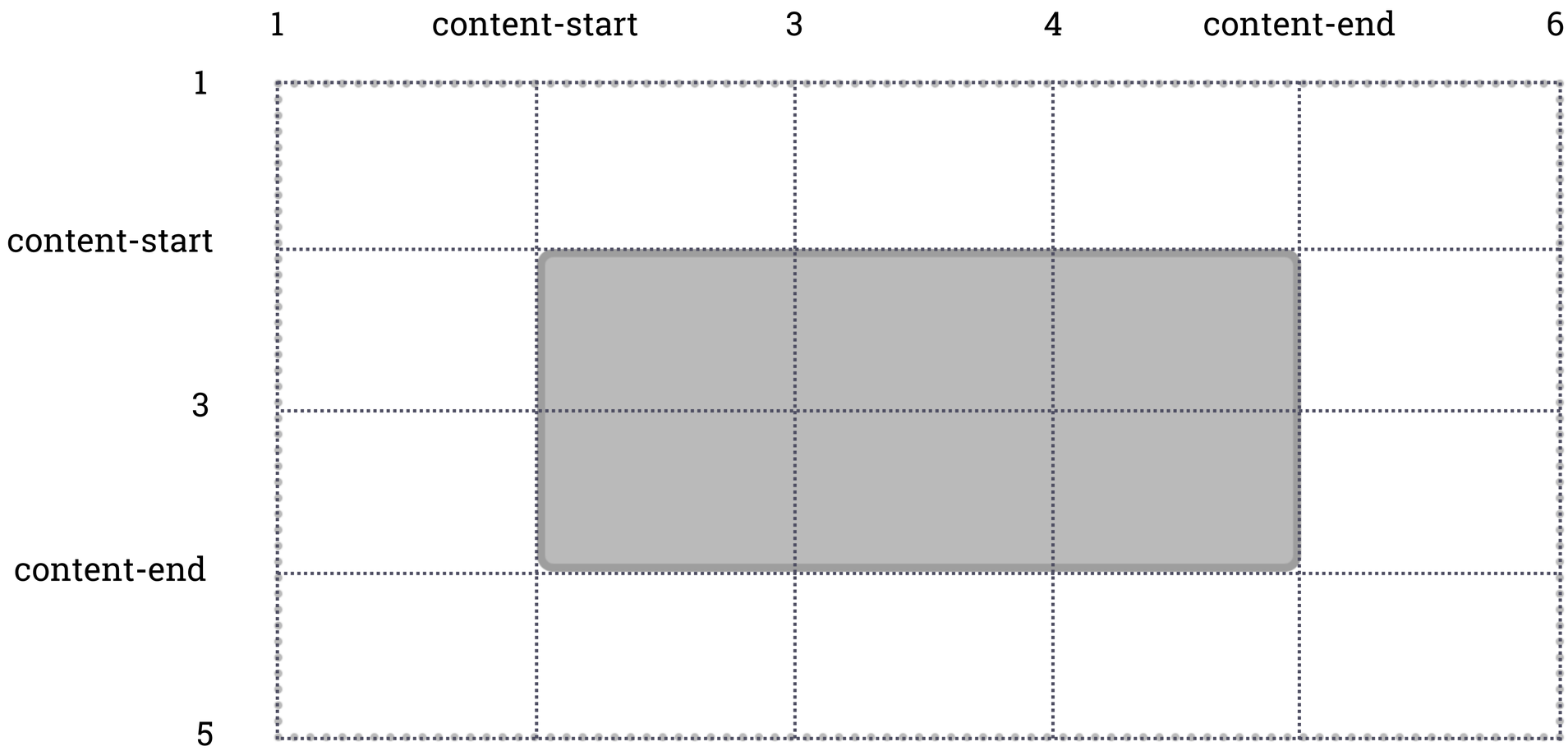
It is all just **lines**.




1
2
3
4
5
6
1
2
3
4
5

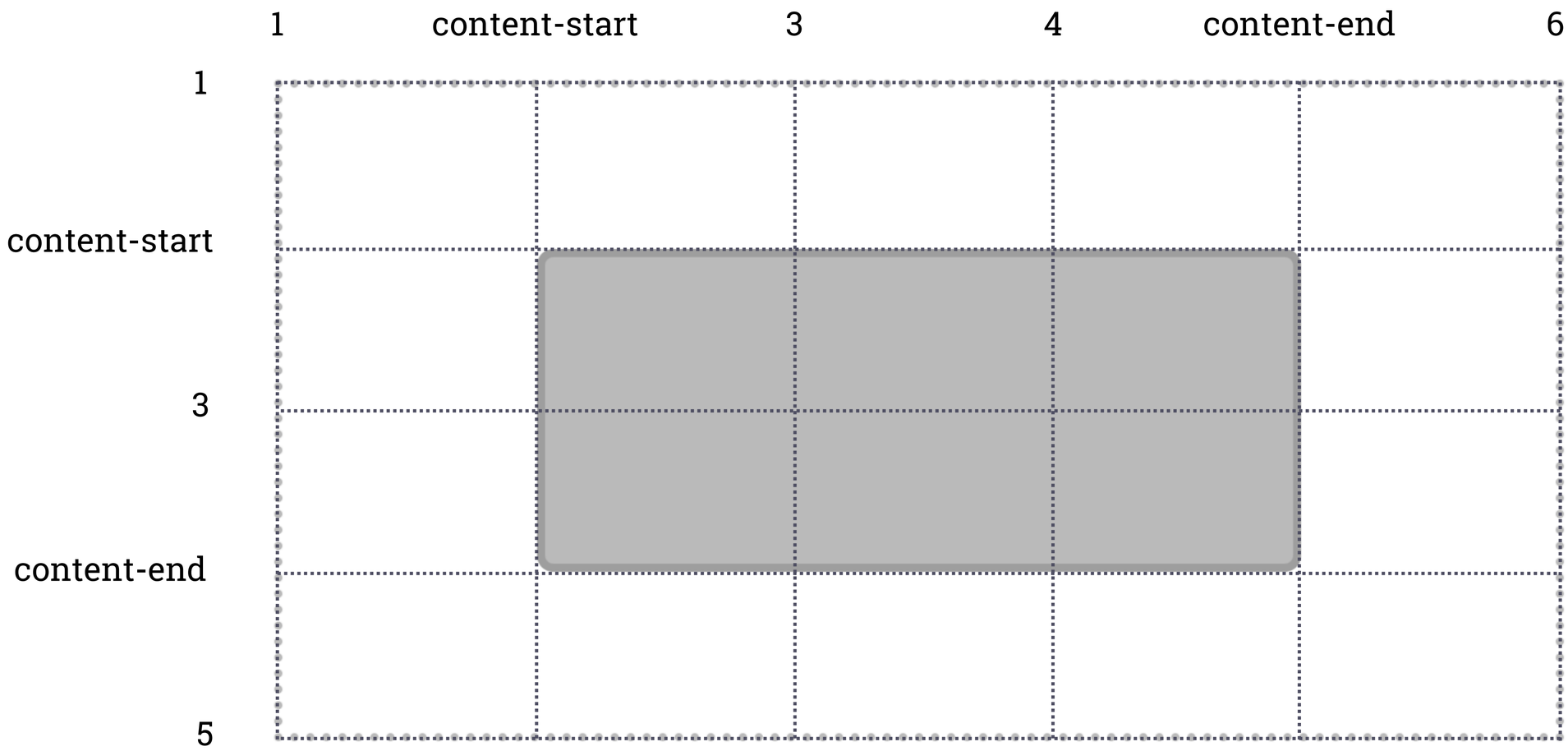
https://codepen.io/rachelandrew/pen/bomPLN/

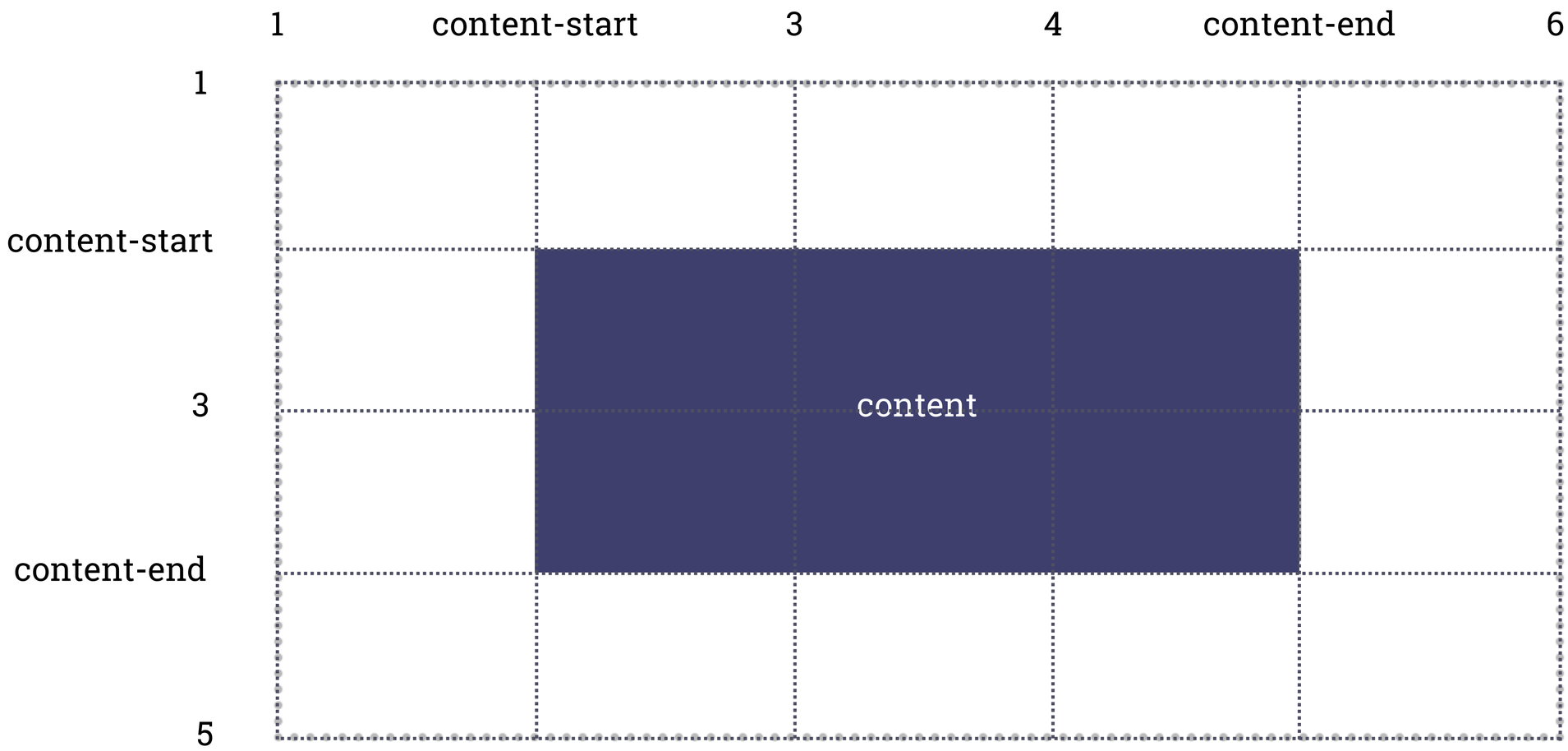
```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr 1fr 1fr;
  grid-template-rows: 100px 100px 100px 100px;
}

.item {
  grid-column: 2 / 5;
  grid-row: 2 / 4;
}
```


1
content-start
3
4
content-end
6
1
content-start
3
content-end
5

https://codepen.io/rachelandrew/pen/oGQXjx/

```
.grid {
  display: grid;
  grid-template-columns: 1fr [content-start] 1fr
1fr 1fr [content-end] 1fr;
  grid-template-rows: 100px [content-start] 100px
100px [content-end] 100px;
}

.item {
  grid-column: content-start / content-end;
  grid-row: content-start / content-end;
}
```


1
content-start
3
4
content-end
6
1
content-start
3
content-end
5


1
content-start
3
4
content-end
6
1
content-start
3
content-end
5
content

https://codepen.io/rachelandrew/pen/QqJbyB/

```
.grid {
  display: grid;
  grid-template-columns: 1fr [content-start] 1fr
1fr 1fr [content-end] 1fr;
  grid-template-rows: 100px [content-start] 100px
100px [content-end] 100px;
}

.item {
  grid-area: content;
}
```

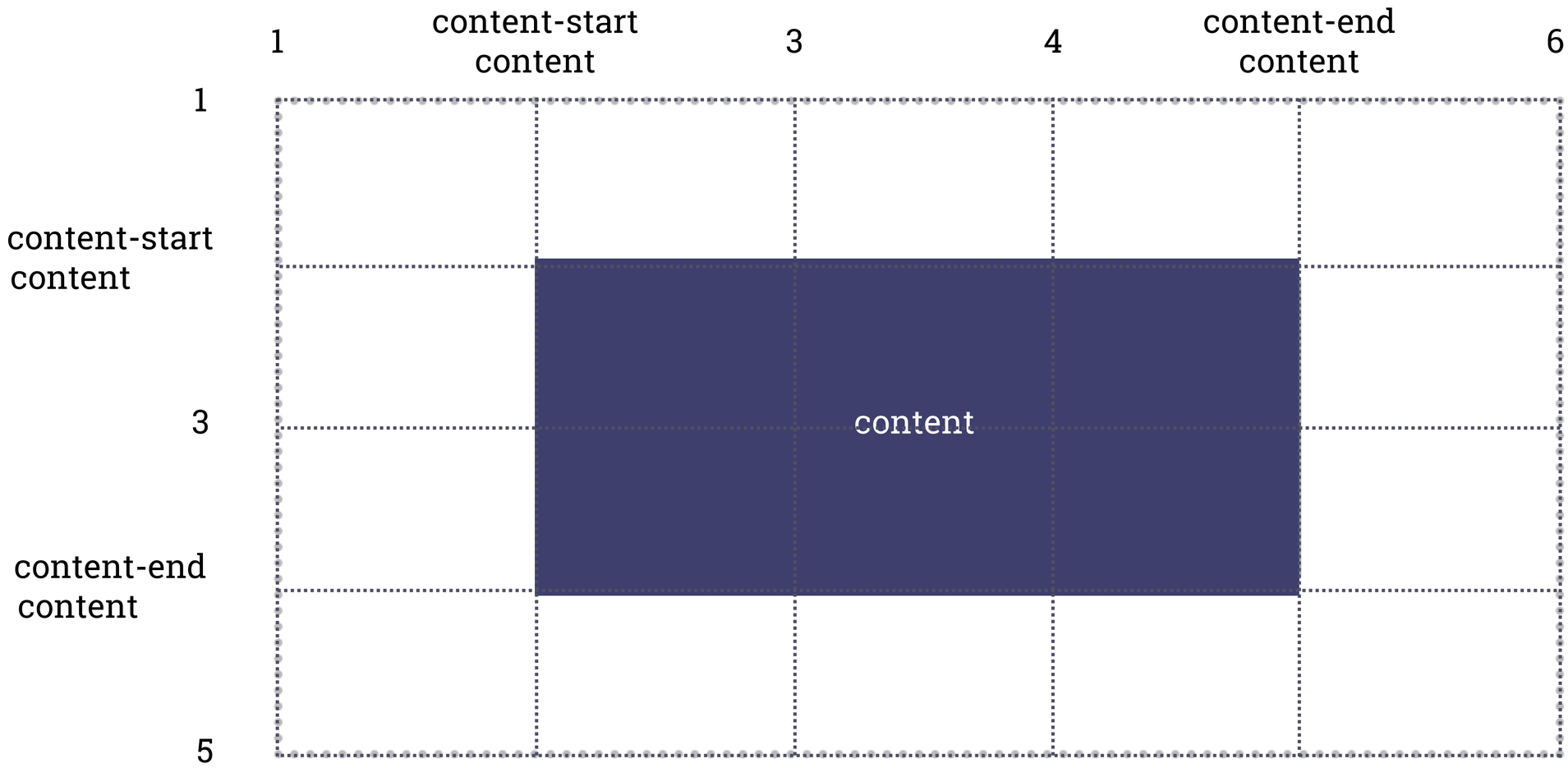
https://codepen.io/rachelandrew/pen/QqJbyB/

```
.grid {
  display: grid;
  grid-template-columns: 1fr [content-start] 1fr
1fr 1fr [content-end] 1fr;
  grid-template-rows: 100px [content-start] 100px
100px [content-end] 100px;
}

.item {
  grid-area: content / content / content / content;
}
```

https://codepen.io/rachelandrew/pen/QqJbyB/

```
grid-area: content / content / content / content;
```

grid-row-start grid-column-start grid-row-end grid-column-end


1
content-start content
3
4
content-end content
6
1
content-start content
3
content
content-end content
5

https://codepen.io/rachelandrew/pen/QqJbyB/

```
grid-area: content / content / content / content;
```

grid-row-start grid-column-start grid-row-end grid-column-end

https://codepen.io/rachelandrew/pen/QqJbyB/

```
grid-area: content / content / content ;
```

grid-row-start grid-column-start grid-row-end

- grid-column-end is set to the value used for grid-column-start, which is ‘content’.

https://codepen.io/rachelandrew/pen/QqJbyB/

```
grid-area: content / content ;
```

grid-row-start grid-column-start

- grid-row-end is set to the value used for grid-column-start, which is ‘content’.
- grid-column-end is set to the value used for grid-column-start, which is ‘content’.

https://codepen.io/rachelandrew/pen/QqJbyB/

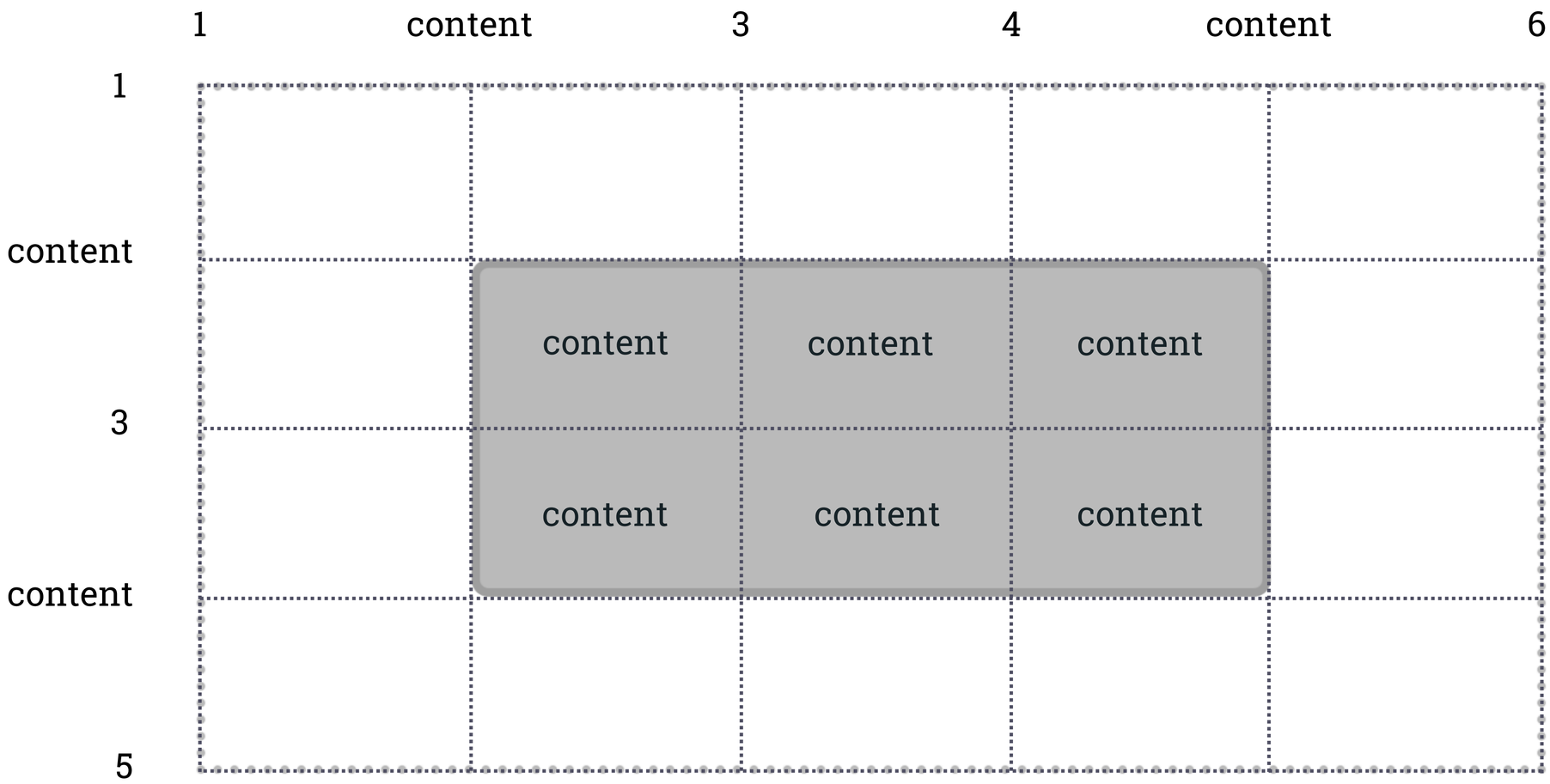
```
grid-area: content ;
```

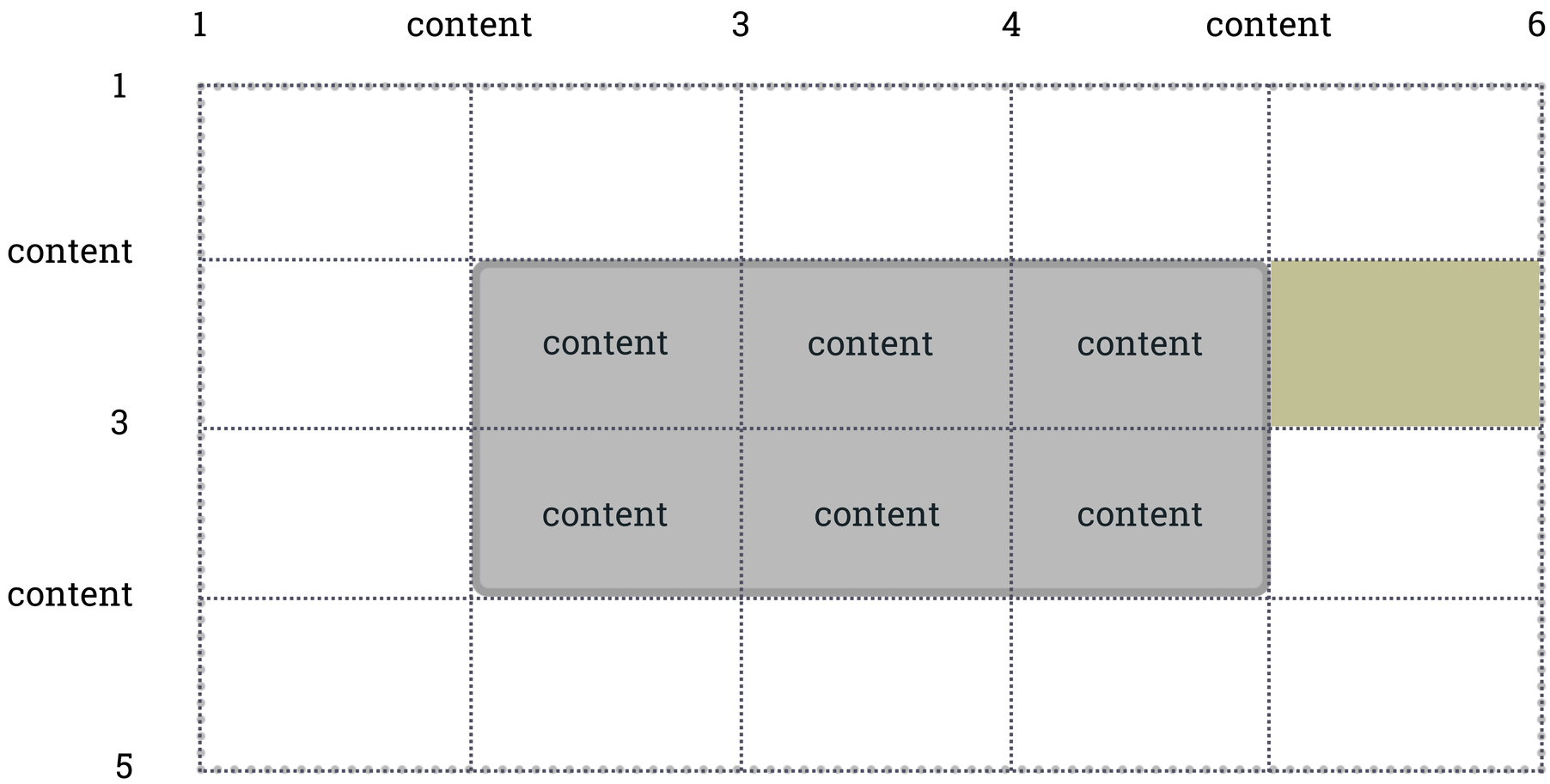
grid-row-start

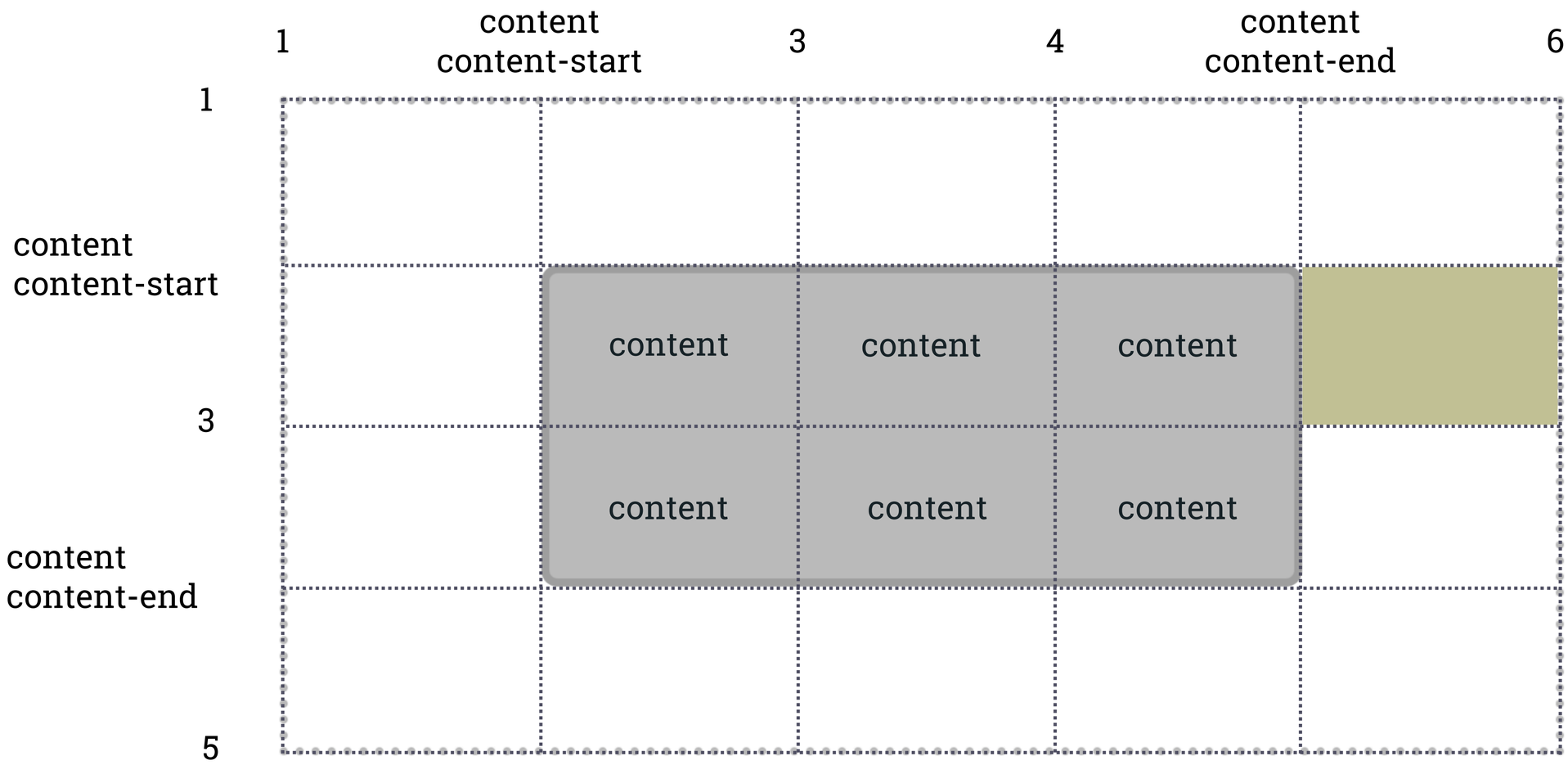
- The other three values are set to the same as grid-row-start, so all are set to ‘content’

https://codepen.io/rachelandrew/pen/xXQGVG/

```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr 1fr  1fr;
  grid-template-rows: 100px 100px 100px 100px;
  grid-template-areas:
    ". . . . ."
    ". content content content ."
    ". content content content ."
    ". . . . ."
}

.item {
  grid-area: content ;
}
```

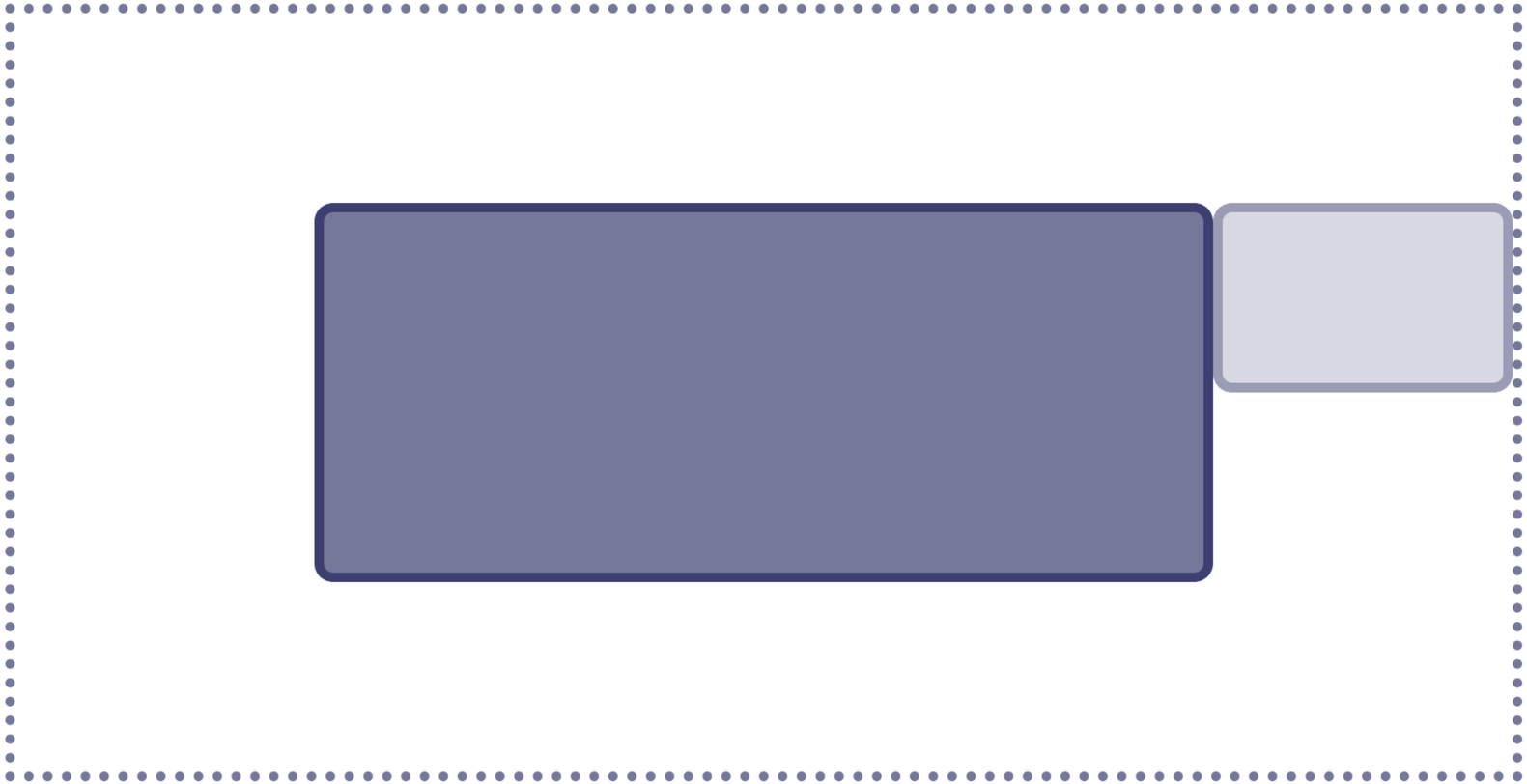

1
content
3
4
content
6
1
content
3
content
5
content
content
content
content
content
content


1
content
3
4
content
6
1
content
3
content
5
content
content
content
content
content
content


1
content
content-start
3
4
content
content-end
6
1
content
content-start
3
content
content
content
content
content
content
content
content-end
5

https://codepen.io/rachelandrew/pen/xXQGVG/

```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr 1fr  1fr;
  grid-template-rows: 100px 100px 100px 100px;
  grid-template-areas:
    ". . . . ."
    ". content content content ."
    ". content content content ."
    ". . . . ."
}
.item {
  grid-area: content ;
}
.item2 {
  grid-row-start: content-start;
  grid-column-start: content-end;
}
```



You have **real choice** for the first time.

What would be the **best method** to achieve this design pattern?

Could we solve this problem with a new design pattern?

Instead of “which patterns does our framework give us to use?”

How old is the oldest CSS in your project?

368

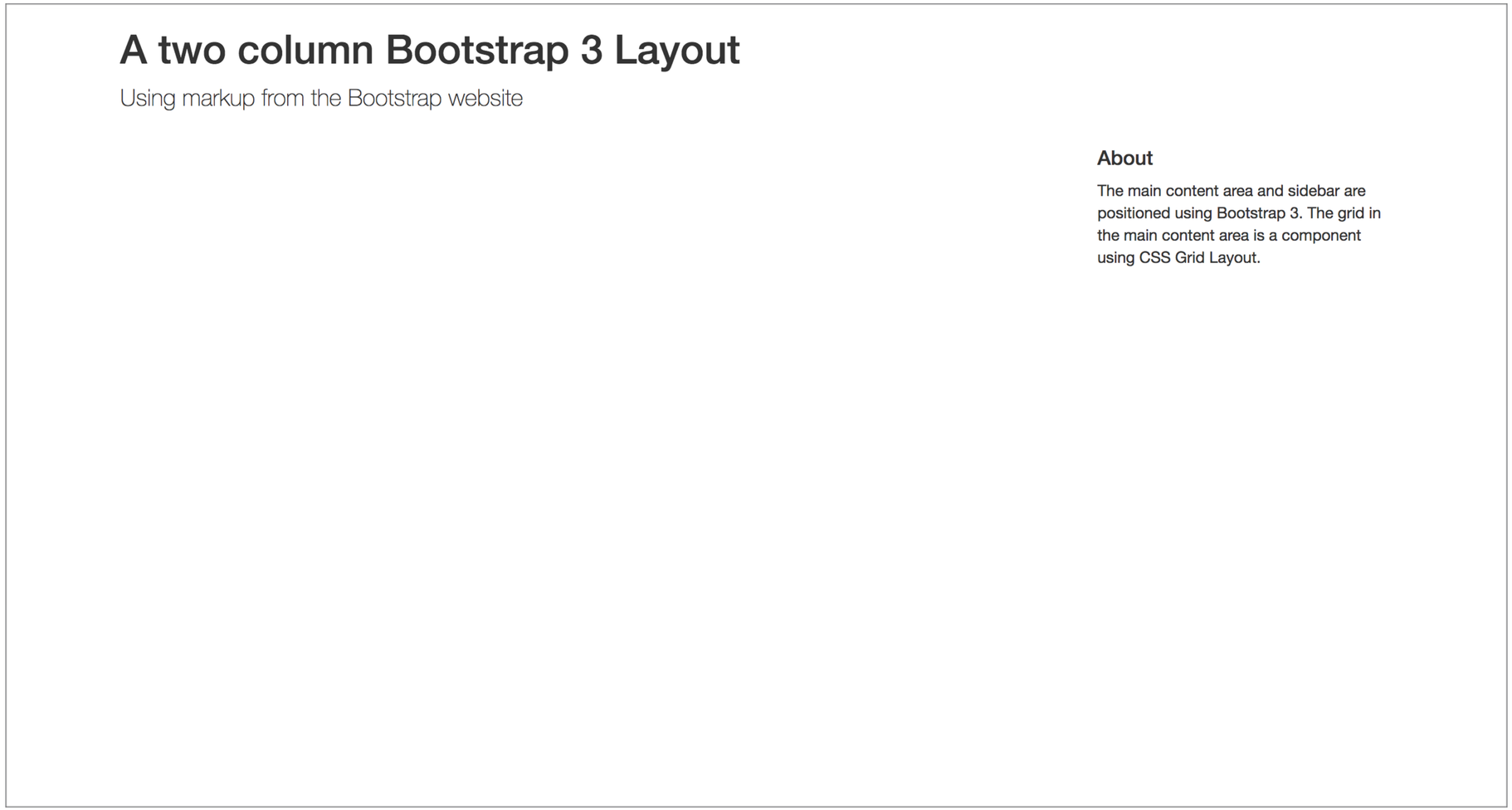
people working on existing projects

29

had CSS in their codebase written 10 years or more ago.

Old CSS in your project doesn’t mean you **can’t** use new CSS.

This is where **understanding CSS** comes in really useful.


A two column Bootstrap 3 Layout
Using markup from the Bootstrap website
About
The main content area and sidebar are positioned using Bootstrap 3. The grid in the main content area is a component using CSS Grid Layout.

A two column Bootstrap 3 Layout

Using markup from the Bootstrap website

Caption

Caption

Caption

Caption

Caption

Caption

About

The main content area and sidebar are positioned using Bootstrap 3. The grid in the main content area is a component using CSS Grid Layout.

https://codepen.io/rachelandrew/pen/wrbwOz/

```
img {
  max-width: 100%;
}
.gallery {
  display: grid;
  grid-template-columns: repeat(auto-fill,minmax(200px,1fr));
  grid-gap: 10px 20px;
  grid-auto-flow: dense;
}

.portrait {
  grid-row-end: span 2;
}

figcaption {
  text-align: center;
  font-size: 1.5em;
}
```

Creating **systems** with new layout.

Other layout methods **still exist**.

Floating the image means the text wraps round.

We now near the confines of the clouds, and dip swiftly into the thickest of them; we experience a decided chill, and hear the rustling of the collapsing balloon, which is now but one-third full, but cannot see it, so dense is the mass of vapour. One, two, three, or more minutes pass, and we are still in the cloud. How thick it must be, considering the rapidity of the descent!

We now near the confines of the clouds, and dip swiftly into the thickest of them; we experience a decided chill, and hear the rustling of the collapsing balloon, which is now but one-third full, but cannot see it, so dense is the mass of vapour. One, two, three, or more minutes pass, and we are still in the cloud. How thick it must be, considering the rapidity of the descent!

Defining a grid on the container means we don’t get the wrapping behaviour.

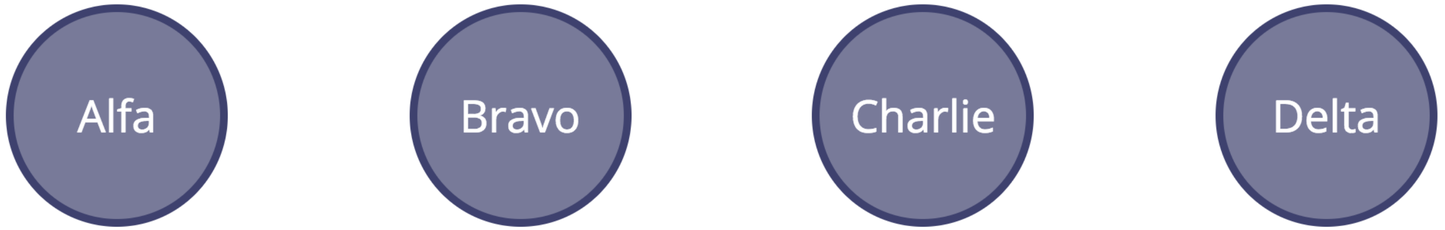
Multi-column layout splits content into equal width columns.

Choose tags

- alfa
- bravo
- charlie
- delta
- echo
- foxtrot
- golf
- hotel
- indigo
- juliet
- kilo
- lima
- mike
- november

Using column-width of 200px means we get more columns if there is room, fewer with less available width.

Flex items with the value of justify-content set to space-between.



I also use flexbox to centre the word in the circle.

You don’t need a **grid-shaped hammer** for every layout task.

Off-the-shelf frameworks are designed to solve **generic** problems.

Do you want your project to inherit the CSS issues of the **rest of the world**?

Build your own framework*

* framework doesn’t mean “all-encompassing behemoth”

Solving **your specific problems only** will result in lighter, easier to understand code

https://codepen.io/rachelandrew/pen/dVEojr/

```
@mixin gridded($type: grid, $col: 20em, $gap: 20px) {
  @if ($type == 'flex') {
    display: flex;
    flex-wrap: wrap;
    margin-left:  -#{$gap} ;
    > * {
      flex: 1 1 $col;
      margin: 0 0 $gap $gap;
    }
  }
  @if ($type == 'grid') {
    display: grid;
    grid-template-columns: repeat(auto-fill, minmax($col,1fr));
    grid-gap: $gap;
  }

  @if ($type == 'multicol') {
    column-gap: $gap;
    column-width: $col;
  }
}
```

https://codepen.io/rachelandrew/pen/dVEojr/

```
.multicol {
  @include gridded('multicol',200px,20px);
}

.grid{
  @include gridded('grid',200px,20px);
}

.flex {
  @include gridded('flex',200px,20px);
}
```

I am flex item 1

I am flex item 2

I am flex item 3

I am flex item 4

I am grid item 1

I am grid item 2

I am grid item 3

I am grid item 4

As the moment for departure drew near, friends became impatient, and every one anxiously watched the final arrangements, which were made by Mr Coxwell, on whom was laid the important duty of letting go. His hand was on the catch, his countenance was fixed, and his expression stern, as he gazed up into the heavens. He was waiting for the right moment, for the sky was partially cloudy, and it was necessary to wait until the balloon was midway between the cloud that had just passed and the next that was approaching, so that the aeronauts might have a clear sky, and be able to see the earth they were about to quit for a time. Nor was this all; he knew that in every wind, however strong it might be, there are periods of calm. If he could start in one of these he would avoid much rotatory motion. The deciding, therefore, of the exact moment for making a fair start was not so easy a matter as one might suppose.

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But they were more than free. They were suddenly in profound repose, for—however high the wind may be, however agitated the balloon, swaying to and fro with sudden and violent action, despite the efforts of many hands that endeavour to restrain it,—no sooner do aeronauts quit their hold of earth, than, in an instant, all agitation ceases and they are in perfect stillness, without any sense of motion whatever; and this freedom continues throughout the entire flight—except, indeed, when they sink so low as to come into contact with mother earth, when the serenity of their flight is terribly and violently interrupted, as shall be seen in the case of another balloon voyage hereafter to be described.

Working with **less capable** browsers.

These may not always be **old browsers**.

A lack of **understanding** on one side.
A lack of **confidence** on the other.

https://web.archive.org/web/20060318055841/http://developer.yahoo.com/yui/articles/gbs/gbs_browser-chart.html

Browser Grades

by Nate Koechley
Senior Web Developer
Yahoo! Inc.
February 13, 2006

This table shows the grade of support that each browser receives. For more information, see Graded Browser Support.

	Win 98	Win 2000	Win XP	Mac 10.0	Mac 10.2	Mac 10.3	Mac 10.3.x	Mac 10.4
IE 7.0	n/a	n/a	A-grade	n/a	n/a	n/a	n/a	n/a
IE 6.0	A-grade	A-grade	A-grade	n/a	n/a	n/a	n/a	n/a
IE 5.5	A-grade	A-grade	n/a	n/a	n/a	n/a	n/a	n/a
IE 5.0	C-grade	C-grade	n/a	C-grade	C-grade	C-grade	C-grade	C-grade
Netscape 8.0	X-grade	X-grade	A-grade	n/a	n/a	n/a	n/a	n/a
Firefox 1.5	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade
Firefox 1.0.7	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade	A-grade
Mozilla 1.7.12	X-grade	X-grade	A-grade	X-grade	X-grade	X-grade	X-grade	X-grade
Opera 8.5	X-grade	X-grade	A-grade	C-grade	C-grade	C-grade	X-grade	X-grade
Safari 1.0	n/a	n/a	n/a	X-grade	n/a	n/a	n/a	n/a
Safari 1.1	n/a	n/a	n/a	X-grade	X-grade	n/a	n/a	n/a
Safari 1.2	n/a	n/a	n/a	X-grade	X-grade	X-grade	n/a	n/a
Safari 1.3	n/a	n/a	n/a	n/a	n/a	X-grade	A-grade	n/a
Safari 2.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	A-grade

Building confidence in your CSS skills will help you to make your case to use newer methods.

(Although quite often asking permission is optional)

Old browser versions

39%

of survey respondents cited IE11 as oldest IE supported.

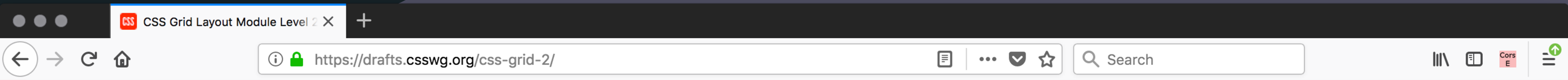
Old browser versions

63%

of survey respondents support IE10+

IE10 & 11 have the `-ms` prefixed older version of grid layout.

For other desktop browsers supporting **the last 2 versions** is common.



W3C Editor's Draft

TABLE OF CONTENTS

CSS Grid Layout Module Level 2

Editor's Draft, 11 June 2018

▸ **Specification Metadata**

Abstract

This CSS module defines a two-dimensional grid-based layout system, optimized for user interface design. In the grid layout model, the children of a grid container can be positioned into arbitrary slots in a predefined flexible or fixed-size layout grid. Level 2 expands Grid by adding "subgrid" capabilities for nested grids to participate in the sizing of their parent grids; and aspect-ratio–controlled gutters.

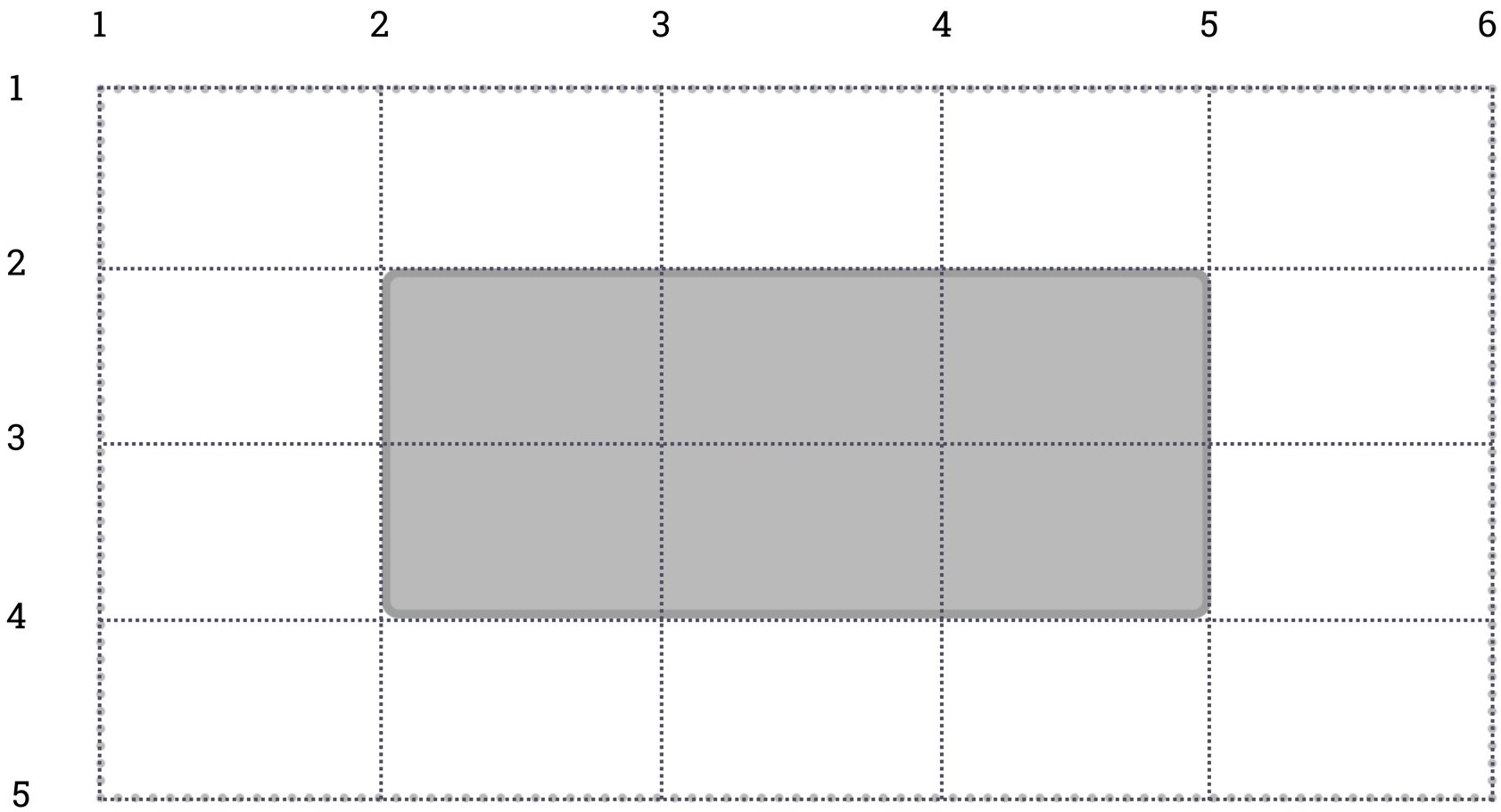
CSS is a language for describing the rendering of structured documents (such as HTML and XML) on screen, on paper, in speech, etc.

Status of this document

This is a public copy of the editors' draft. It is provided for discussion only and may change at any moment. Its publication here does not imply endorsement of its contents by W3C. Don't cite this document other than as work in progress.

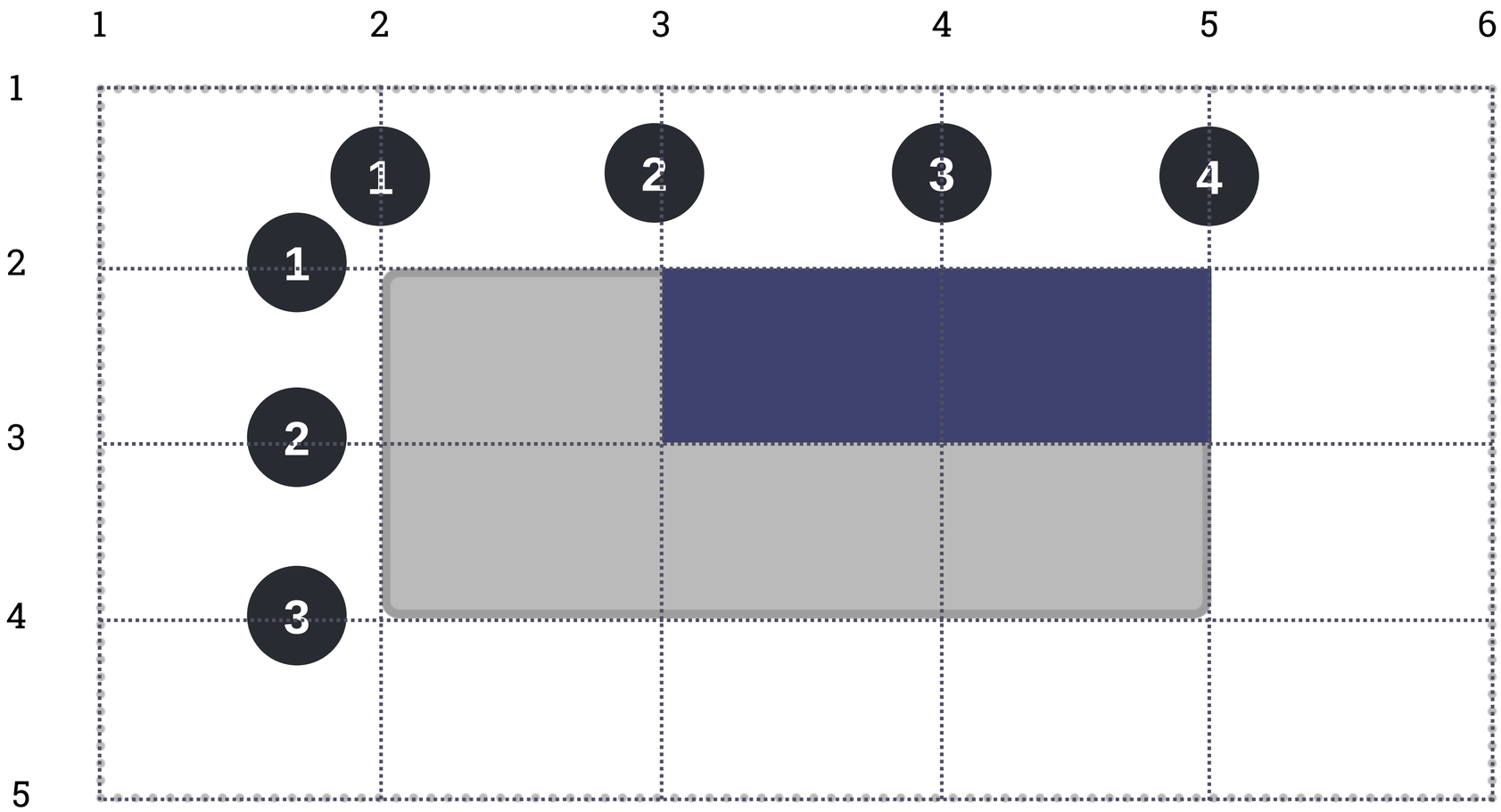
GitHub Issues are preferred for discussion of this specification. When filing an issue, please put the text "css-grid" in the title, preferably like this: "[css-grid] *…summary of comment…*". All issues and comments are archived, and there is also a historical archive.

This document was produced by the CSS Working Group (part of the Style Activity)


1
2
3
4
5
6
1
2
3
4
5

```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr 1fr 1fr;
  grid-template-rows: 100px 100px 100px 100px;
}

.item {
  grid-column: 2 / 5;
  grid-row: 2 / 4;



}
```

```
.grid {
  display: grid;
  grid-template-columns: 1fr 1fr 1fr 1fr 1fr;
  grid-template-rows: 100px 100px 100px 100px;
}

.item {
  grid-column: 2 / 5;
  grid-row: 2 / 4;
  display: grid;
  grid-template-columns: subgrid;
  grid-template-rows: subgrid;
}
```


1
2
3
4
5
6
1
2
3
4
1
2
3
1
2
3
4
5

```
.item {
  grid-column: 2 / 5;
  grid-row: 2 / 4;
  display: grid;
  grid-template-columns: subgrid;
  grid-template-rows: subgrid;
}

.item > div {
  grid-column: 2 / 4;
  grid-row: 1;
}
```

http://caniuse.com/#search=css%20grid (December 2017)

CSS Grid Layout - CR

Global 71.42% + 5.5% = 76.92%

unprefixed: 71.42%

Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Current aligned | Usage relative | Date relative | Show all

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	UC Browser for Android	Samsung Internet
			1 49									
			61			10.2						4
	2 15	56	62	10.1		10.3		4.4				5
2 11	16	57	63	11	48	11.2	all	62	37	62	11.4	6.2
	17	58	64	TP	49							
		59	65		50							
		60	66									

Notes | Known issues (2) | Resources (13) | Feedback

1 Enabled in Chrome through the "experimental Web Platform features" flag in chrome://flags

2 Partial support in IE refers to supporting an older version of the specification.

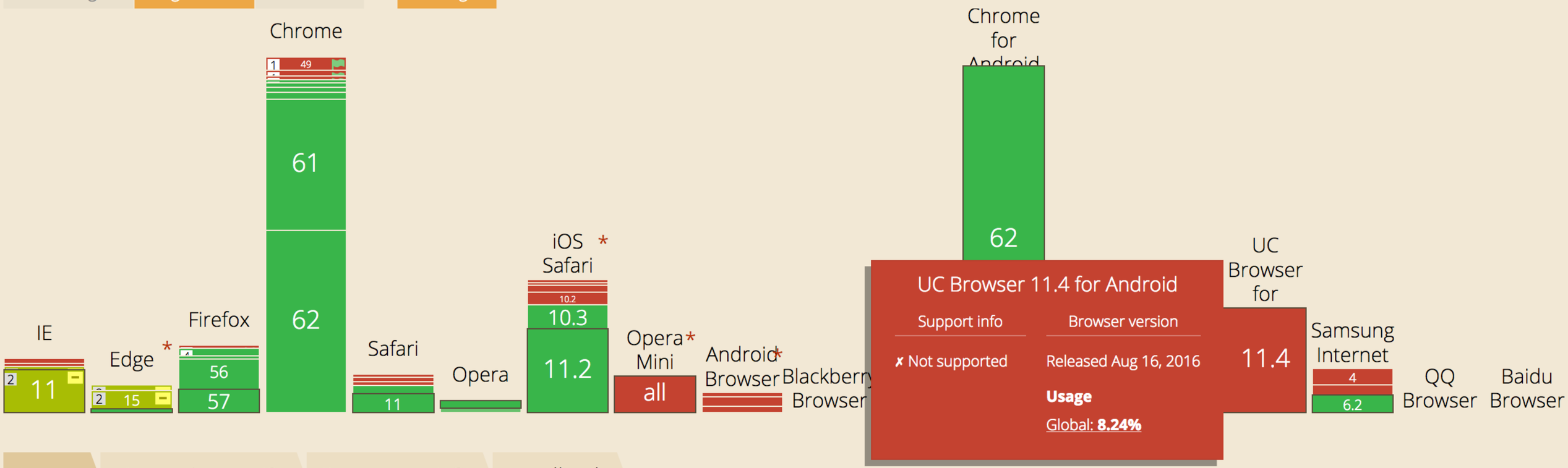
CSS Grid Layout - CR

Global 71.42% + 5.5% = 76.92%

unprefixed: 71.42%

Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Current aligned | Usage relative | Date relative | Showing all



Notes | Known issues (2) | Resources (13) | Feedback

statcounter GlobalStats

Press Releases FAQ About Feedback

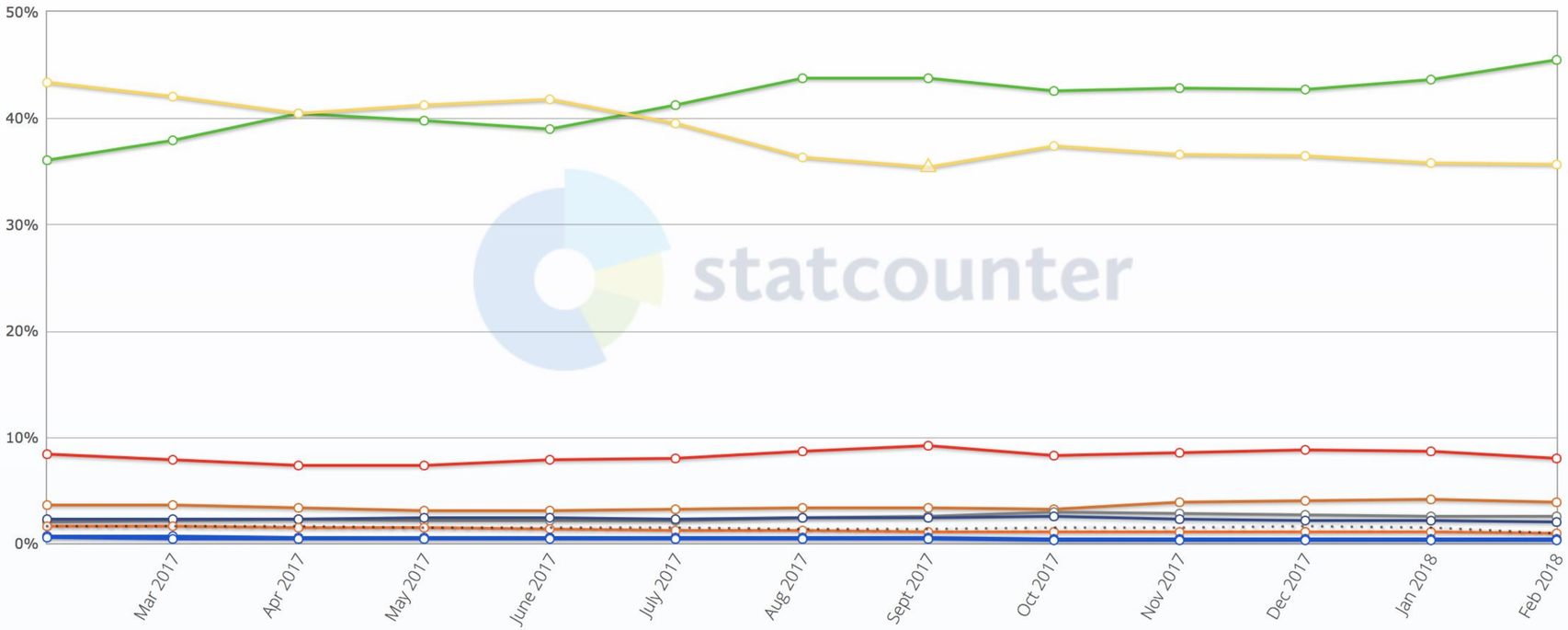
Chrome	UC Browser	Opera	Firefox	Safari	Samsung Internet
45.42%	35.63%	7.92%	3.92%	2.52%	2.05%

Browser Market Share in India - February 2018

Browser Market Share India

Feb 2017 - Feb 2018

Edit Chart Data



Many browsers without support for Grid and other new CSS at this point are **mobile browsers**.

Many of the browsers without support are most popular in areas where data is **expensive** or devices **less powerful.**

“Grid too young and would need a ton of polyfills.”

“Lack of a good css grid polyfill that works with postcss and supports not so old browsers”

–Survey responses

Stop looking for polyfills and shims. They will make the experience **worse** for less capable browsers and devices.

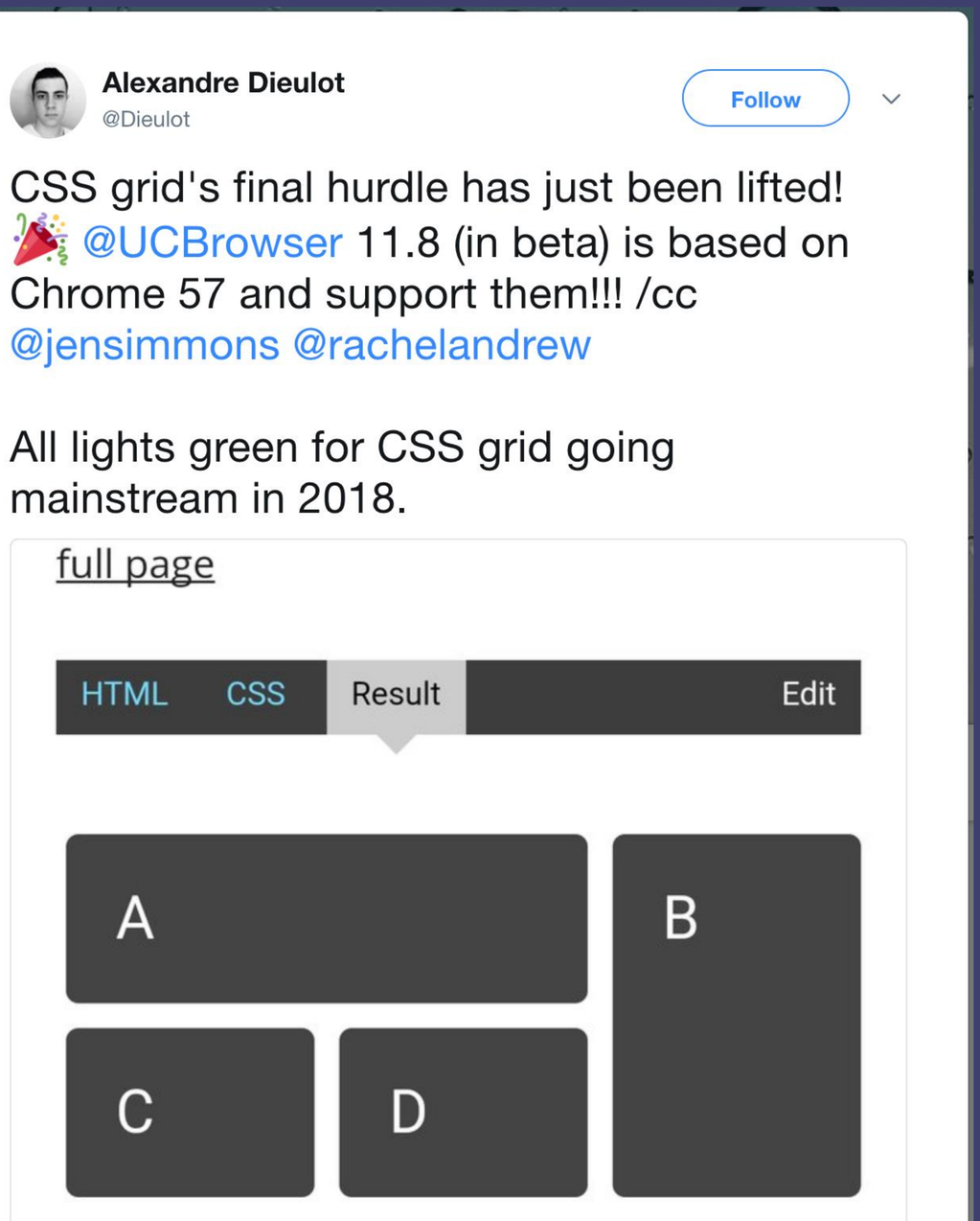
“The time it takes your customer to get the information she came for.”

–Jeffrey Zeldman

Using Grid rather than loading a big framework can help create a better experience even for browsers that **don’t support Grid**.

Feature Queries - use CSS to ask if the browser supports a feature before using it.

https://twitter.com/dieulot/status/938858161699807233



http://gs.statcounter.com/browser-version-market-share/all/india/#monthly-201703-201803

statcounter GlobalStats

Press Releases FAQ About Feedback

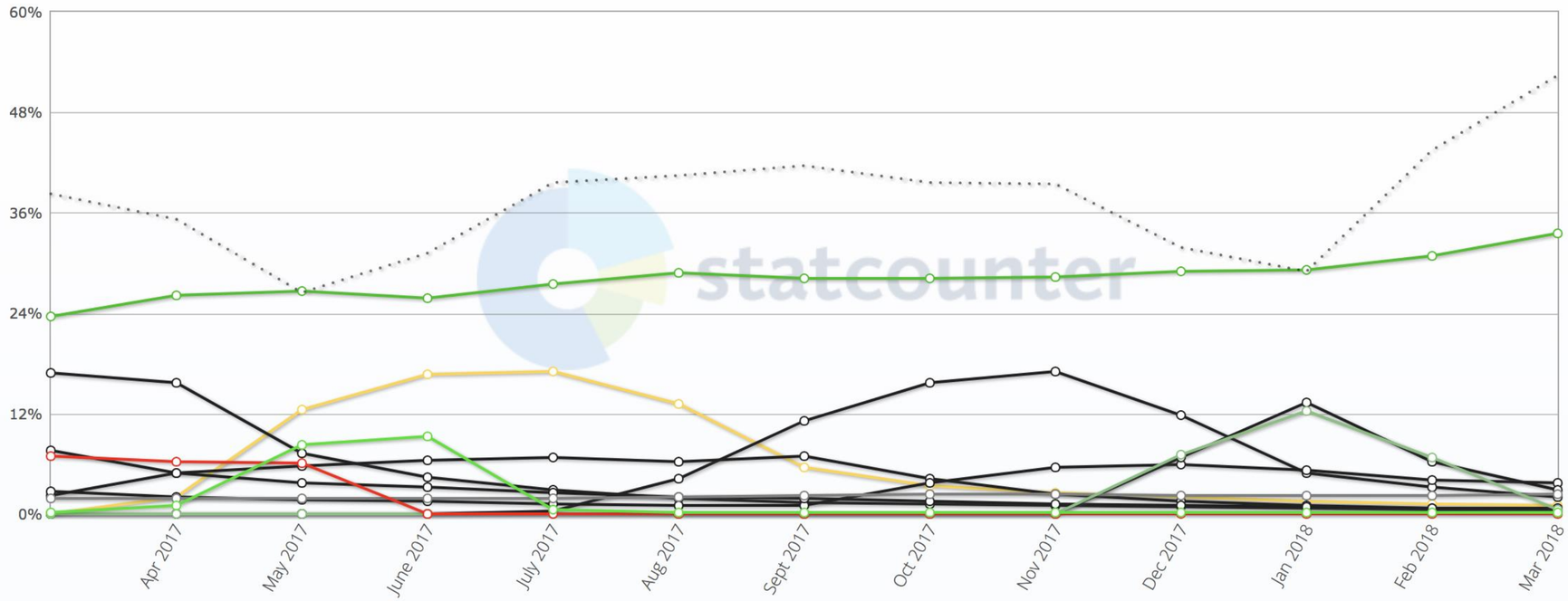
Chrome for Android	UC Browser 12.0	Chrome 63.0	UC Browser 11.5	Chrome 64.0	UC Browser 11.0
30.82%	11.76%	6.68%	6.3%	6.23%	4.05%

Browser Version Market Share in India - February 2018

Browser Version Market Share India

Mar 2017 - Mar 2018

Edit Chart Data



Create complex layouts for browsers that support them **with a few lines of CSS**.

Making the web available to **everyone**.
That’s exciting.

“Q. How do you feel when you see a new CSS feature announced?”

–Me, in a survey question

“Excited!”

Thank you!

@rachelandrew