INDEX

Numbers and Symbols

* (asterisk), as Arbitrary Selector, 26
^ (caret), as Beginning Selector, 23–25
$ (dollar sign), as Ending Selector, 25–26
:: (double colon), for pseudo-elements, 45
= (equal sign), as Exact Attribute Value Selector, 22
~ (tilde), as Partial Attribute Value Selector, 22
| (vertical pipe), as Language Attribute Selector, 22–23
2D transformations
  browser support, 137, 147, 261
  in document flow, 137–138
  with matrices, 144–147
  online resources, 265
  origin, 138–139
2D Transformations Module, 135
3D transformations, 149–163
  browser support, 163, 261
  functions, 151–158
    perspective, 154–155
    rotation around axis, 151–153
    scaling, 156–157
    transformation matrix, 157–158
    translation along axis, 155–156
  online resources, 265
  origin, 160–161
  transform-style property, 161–162
456 Berea Street blog, 44

A

addition, calc() function for, 202
Adjacent Sibling Combinator, 28
::after pseudo-element, 45
align-items property, vertical alignment with, 194–195
alignment
  in flexible box layout, 187
    inside container, 193–197
    of multiple lines, 196–197
  of text, 70
align-self property, cross-axis alignment with, 195
all value, of transition-property property, 167
Alpha color channel, 111, 113–116
  hsla() function for, 118
alternate value, for animation-direction property, 179
and operator
  for chaining multiple media queries, 18
  for feature queries, 252
angle argument, for gradient direction, 123
angle units, 124
animations, 175–183
  animation-delay property, 178
  animation-direction property, 179–180
  animation-duration property, 178
  animation-fill-mode property, 180–181
  animation-iteration-count property, 179
  animation-name property, 177
  animation-play-state property, 181
  animation-timing-function property, 178
  browser support, 183, 261
  clip path, 240
  example, 182–183
  keyframes, 175–177
  multiple, 183
  online resources, 265
  repeating, 179
  shorthand, 181–182
  vs. transitions, 166

Animations Module, 165, 175
Arbitrary Selector, 26–27, 76
ascenders, 57
aspect ratio, for media queries, 17–18
asterisk (*), as Arbitrary Selector, 26
at keyword, with radial gradients, 128
attribute selectors, 21, 22–23
  Arbitrary Selector, 26–27
  Beginning Selector, 23–25
  browser support, 46, 258
  chaining multiple, 27–28
  Ending Selector, 25–26
  Exact Attribute Value Selector, 22
  Language Attribute Selector, 22–23
  Partial Attribute Selector, 22
  Simple Attribute Selector, 22
auto value
  for background-size property, 90
  for column-fill property, 78–79
  for hyphens property, 72
axis, 64–65
  main, 187
  rotation around, 151–153
  translation along, 155–156

B

backface of elements, showing or hiding, 162
backface-visibility property, 162
background-attachment property, 86–87
background-blend-mode property, 226–228
background-clip property, 92, 94
background-color property, 90
background-image property, 15
  linear-gradient() function, 122
background images, 85–95
  blending, 227–228
  for borders, 101–107
  browser support, 95, 260
  clip and origin, 92–94
  color, 90
  dynamically scaled, 90–92
  multiple, 88–90
  online resources, 265
  positioning, 86
  repeating, 87–88
  scrolling, 86–87
  tiling, 87–88
background-origin property, 93, 94
background-position property, 86, 89, 93
background-repeat property, 87–88
Backgrounds and Borders Module, 85, 98–101
background shortcut property, 94
background-size property, 90
backwards keyword
  for animation-fill-mode property, 180
  for column-fill property, 78
bandwidth, mobile-first development and, 19
Basic User Interface Module, 70, 204
::before pseudo-element, 45
Beginning Substring Attribute Value selector, 23–25
bitmap images
  device pixel ratio and, 14–15
  vs. SVG format, 225
blend modes, 226–231
  background-blend-mode property, 226–228
  browser support, 244, 262
  isolation, 230–231
  mix-blend-mode property, 229
  multiple, 228–229
  online resources, 266
block-level flex container, 186
blog comments, markup, 40
blur() function, 231
blur radius
  for box-shadow property, 108
  for text-shadow property, 67
border-box keyword, for background-clip property, 92–94
border-image-outset property, 105–106
border-image-repeat property, 106–107
border-image shorthand property, 107
border-image-slice property, 102–104
border-image-source property, 102
border-image-width property, 104–105
border-radius property, 98
  percentage values for, 101
  shorthand, 99–101
borders, 97
  applying mask, 242
  background images for, 101–107
  browser support, 110, 260
  online resources, 265
  rounded corners for, 97–101
both keyword
  for animation-fill-mode property, 180
  for resize property, 73
  for wrap-flow property, 248

bottom keyword
for perspective-origin property, 159
for transform-origin property, 139
box effects
browser support, 110, 260
online resources, 265
box-shadow property, 107–109
box sizing, 203–204
break-word keyword, for word-wrap property, 71
brightness() function, 232
browser support, 257–262
2D transformations, 137, 147
3D transformations, 163
animations, 183
attribute selectors, 46
background images, 95
blend modes, 244
borders, 110
box effects, 110
color, 119
columns of text, 84
DOM selectors, 46
filter effects, 244
flexible box layout, 197, 198
for future CSS, 255
gradients, 133
grid layout, 224
and legacy gradient syntaxes, 131
masking, 244
media queries, 20
min-content and max-content, 205
opacity, 30, 119
selectors, 30, 46
text effects, 74
transitions, 183
typographic styles, 74
values and sizing, 208
web fonts, 62

C

calc() function, 202
calculated values, 202–203
Candidate Recommendation status, 4
caret (^), as Beginning Selector, 23–25
Cartesian coordinate system, 64, 150
Cascading Style Sheets (CSS)
future possibilities, 245–255
browser support, 255, 262
online resources, 263–266
case sensitivity, of attribute selector value, 24
cells in grid, 210
center, of radial gradient, 128
center keyword
for align-items property, 194, 195
for justify-content property, 193, 194
for perspective-origin property, 159
for transform-origin property, 139
chaining
keyframe selectors, 177
multiple attribute selectors, 27–28
multiple media queries, 18
:checked pseudo-class selector, 43
child elements, 34–39
Chrome
3D transformations, 149
background images, 87
column-fill property, 79
column layout, 76
font-feature-settings property in, 61
font-variant-* properties, 61
and legacy gradient syntaxes, 131
min-content and max-content, 205
prefix for, 5
resize property, 73
resolution media feature, 15
::selection pseudo-element, 46
web fonts, 47
Chunk font, 49
circle, percentage values on border-radius for, 101
circle() function, for clip-path, 236
circle keyword, for radial gradient, 127–128
classes. *See* pseudo-classes
class selectors, 21
clear value, for wrap-flow property, 248
clip keyword, for text-overflow property, 69
clip-path property, 235–241
clip paths, 235, 240–241
clipping, 235–241
closest-corner keyword, for radial gradient, 128–129
closest-side keyword, for radial gradient, 128–129
color, 111–119
Alpha color channel, 113–116
background-color property, 90
blending image with, 227
for box-shadow property, 108
browser support, 119, 260

color *(continued)*
common color equivalents, 117
gradients, 121–133
grayscale(), sepia(), and saturate() functions, 232–233
HSL (Hue, Saturation, Lightness), 116–117
online resources, 265
opacity property, 112–113
RGB (Red, Green, Blue) model, 111
of shadow, 66
Color Module, 111
color picker, for HSL, 117
color stop, 122
for linear gradient, 123–125
for radial gradient, 129–130
column-count property, 76–77
combining with column-width, 79–80
column-fill property, 78
column-gap property, 80–81
column keyword
for flex-direction property, 187
for grid-auto-flow property, 220
column-reverse value, for flex-direction property, 187
column-rule property, 80–81
column-rule-width property, 80
columns of text, 75–84
browser support, 84, 259
containing elements within, 81–82
content distribution across, 78–79
elements spanning multiple, 82–83
gaps and rules, 80–81
layout methods, 76–79
online resources, 264
column-span element, 82–83
columns shorthand property, 80
column-width-color property, 80–81
column-width property, 77–78
combining with column-count, 79–80
column-width-style property, 80–81
combinator, 21
General Sibling Combinator, 28–29
Compositing and Blending Module, 226
Conditional Rules Module, 251
conic gradient, 133
constraint validation pseudo-classes, 44–45
contain keyword, for background-size property, 91–92
content-box keyword, 204
for background-clip property, 92–93
contrast() function, 232
coordinates, 64–65
corners for borders, rounded, 97–101
cosine functions, in matrix transformations, 146
cover keyword, for background-size property, 91–92
cross axis, 187
alignment with align-self property, 195
CSS Pocket Reference (Meyer), 23
CSS3
history, 1–2
modules, 2–3
cubic-bezier() function, 168
for transition-timing-function property, 168–170
currentColor keyword, 118–119
Custom Properties for Cascading Variables Module, 250

D

datetime attribute, 25
decorative elements. *See* background images
degrees, 124
deprecation
of media types, 8
of single colon syntax, 45
Deveria, Alexis, 264
Device Adaptation Module, 252–253
browser support, 255
device-aspect-ratio property, for media queries, 17–18
device-height property, 15–16
device pixel ratio (DPR), 13
device-width property, 15–16
direction keyword, for animation, 171
direction property, 186
direction vector, 153
:disabled pseudo-class selector, 43
discretionary ligatures (dlig), 59, 60
display property, 186
for defining grid, 211
division, calc() function for, 202–203
dlig (discretionary ligatures), 59, 60
document flow, 2D transformations in, 137–138
dollar sign ($), as Ending Selector, 25–26
DOM selectors, 21
browser support, 46, 258

dots per centimeter (DPCM), 14
dots per inch (DPI), 14
dots per pixel (DPPX), 14
double colon (::), for pseudo-elements, 45
drop-shadow() function, 233–234
drop shadows, 65–68, 107–109, 233–234
dynamic columns, 77–78

E

ease-in keyword, for transition-timing-function property, 168
ease-in-out keyword, for transition-timing-function property, 168
ease keyword, for transition-timing-function property, 168
ease-out keyword, for transition-timing-function property, 168
elements. *See also* pseudo-elements
  resizing, 72–73
  size of, 203–207
  spanning multiple columns, 82–83
  text flow around, 248
ellipse() function, for clip-path, 236
ellipse keyword, for radial gradients, 127–128
ellipses
  percentage values on border-radius for, 101
  quarter, 98
ellipsis keyword, for text-overflow property, 69
em (relative unit), 199, 200
Embedded OpenType (EOT) format, 52
:empty pseudo-class, 41
enabled elements, 43
:enabled pseudo-class selector, 43
Ending Substring Attribute Value selector, 25–26
end keyword
  for animation, 171
  for text-align property, 70
  for wrap-flow property, 248
EOT (Embedded OpenType) format, 52
equal sign (=), as Exact Attribute Value Selector, 22
even keyword, 33
ex (relative unit), 199
Exact Attribute Value Selector, 22
Exclusions Module, 247–249
  browser support, 255
expand keyword, for animation-name property, 177
explicit grids
  creating by setting track size, 211
  vs. implicit grids, 221–222
  placing items in, 214–215
expression, evaluating, 11
extent of gradient, 128
external style sheet
  @import rule for, 10
  link element for, 9
extrinsic sizing, 204–207

F

FaaS (Fonts as a Service), 53–54
farthest-corner keyword, for radial gradient, 128–129
farthest-side keyword, for radial gradient, 128–129
feature queries, 251–252
  browser support, 255
  logical operators for, 252
file-type extensions, rules for, 26
fill keyword, 206–207
  for border-image-slice property, 104
filter effects, 231–235
  blur() function, 231
  brightness() and contrast() functions, 232
  browser support, 244, 262
  combining with masking, 243
  drop-shadow() function, 233–234
  grayscale(), sepia(), and saturate() functions, 232–233
  hue-rotate() function, 233
  multiple functions, 234
  online resources, 266
  opacity() function, 233
  in SVG, 235
Firefox
  background images, 87
  column-fill property, 79
  column layout, 76
  font-feature-settings property in, 61
  font formats, 52
  font-size-adjust property, 57
  font-stretch property, 58
  images in column layout, 82
  and legacy gradient syntaxes, 131
  min-content and max-content, 205

Firefox *(continued)*
prefix for, 5
resize property, 73
resolution media feature, 15
::selection pseudo-element, 46
text-overflow property, 70
web fonts, 47
:first-child pseudo-class, 33
::first-letter pseudo-element, 45
::first-line pseudo-element, 45
:first-of-type pseudo-class, 37–38
fit-content keyword, 206
fixed keyword, for background-attachment property, 86
Flash of Unstyled Text (FoUT), 55
flat keyword, for transform-style property, 161
Flexbox. *See* Flexible Box Layout Module
flex container
alignment inside, 193–197
creating, 186
width of, 189
flex-direction property, 186
flex-end value
for align-items property, 194, 195
for justify-content property, 193
Flexible Box Layout Module, 185
alignment, 187
inside container, 193–197
of multiple lines, 196–197
browser support, 197, 198, 261
declaring model, 186
flex-basis property, 191–192
flex-direction property, 187
flex-flow shorthand, 196
flex-grow property, 189–190
flex shorthand, 192–193
flex-shrink property, 191
fully reordering content, 188–189
online resources, 265
reversing content order, 187–188
wrap and flow, 195
flex items, adding to container, 186
flex-start value
for align-items property, 194
for justify-content property, 193, 194
flex-wrap property, 196
flow-from property, 249
flow-into property, 249
Fontdeck, 54, 57
@font-face rule, 47, 48–51
bulletproof syntax, 51–53
font-family property, 48
font features, 59–61
font-feature-settings property, 59
font-kerning property, 61
fonts
controlling loading, 55
defining different faces, 49–50
finding name, 49
formats, 52
licensing for web use, 53–54
OpenType fonts, 58–61
true vs. artificial faces, 50–51
x-height, and ex, 199
Fonts as a Service (FaaS), 53–54
font-size-adjust property, 56–57
font-size property, 199
Fonts Module Level 3, 48
Font Squirrel, @font-face Generator, 53
font-stretch property, 58
font-variant-* properties, 61
forwards keyword, for animation-fill-mode property, 180
FoUT (Flash of Unstyled Text), 55
fraction unit (fr), 211
vs. percentages, 213

G

Gaussian blur, 231
General Sibling Combinator, 28–29
global scope, for variables, 251
Google Fonts, 54
gradians, 124
gradient line, 122
gradients, 121–133
browser support, 133, 260
linear, 122–127
setting direction, 122–123
multiple, 132
online resources, 265
radial, 127–131
graphics. *See* images
grayscale() function, 232–233, 234
grid-area rule, 216
grid areas, 210
names for, 217–219
grid-auto-columns property, 219, 221
grid-auto-flow property, 220
grid-auto-rows property, 219, 221
grid-column-end property, 215
grid-column-start property, 214

grid container, 210, 211
grid items, 210
Grid Layout Module, 185, 209–224
  browser support, 224, 262
  declaring and defining grid, 211–220
  grid items without declared place, 220
  grid placement shorthand, 215–216
  grid-template shorthand, 218–219
  implicit grids, 211, 219–220
    vs. explicit grids, 221–222
  Internet Explorer syntax, 223–224
  named grid areas, 217–218
  online resources, 266
  placing items in explicit grid, 214–215
  repeating grid lines, 216–217
  shorthand, 221–222
  stacking order for grid items, 222–223
  terminology, 210
grid lines, 210
grid-row-end property, 215
grid-row-start property, 214
grid-template-areas property, for placing items in named areas, 217
grid-template-columns property, 211
  repeat() function and, 216–217
grid-template-rows property, 211
grid tracks, 210
  defining, 211
gutter, 216

H

hardware acceleration for graphics, 149
Hay, Stephen, 197
header, for @media, 12–13
height media feature, 13
hexadecimal notation, for color values, 113
hidden keyword, for backface-visibility property, 162
horizontal alignment, with justify-content property, 193–194
horizontal axis, translateX() function for movement on, 140
horizontal value, for resize property, 73
:hover pseudo-class, as trigger, 166
HSL (Hue, Saturation, Lightness), 116–117
hsla() function, 118
hsl() function, 117
HTML content, 165
Hue, Saturation, Lightness (HSL), 116–117
hue-rotate() function, 233
hyperlinks, web protocol for, 24–25
hyphenation, of words, 72

I

images. *See also* background images
  blending two, 227–228
  blending with color, 227
  masking, 241–242
img element, in column layout, 81–82
implicit grids, 211, 219–220
  vs. explicit grids, 221–222
@import rule, 10
indeterminate UI element state, 44
infinite keyword, for animation-iteration-count property, 179
inline-flex value, 186
:in-range pseudo-class, 45
inset() function, for clip-path, 236–237
inset keyword, for box-shadow property, 108
inset-rectangle() function, 238–239
inset shadows, 109
Internet Explorer
  background images, 85, 87
  box model, 203
  column-fill property, 79
  column layout, 76
  Exclusions Module, 248
  Flexbox, 197
  font-feature-settings property in, 61
  font-stretch property, 58
  grid layout syntax, 223–224
  and legacy gradient syntaxes, 131
  local() value in, 52
  prefix for, 5
  Regions Module, 250
  resolution media feature, 15
  ::selection pseudo-element, 46
  vmin and vmax, 202
  web fonts, 47
Intrinsic & Extrinsic Sizing Module, 204–207
:invalid pseudo-class, 44
iPhone, aspect ratio, 17–18

irregular quarter ellipses, 98
shorthand syntax for, 100–101
isolation, 230–231
italic text, 50–51

J

JavaScript, 165
justify-content property, horizontal alignment with, 193–194

K

keyframes, in animations, 175–177
@keyframes rule, 175–177
keywords, for color values, 113

L

landscape value, of orientation property, 16–17
Language Attribute Selector, 23
Last Call status, 4
:last-child pseudo-class, 37–38
:last-of-type pseudo-class, 37–38
left keyword
for perspective-origin property, 159
for transform-origin property, 139
licensing fonts for web use, 53–54
ligatures, 60
lightness, 116, 117
line, between columns, 80
linear gradients, 122–127
adding color-stop values, 123–125
repeating, 126–127
setting direction, 122–123
linear keyword, for transition-timing-function property, 168
line wrap, controlling, 71–72
link element
for external style sheet, 9
media attribute, 7–8, 10
mobile-first development and, 19
loading fonts, control of, 55
load time, mobile-first development and, 19
local keyword, for background-attachment property, 87
local() value, for src property, 48–49, 52
logical operators
for feature queries, 252
for media queries, 11
luminance, 116

M

Magnet Studio's Beginners Guide to OpenType, 59
main axis, 187
manual value, for hyphens property, 72
Marcotte, Ethan, "Responsive Web Design," 10
mask-border-output property, 242
mask-border-repeat property, 242
mask-border-slice property, 242
mask-border-source property, 242
mask-border-width property, 242
mask-clip property, 242
mask-composite property, 242
masking, 235–243
browser support, 244, 262
clipping, 235–241
combining filter effects with, 243
image masks, 241–242
online resources, 266
in SVG, 242–243
mask-mode property, 242
mask-origin property, 242
mask property, 241–242
mask-repeat property, 242
matrices, 2D transformations with, 144–147
matrix() function, 145, 157–158
max-content keyword, 205
max-device-aspect-ratio property, 18
max-height property, 13
maximum keyword, for wrap-flow property, 248
max-resolution media feature, 14
max-width property, 12
MDN (Mozilla Developer Network), 44, 264
measurement, relative length units, 199–202
media attribute of link element, 7–8, 10
Media Queries Module, 8
advantages, 8–9
browser support, 258
media features, 11–18
aspect ratio, 17–18
chaining multiple queries, 18
device width and height, 15–16
orientation, 16–17
pixel rate, 13–15
width and height, 12–13
mobile-first development, 18–19
online gallery, 9

online resources, 264
syntax, 9–11
@media rule, 10–11
Meyer, Eric, *CSS Pocket Reference*, 23
min-content keyword, 205
min-device-aspect-ratio property, 18
min-height property, 13
minimum keyword, for wrap-flow property, 248
min-resolution media feature, 14
min-width property, 12
mix-blend-mode property, 229
mobile-first development, 18–19
mobile-friendly versions, of websites, 8
mobile mode, 16
modules, 2–3
and recommendation process, 3–4
Mozilla, font formats, 52
Mozilla Developer Network (MDN), 44, 264
-moz- prefix, 5
-ms- prefix, 5
Multi-column Layout Module, 75
multiplication, calc() function for, 202–203
Multiply mode, 226

N

named anchor, 40
names
for CSS variables, 250
for flow, 249
for grid areas, 217–219
navigation menu, orientation for display, 16–17
negation pseudo-class, 42
negative value
for flipping element vertically, 142
for transition-delay property, 172
nested calc() function, 203
Next Web (website), 9
none keyword
for animation-fill-mode property, 180
for animation-name property, 177
for hyphens property, 72
for perspective() function, 154
for resize property, 73
for transition-property property, 167
no-repeat value, for background-repeat property, 87
normal value
for animation-direction property, 179
for word-wrap property, 71
not operator, for feature queries, 252
:not() pseudo-class, 42
not value, for @media rule, 11
nowrap value, for flex-wrap property, 196
:nth-* pseudo-class, 33–36
:nth-child() pseudo-class, 34–36
:nth-last-child() pseudo-class, 36
:nth-last-of-type() pseudo-class, 36
:nth-of-type() pseudo-class, 34–36

O

odd keyword, 33
odd-numbered element, selecting, 33–34
online resources, 263–266
:only-child pseudo-class, 39
only value, for @media rule, 11
:only-of-type pseudo-class, 39
opacity
browser support, 119, 260
online resources, 265
opacity() function, 233
opacity property, 111, 112–113
vs. rgba() function, 114
OpenType fonts, 52, 58–61
:optional pseudo-class, 44
order property
for flexible box layout, 188
for grid layout, 223
ordinal group, 188
or expression, for multiple media queries, 18
orientation, of viewing device, 16–17
origin
of 2D transformations, 138–139
of 3D transformations, 160–161
of coordinate system, 64
or operator, for feature queries, 252
:out-range pseudo-class, 45
overflow text, restricting, 69–70
overflow-wrap property, 71
Overlay mode, 226

P

padding-box keyword, for background-clip property, 92–93
parent elements, children of, 34

Partial Attribute Value Selector, 22, 27
paused keyword, for animation-play-state property, 181
percentages, vs. fraction unit (fr), 213
performance
  3D-transformed elements and, 149–150
  graphical effects and, 122
perspective() function, 154
perspective-origin property, 159
perspective property, 159–160
pixel grid, 65
polygon() function, for clip paths, 237–238
portrait value, for orientation property, 16–17
Positioned Layout Module, 253
position property, 253
prefixes, for properties, 5
prescriptive columns, 76–77
presentation, of web page, 165
preserve-3d keyword, for transform-style property, 161
print media type, 10
properties
  changes, transitions and, 166
  custom, 250
  prefix for, 5
Proposed Recommendation status, 4
pseudo-classes, 31
  constraint validation, 44–45
  :empty, 41
  :not(), 42
  online resources, 264
  :root, 41–42
  structural, 32–39
  :target, 40–41
  UI element states, 43–44
pseudo-elements, 31, 45–46
  online resources, 264
pseudo-selectors, 21

Q

quarter ellipses, 98
queries. *See* feature queries; Media Queries Module

R

radial gradients, 127–131
  multiple color-stop values, 129–130
  repeating, 130–131
radial-gradient() value function, 127
radians, 124
recommendation process, for modules, 3–4
Recommendation status, 4
rectangle() function, 239–240
Red, Green, Blue (RGB) model, 111, 113
Red, Green, Blue, Alpha (RGBA) model, 113–115
  and graceful degradation, 115–116
Regions Module, 249–250
  browser support, 255
regular quarter ellipses, 98
  shorthand syntax for, 99
relative length units, 199–202
rel attribute, 22
rem (root em), 200
repeat() function, grid-template-columns property and, 216–217
repeating animations, 179
repeating-linear-gradient() function, 126
repeating-radial-gradient() function, 130–131
repeat keyword
  for background-repeat property, 87
  for border-image-repeat property, 106
repeat-x value, for background-repeat property, 87
repeat-y value, for background-repeat property, 87
required attribute, 44
:required pseudo-class, 44
resize property, 72–73
resizing elements, 72–73
resolution media feature, 14–15
"Responsive Web Design" (Marcotte), 10
reverse play for animation, 179–180
RGB (Red, Green, Blue) model, 111, 113
RGBA (Red, Green, Blue, Alpha) model, 113–115
  and graceful degradation, 115–116
rgba() function, 68, 113–115
right keyword
  for perspective-origin property, 159
  for transform-origin property, 139
root em (rem), 200
:root pseudo-class, 41–42
root-relative units, 200
rotate3d() function, 152–153
rotate function, for transform property, 136–140
rotateX() function, 152

rotateY() function, 152
rotateZ() function, 152
rotation
around axis, 151–153
with skew, 143
rounded corners, for borders, 97–101
round keyword
for background images, 87
for border-image-repeat property, 106
for clip path corners, 237
row keyword
for flex-direction property, 187
for grid-auto-flow property, 220
row-reverse value, for flex-direction property, 187
running keyword, for animation-play-state property, 181

S

Safari
3D transformations, 148, 149
background images, 87
clip path in, 238–240
column-fill property, 79
column layout, 76
Flexbox, 197
font formats, 52
font-variant-* properties, 61
and legacy gradient syntaxes, 131
min-content and max-content, 205
Regions Module, 250
resize property, 73
::selection pseudo-element, 46
text-shadow property, 65
web fonts, 47
-webkit-device-pixel-ratio, 15
saturate() function, 232–233
saturation, 116, 117
Scalable Vector Graphics (SVG), 135, 225
clip paths in, 240–241
filter effects in, 235
font type, 52
masking in, 242–243
scale3d() function, 156–157
scale function, for transform property, 142
scaleZ() function, 156–157
scaling, 156–157
with matrices, 145
screen media type, 10
Screen mode, 226
screen size, physical, 15
scroll keyword, for background-attachment property, 86
::selection pseudo-element, 45–46
selectors, 4, 21–30
attribute selectors, 22–23
browser support, 30, 46, 258
online resources, 264
Selectors Level 3 Module, 21–22
sepia() function, 232–233, 234
shadows
drop, 65–67, 107–109, 233–234
multiple, for text, 67–68
inset, 109
shape-margin property, 247
shape-outside property, 246
Shapes Module, 246–247
browser support, 255
shrinking elements, 191
 (soft-hyphenation symbol), 72
Simple Attribute Selector, 22
sine functions, in matrix transformations, 146
sizing
elements, 72–73, 203–207
fill keyword, 206–207
fit-content keyword, 206
intrinsic and extrinsic, 204–207
max-content keyword, 205
min-content keyword, 205
online resources, 266
and values, browser support, 208, 261
skew functions, for transform property, 143–144
skewing, with matrices, 145
slices for images, 102
small caps font faces, 50
smcp (small caps) OpenType feature, 59–60
space-around keyword, for justify-content property, 193, 194
space between columns, 80–81
space-between keyword, for justify-content property, 193
space keyword, for background images, 87
span keyword, for grid-row-end property, 215
spanning element, 83
spread value, for box-shadow property, 108

src property
for font file, 48
local() value for, 48–49, 52
stacking context, creating, 230
stacking order for grid items, 222–223
start keyword
for text-align property, 70
for wrap-flow property, 248
steps() function, 168, 170–171
sticky positioning, 253–254
browser support, 255
sticky threshold value, 254
stretch keyword
for align-items property, 194, 195
for border-image-repeat property, 106
structural pseudo-classes, 32–39
:first-child pseudo-class, 33
:first-of-type pseudo-class, 37–38
:last-child pseudo-class, 37–38
:last-of-type pseudo-class, 37–38
:nth-* pseudo-class, 33–36
:nth-child() pseudo-class, 34–36
:nth-last-child() pseudo-class, 36
:nth-last-of-type() pseudo-class, 36
:nth-of-type() pseudo-class, 34–36
:only-child pseudo-class, 39
:only-of-type pseudo-class, 39
style sheet
@import rule for external, 10
link element for external, 9
subtraction, calc() function for, 202
@supports rule, 251
SVG (Scalable Vector Graphics), 135, 225
clip paths in, 240–241
filter effects in, 235
font type, 52
masking in, 242–243
SVG 1.1 module, 144
syntax, 4–5

T

tangent functions, in matrix transformations, 145
:target pseudo-class, 40–41
text. *See also* fonts
aligning, 70
controlling line wrapping, 71–72
flowing around elements, 248
outlining, 63
restricting overflow, 69–70
shadows for, 65–68
text-align property, 70
text-direction property, 186
text effects
browser support, 74, 259
online resources, 264
Text Level 3 Module, 63
Text Module, 63
text-overflow property, 69–70
text-shadow property, 65–68
three-dimensional. *See* 3D elements; 3D transformations
tilde (~), as Partial Attribute Value Selector, 22
tiling background images, 87–88
to keyword, for gradient direction, 122–123
top keyword
for perspective-origin property, 159
for transform-origin property, 139
tracks, in grids, 210
transformations. *See* 2D transformations; 3D transformations
transform-origin property, 138–139
of 3D transformations, 160
transform property, 136–144
default values for functions, 144
rotate function, 136–139
scale function, 142
skew function, 143–144
translate function, 140–141
Transforms Module, 135–136
transform-style property, 161–162
transitions, 174. *See also* animations
vs. animations, 166
browser support, 183, 261
conditions for, 166
example, 173–174
multiple, 174–175
online resources, 265
shorthand, 172–173
transition-delay property, 172
transition-duration property, 167, 174
transition-property property, 167, 174
transition-timing-function property, 168–171
Transitions Module, 165
translate3d() function, 156
translate() function, 140–141, 155
translateX() function, 140, 155
translateY() function, 140, 155

trigonometric functions, 145–146
TrueType font format, 52
Typekit, 54
type selectors, 21
typographic styles
    browser support, 74, 259
    online resources, 264

U

UI element states, 43–44
`url()` function
    for borders, 102
    filter ID in, 235

V

`:valid` pseudo-class, 44
values and sizing, browser support, 208, 261
Values and Units Module, 199
    angle units, 124
    calculated values, 202–203
    relative length units, 199–202
        root-relative units, 200
        viewport-relative units, 200–202
variables, 250–251
    browser support, 255
    online resources, 266
Verou, Lea, 170
vertical alignment, with `align-items` property, 194–195
vertical axis, `translateY()` function for movement on, 140
vertical pipe (|), as Language Attribute Selector, 22–23
`vertical` value, for `resize` property, 73
`vh` (viewport height), 201
viewport
    descriptors, 253
    of media type, width, 12–13
    meta tag, 16
    of mobile device browser, 16
    setting properties, 252–253
viewport height (`vh`), 201
viewport-relative units, 200–202
`@viewport` rule, 253
viewport width (`vw`), 201
`visible` keyword, for `backface-visibility` property, 162
`vmax`, 201, 202
`vmin`, 201, 202
`vw` (viewport width), 201

W

Web Font Loader Library, 55
web fonts, 47–62
    browser support, 62, 259
    `@font-face` method, 47, 48–51
    licensing, 53–54
    online resources, 264
    real-world example, 54–55
WebKit, syntax for linear gradients, 131
`-webkit-clip-path`, in Safari, 238
`-webkit-` prefix, 5, 149
    for transition properties, 166
Web Open Font Format (WOFF), 52
web pages, layers, 165
websites
    devices for accessing, 7
    mobile-friendly versions of, 8
web use, licensing fonts for, 53–54
weight of fonts, 49–50
Westciv, 3D effects test page, 151
width
    of flex container, 189
    of text column, 77–78
`width` media feature, 12–13
width-to-height ratio, for media queries, 17–18
WOFF (Web Open Font Format), 52
words, hyphenation, 72
`word-wrap` property, 71
Working Draft status, 3
`wrap-flow` property, 248
`wrap` value, of `flex-wrap` property, 196

X

x-axis, 64
x-height, 56
x-offset, 66
    for text shadow, 68

Y

y-axis, 64
y-offset, 66
    for text shadow, 68

Z

z-axis, 64, 149, 150
zebra striping for tables, 35–36
`z-index` property, 222–223