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
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

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
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
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
ccontent-box keyword, 204
  for background-clip property, 92–93
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
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
ture vs. artificial faces, 50–51
x-height, and ex, 199
Fonts as a Service (FaaS), 53–54
font-size-adjust property, 56–54
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
gradients, 121–133
gradient line, 122
grid areas, 210
grid auto-columns property, 219, 221
g grid-auto-flow property, 220
grid-auto-rows property, 219, 221
grid-column-end property, 215
g 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
hs1a() function, 118
hs1() 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-repaint 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, 7–10
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 ratio, 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
type of, 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
sephia() function, 232–233, 234
shadows
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
&shy; (soft-hyphenation symbol), 72
Simple Attribute Selector, 22
eine 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, 36–38
  `: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