

Material-UI Responsive Design Cheat Sheet

Use this cheat sheet to quickly reference Material-UI's responsive design tools and techniques while building your next project.

Breakpoints

Breakpoints define screen sizes and allow styles to adapt based on the device. Material-UI provides these default breakpoints:

Name	Key	Width (px)
xs	0	Extra small
sm	600	Small
md	960	Medium
lg	1280	Large
xl	1920	Extra large

Usage Examples:

Inline styles with `sx` prop:

```
<Box sx={{ fontSize: { xs: '12px', sm: '14px', md: '16px' } }}>Responsive  
Text</Box>
```

1.

`useTheme` Hook:

```
import { useTheme } from '@mui/material/styles';
```

```
const theme = useTheme();  
console.log(theme.breakpoints.up('sm'));
```

2.

Grid System

The Material-UI Grid system uses a **12-column layout** and Flexbox under the hood.

Prop	Description
<code>container</code>	Defines a flex container
<code>item</code>	Defines a grid item
<code>spacing</code>	Sets spacing between items
<code>xs, sm, md, lg, xl</code>	Number of columns to span for different breakpoints

Example:

```
<Grid container spacing={2}>
  <Grid item xs={12} sm={6} md={4}>
    Content 1
  </Grid>
  <Grid item xs={12} sm={6} md={4}>
    Content 2
  </Grid>
</Grid>
```

Responsive Typography

Adjust font sizes and styles for different devices.

Example:

```
<Typography variant="h1" sx={{ fontSize: { xs: '2rem', sm: '3rem', md:
'4rem' } }}>
  Responsive Heading
</Typography>
```

Hidden Component

Show or hide components based on screen size.

Example:

```
<Hidden smUp>
  <Box>Visible on small screens and below</Box>
</Hidden>

<Hidden smDown>
  <Box>Visible on medium screens and above</Box>
</Hidden>
```

Drawer for Responsive Navigation

Create sliding menus for smaller screens.

Example:

```
<Drawer anchor="left" open={isOpen} onClose={() => setOpen(false)}>
  <List>
    <ListItem button>Home</ListItem>
    <ListItem button>About</ListItem>
    <ListItem button>Contact</ListItem>
  </List>
</Drawer>
```

Box Component with Flexbox

Use the `Box` component for Flexbox-based alignment.

Example:

```
<Box
  display="flex"
  flexDirection={{ xs: 'column', sm: 'row' }}
  justifyContent="center"
  alignItems="center"
>
  <Button>Button 1</Button>
  <Button>Button 2</Button>
```

```
</Box>
```

Image Responsiveness

Ensure images adjust to screen size using Material-UI's `ImageList` or CSS `object-fit`.

Example:

```
<Box
  component="img"
  src="example.jpg"
  sx={{ width: '100%', height: 'auto' }}
  alt="Responsive Image"
/>
```

Spacing and Alignment

Material-UI uses an **8px spacing system** by default.

Prop	Description
<code>spacing</code>	Sets grid gaps (e.g., <code>spacing={2}</code> for 16px)
<code>padding</code>	Padding around elements
<code>margin</code>	Margins around elements

Example:

```
<Box sx={{ p: { xs: 1, sm: 2 }, m: { xs: 1, sm: 2 } }}>
  Spaced Box
</Box>
```

Key Tips

1. **Start Mobile-First:** Use `xs` for default styles and override them for larger breakpoints.
 2. **Use Flexbox Inside Grids:** Combine the `Grid` and `Box` components for layout flexibility.
 3. **Test Across Devices:** Always test your layout on actual devices or responsive design tools.
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Common Patterns

Two-Column Layout:

```
<Grid container spacing={2}>
  <Grid item xs={12} sm={6}>
    Column 1
  </Grid>
  <Grid item xs={12} sm={6}>
    Column 2
  </Grid>
</Grid>
```

Card Layout for Products:

```
<Grid container spacing={3}>
  {products.map((product) => (
    <Grid item xs={12} sm={6} md={4} key={product.id}>
      <Card>
        <CardMedia image={product.image} title={product.name} />
        <CardContent>{product.name}</CardContent>
      </Card>
    </Grid>
  ))}
</Grid>
```

Responsive Footer:

```
<Box
  sx={{
    display: 'flex',
    flexDirection: { xs: 'column', sm: 'row' },
    justifyContent: 'space-between',
    p: 2,
```

```
    }}  
  >  
  <Typography>(c) 2024 Your Company</Typography>  
  <Box>  
    <Link href="/">Privacy</Link>  
    <Link href="/">Terms</Link>  
  </Box>  
</Box>
```

Quick Reference

- **Breakpoints:** `xs`, `sm`, `md`, `lg`, `xl`
- **Grid Props:** `container`, `item`, `spacing`, `xs`, `sm`, `md`, `lg`, `xl`
- **Typography:** Use `sx` for responsive font sizes.
- **Box:** Flexbox helper with `sx` for spacing and alignment.

Save this cheat sheet for quick access during your projects! Share it with your team to keep everyone on the same page. 🚀