

# Week 8-1

# **Perception: Gestalt Principles**

SFWRENG 4HC3/6HC3 Human Computer Interfaces

*\* Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3*

slido

Please download and install the  
Slido app on all computers you use



**Which of the following statements  
is **INCORRECT** about vision?**

① Start presenting to display the poll results on this slide.

# Vision Summary

- Cannot easily detect **color differences in the periphery**
- Certain colors more **easily detectable** (e.g., blue has low sensitivity)
- Need to design for **color blindness/aging users**
- **Don't rely only on color**

# Vision Summary



# Vision Summary



chromostereopsis



Images

Symptoms

Treatment

Test

Videos

Meaning

Examples

Pronunciation

Generator

All filters ▾

Tools

SafeSearch ▾

About 114,000 results (0.31 seconds)

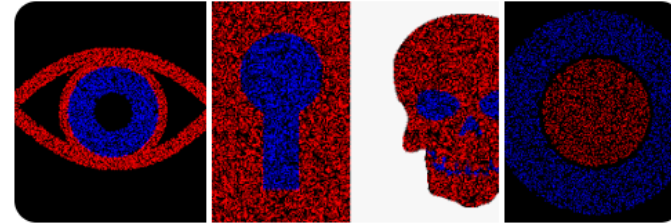
Chromostereopsis is a visual illusion that occurs when certain colors are placed alongside each other, making it unnecessarily difficult to focus on both colors. The illusion is due to the respective wavelengths stimulating different areas within the eye.



The Interaction Design Foundation

<https://www.interaction-design.org> › literature › topics

[What is Chromostereopsis? - The Interaction Design Foundation](#)



[About featured snippets](#) • [Feedback](#)



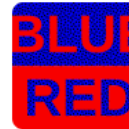
Wikipedia

<https://en.wikipedia.org/wiki/Chromostereopsis>

**Chromostereopsis**

Chromostereopsis is a visual illusion whereby the impression of depth is conveyed in two-dimensional color images, usually of red–blue or red–green colors, ...

[Binocular nature of...](#) · [Reversal effect](#) · [Theory](#) · [Chromatic aberration](#)



**Chromostereopsis**



Chromostereopsis is a visual illusion whereby the impression of depth is conveyed in two-dimensional color images, usually of red–blue or red–green colors, but can also be perceived with red–grey or blue–grey images. [Wikipedia](#)

[Feedback](#)

People also ask

What is an example of chromostereopsis?



What is the theory of chromostereopsis?



### **Lorem ipsum dolor sit amet**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut varius nisi eu eros consectetur, eu efficitur orci tristique. Curabitur diam odio, facilisis vitae turpis eget, bibendum vehicula risus. Aliquam velit elit, sodales vitae cursus vitae, maximus quis massa.

Ut vitae blandit lacus. Cras eu fermentum dui. Nam sollicitudin nisi vel justo lobortis imperdiet. Donec id tempus augue. In nec purus a tellus sagittis semper at eget tortor.

In consectetur laoreet magna at tincidunt. Vivamus nunc est, lobortis at nisi sit semper mollis.

### **Lorem ipsum dolor sit amet**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut varius nisi eu eros consectetur, eu efficitur orci tristique. Curabitur diam odio, facilisis vitae turpis eget, bibendum vehicula risus. Aliquam velit elit, sodales vitae cursus vitae, maximus quis massa.

Ut vitae blandit lacus. Cras eu fermentum dui. Nam sollicitudin nisi vel justo lobortis imperdiet. Donec id tempus augue. In nec purus a tellus sagittis semper at eget tortor.

In consectetur laoreet magna at tincidunt. Vivamus nunc est, lobortis at nisi sit semper mollis.

### **Lorem ipsum dolor sit amet**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut varius nisi eu eros consectetur, eu efficitur orci tristique.

Curabitur diam odio, facilisis vitae turpis eget, bibendum vehicula risus. Aliquam velit elit, sodales vitae cursus vitae, maximus quis massa.

**Aliquam  
lobortis sem  
id orci portti-  
tor, sit amet  
rhoncus nibh  
vulputate.**

*"Ut vitae blandit lacus. Cras eu fermentum dui. Nam sollicitudin nisi vel justo lobortis imperdiet."*

Donec id tempus augue. In nec purus a tellus sagittis semper at eget tortor.

In consectetur laoreet magna at tincidunt. Vivamus nunc est, lobortis at nisi sit semper mollis.

# Week 8 Overview

- **Monday**
  - **Perceptions: Gestalt**
- **Wednesday**
  - Memory
- **Friday**
  - Cognition

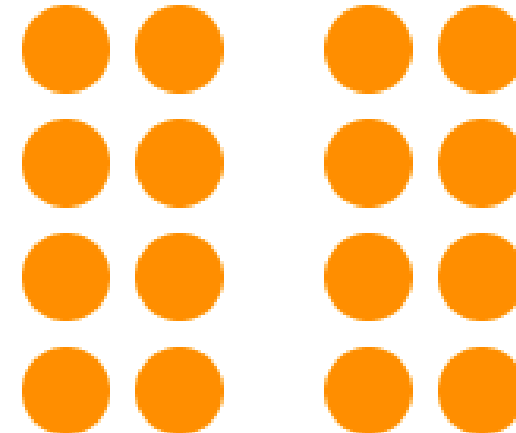
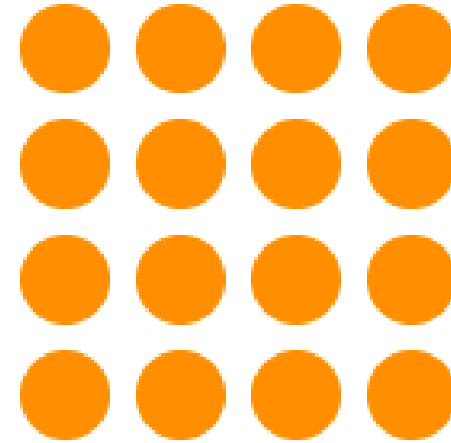
# Gestalt Principles of Perception

Principles about how people perceive patterns or configurations (rather than individual elements):

- Proximity
- Similarity
- Continuity
- Closure
- Area
- Symmetry

# Gestalt: Proximity

Items that are **closer together** will appear to belong together as compared to items that are further away



# Gestalt: Proximity



World U.S. Politics N.Y. Business Opinion Science Health Sports Arts Books Style Food Travel Magazine Real Estate Cooking The Athletic Wirecutter Games

## NEWS

### World News



Russia-Ukraine War: Defense Officials Meet Zelenskyy in Kyiv Ahead of Forum

North Korea May Have Seen Little Benefit in Keeping U.S. Soldier

Nagorno-Karabakh Government Says It Will Disband

### U.S. News



G.O.P. Rivals Attack Trump, and One Another, in Chaotic Debate

Watchdog Urges Extending Surveillance Law With New Limits

In Michigan, Biden and Trump Offer a Preview of 2024

### U.S. Politics



In Michigan, Biden and Trump Offer a Preview of 2024

G.O.P. Rivals Attack Trump, and One Another, in Chaotic Debate

Biden to Create Library Honoring His Friend and Rival John McCain

### New York



In Menendez Case, Prosecutors Confront Tighter Definition of Corruption

An Aristocrat's Grandson, a Precious Desk and a Storage Unit in Queens

Where the Migrants Who Came to New York Are Living Now

### Business



Want to Spur Green Energy in Wyoming? Aim for the Billionaires.

New Trouble Roils China Evergrande, Fueling Real Estate Crisis Fears

Meet the A.I. Jane Austen: Meta Weaves A.I. Throughout Its Apps

### Technology

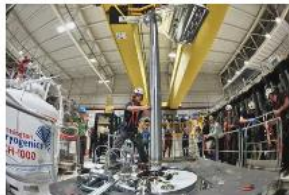


Meet the A.I. Jane Austen: Meta Weaves A.I. Throughout Its Apps

To Bring Socializing Back to Social Networks, Apps Try A.I. Imagery

With Meta's Quest 3, Mixed Reality Is Here. So Now What?

### Science



Nothing's the Matter With Antimatter, New Experiment Confirms

To Knock an Elephant Off Balance, Bring Out a Giant Blindfold

Satellites Show Mysterious Fairy Circles in More Parts of the World

### Sports



The Collapse That Led to the Yankees' Most Miserable Season in 30 Years

The Bucks Landed Damian Lillard. They Aren't the Only Winner in the Trade.

The Jets Find Themselves in a Quarterback Conundrum. Now What?

### Obituaries



Michael Gambon, British Actor Who Played Dumbledore in 'Harry Potter,' Dies at 82

M. S. Swaminathan, Scientist Who Helped Conquer Famine in India, Dies at 98

Endel Tulving, Whose Work on Memory Reshaped Psychology, Dies at 96

### The Upshot



What Polling After the First Debate Tells Us About Round 2

Flashback: Your Weekly History Quiz, September 24, 2023

It's Not a Race, Yet, in the Republican Primary

# Proximity: Grouping

**White space** is more powerful:

- Both convey groupings, but the one on the right is much cleaner

Text1:	<input type="text"/>
Text2:	<input type="text"/>

Text3:	<input type="text"/>
Text4:	<input type="text"/>
Text5:	<input type="text"/>

Text1:	<input type="text"/>
Text2:	<input type="text"/>

Text3:	<input type="text"/>
Text4:	<input type="text"/>
Text5:	<input type="text"/>

# Proximity: Grouping

**1 Select departing flight** **Two free checked bags** with all economy fares for flights operated by Air Canada.

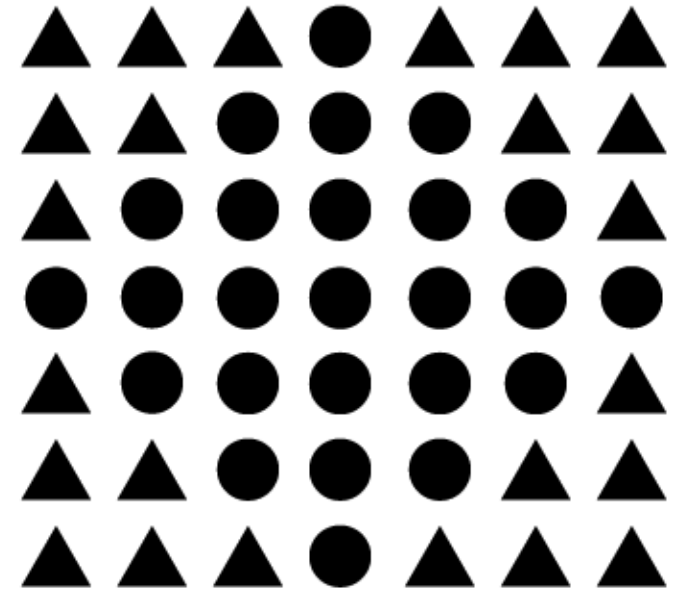
Day's lowest fare→		Sat 19-Sep \$205	Sun 20-Sep \$205	Mon 21-Sep \$149	Tue 22-Sep \$149	Wed 23-Sep \$149	Thu 24-Sep \$149	Fri 25-Sep \$205	Sat 26-Sep \$205	Sun 27-Sep \$205	Mon 28-Sep \$149	Tue 29-Sep \$149
From: <b>Winnipeg, MB (YWG)</b>												
To: <b>Ottawa, Ottawa Int'l, ON (YOW)</b> <a href="#">Compare our fare options</a>												
Op.	Flights	Depart	Arrive	Aircraft	Connections	Tango	Tango Plus	Latitude	Executive Class Lowest	Executive Class Flexible		
<b>Direct Flights</b>												
✶1	AC8526	08:35	11:56	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶1	AC8528	14:55	18:16	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶1	AC8524	20:00	23:21	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
<b>Connecting Flights</b>												
✶	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC446	10:10	11:10	E90								
✶	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC448	11:10	12:10	E90								
✶	AC260	07:40	10:58	319	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC450	12:10	13:10	321								
✶	AC260	07:40	10:58	319	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC452	13:10	14:10	319								
✶	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶	AC452	13:10	14:10	319								
✶	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶	AC454	14:10	15:10	321								
✶	AC264	10:35	13:53	320	Toronto (YYZ)	<input type="radio"/> \$494	<input type="radio"/> \$579	<input type="radio"/> \$899	-	<input type="radio"/> \$1385		



# Gestalt: Similarity

Items that share **basic visual characteristics** will be seen as **belonging together**

- Size
- Color
- Texture
- Orientation

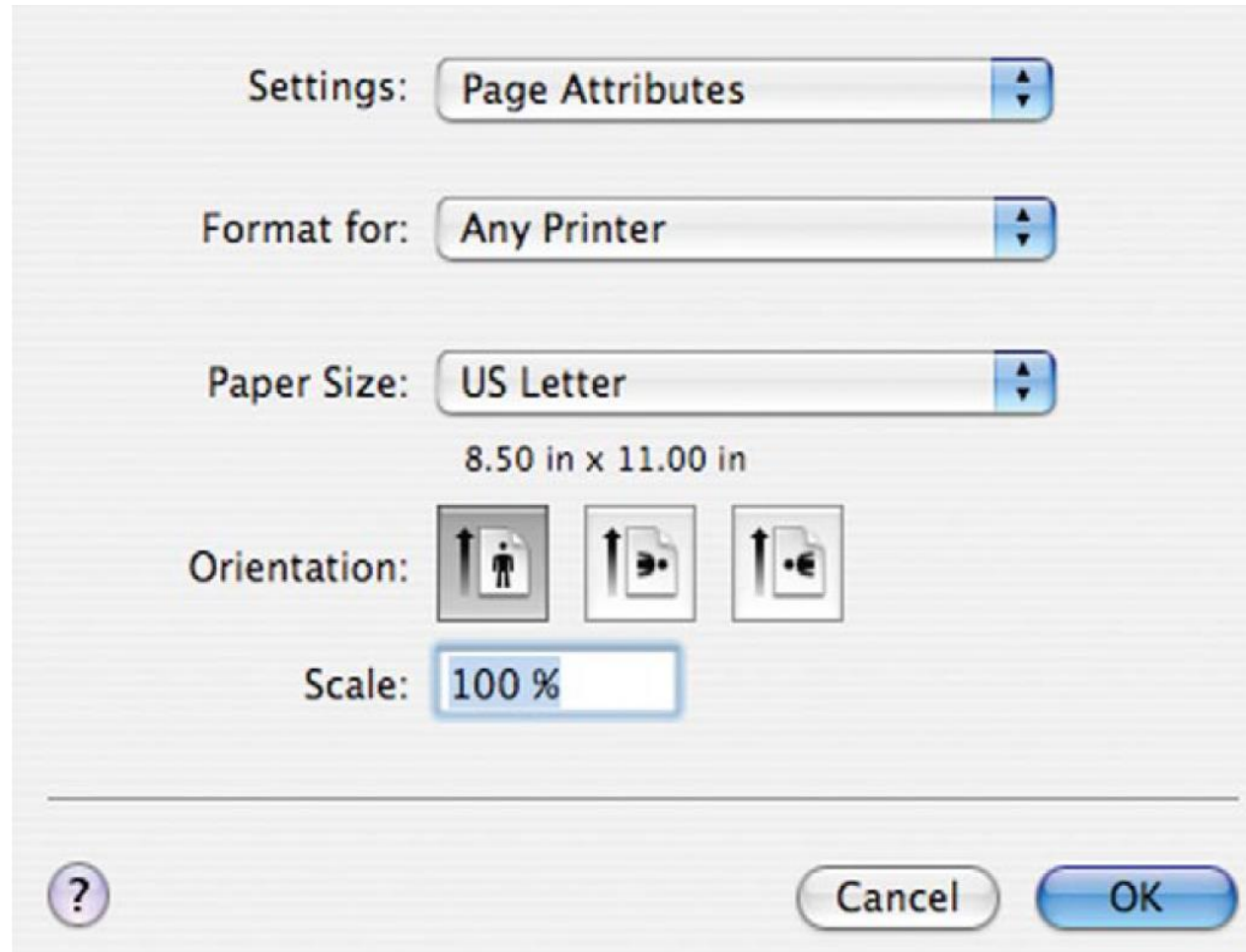


# Similarity: Grouping

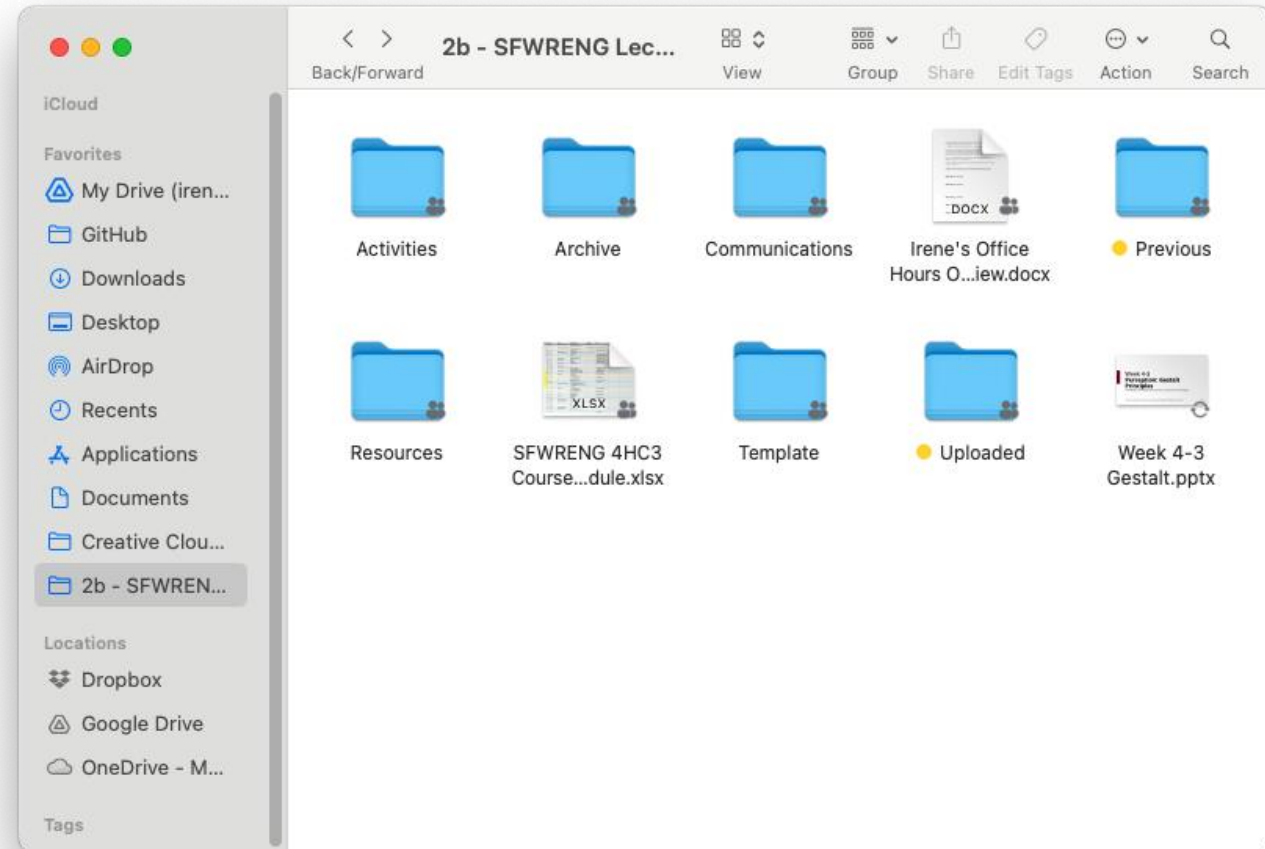
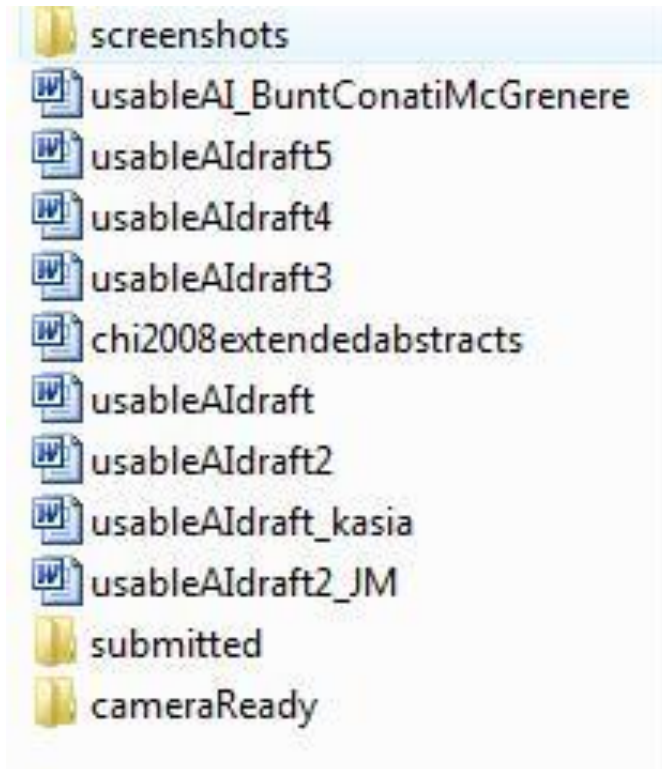
**1 Select departing flight** **Two free checked bags** with all economy fares for flights operated by Air Canada.

Day's lowest fare →		Sat 19-Sep \$205	Sun 20-Sep \$205	Mon 21-Sep \$149	Tue 22-Sep \$149	Wed 23-Sep \$149	Thu 24-Sep \$149	Fri 25-Sep \$205	Sat 26-Sep \$205	Sun 27-Sep \$205	Mon 28-Sep \$149	Tue 29-Sep \$149
From: <b>Winnipeg, MB (YWG)</b> To: <b>Ottawa, Ottawa Int'l, ON (YOW)</b> <a href="#">Compare our fare options</a>												
Op.	Flights	Depart	Arrive	Aircraft	Connections	Tango	Tango Plus	Latitude	Executive Class Lowest	Executive Class Flexible		
<b>Direct Flights</b>												
✶1	AC8526	08:35	11:56	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶1	AC8528	14:55	18:16	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶1	AC8524	20:00	23:21	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
<b>Connecting Flights</b>												
✶	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC446	10:10	11:10	E90								
✶	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC448	11:10	12:10	E90								
✶	AC260	07:40	10:58	319	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC450	12:10	13:10	321								
✶	AC260	07:40	10:58	319	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385		
✶	AC452	13:10	14:10	319								
✶	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶	AC452	13:10	14:10	319								
✶	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385		
✶	AC454	14:10	15:10	321								
✶	AC264	10:35	13:53	320	Toronto (YYZ)	<input type="radio"/> \$494	<input type="radio"/> \$579	<input type="radio"/> \$899	-	<input type="radio"/> \$1385		

# Similarity: Grouping



# Similarity: Grouping



# Similarity: Repetition in Design

Similarity helps a reader  
**group similar objects** or  
to **recognize patterns** in  
meaning

**Lorem** ipsum dolor sit amet,  
consectetur adipisicing elit, sed do  
eiusmod tempor incididunt ut  
labore et dolore magna aliqua.

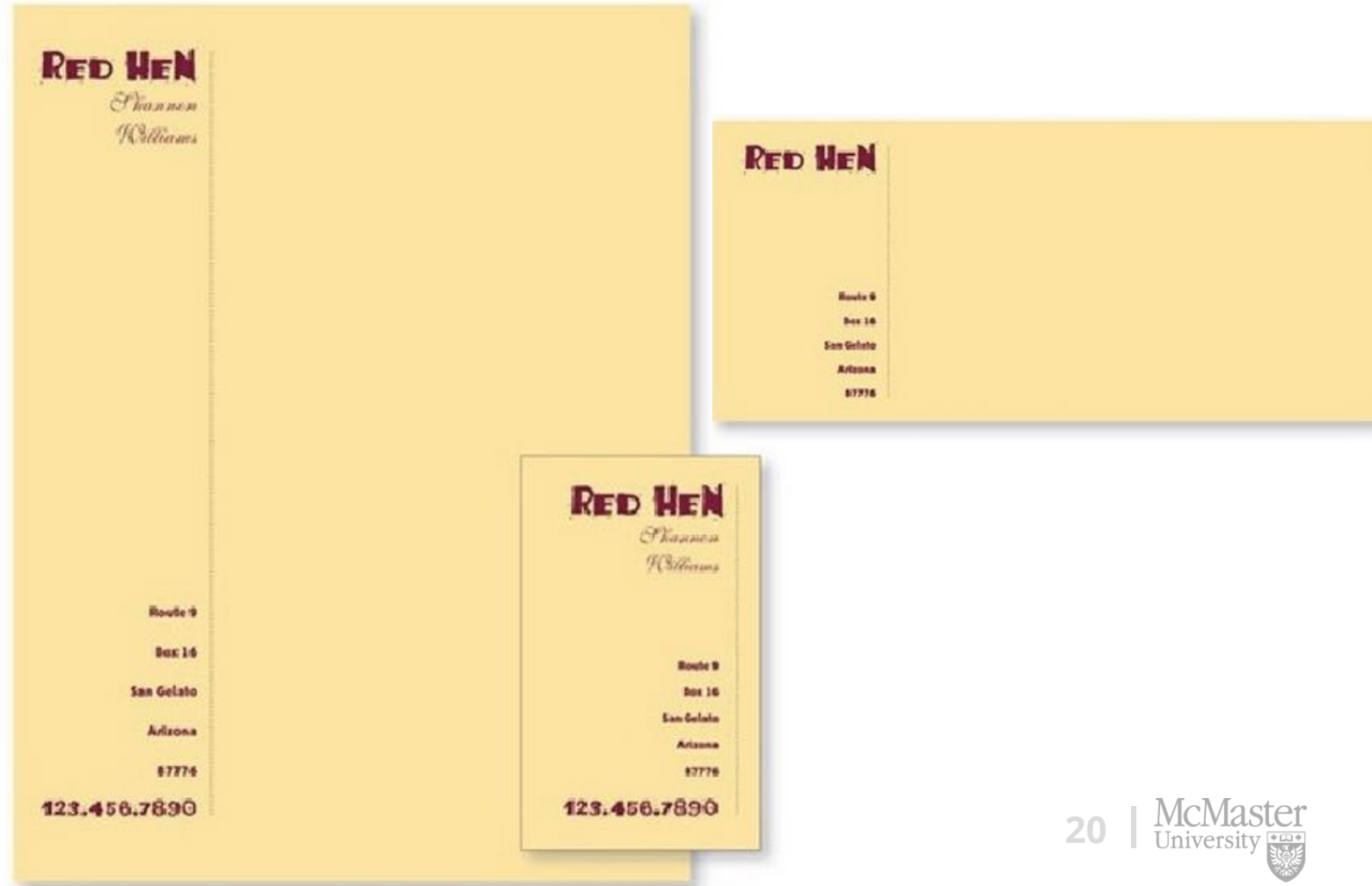
**Ut** enim ad minim veniam, quis  
nostrud exercitation ullamco laboris  
nisi ut aliquip ex ea commodo  
consequat.

**Duis** aute irure dolor in  
reprehenderit in voluptate velit esse  
cillum dolore eu fugiat nulla  
pariatur.

**Excepteur** sint occaecat cupidatat  
non proident, sunt in culpa qui  
officia deserunt mollit anim id est  
laborum.

# Similarity: Repetition in Design

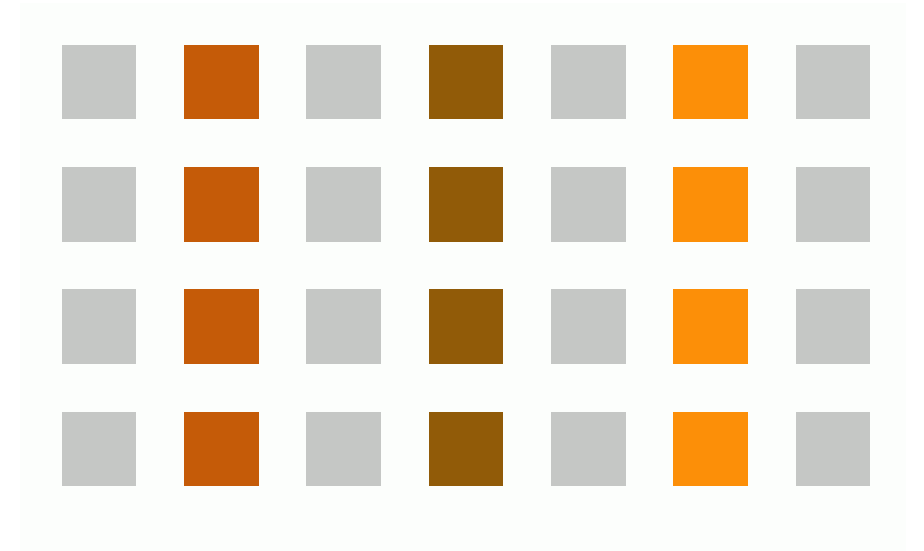
Repetition across  
multiple elements



# Breaking Similarity for Contrast

Differences in size, shape or color help to distinguish elements from one another (break grouping)

Use these **sparingly**, and where noticing something is a desirable thing



# Breaking Similarity for Contrast

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

# Breaking Similarity for Contrast

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. **Duis aute irure dolor** in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. *Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.*

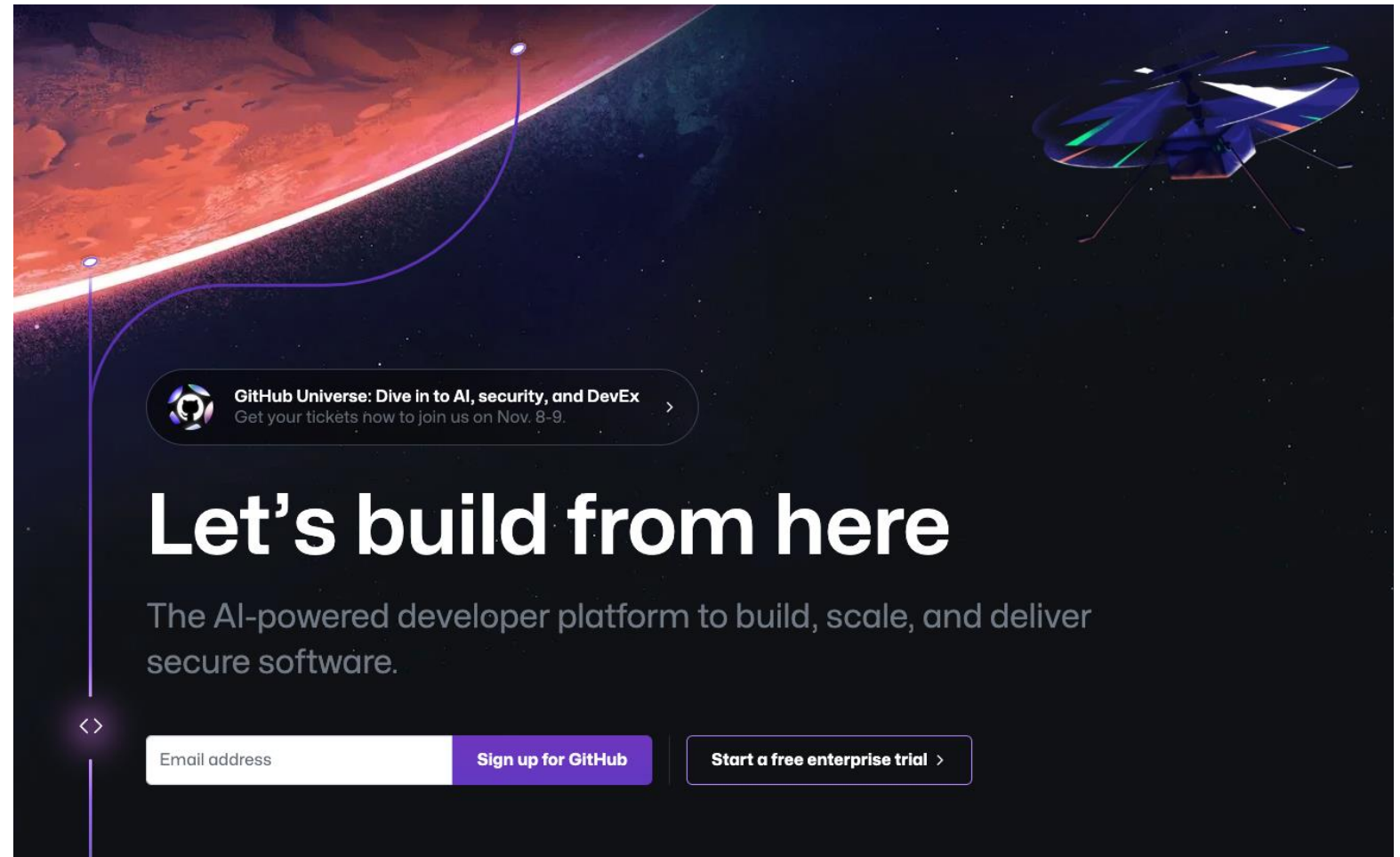
# Contrast: Example

Probably a bad example  
but effective in contrasting.



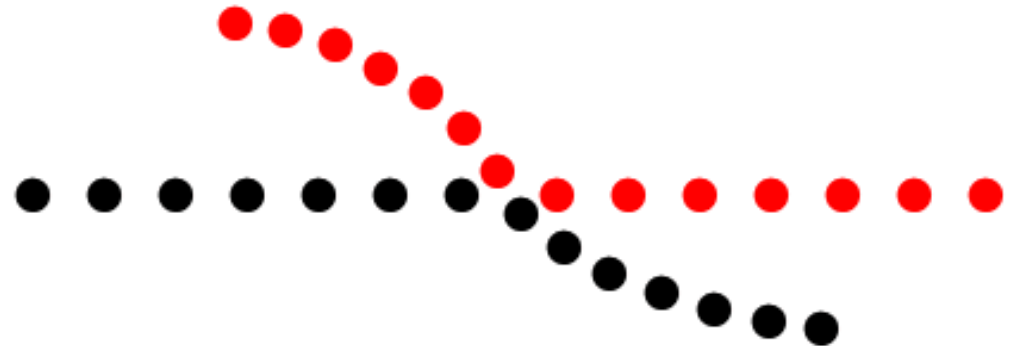
# Contrast: Example

Contrast for Call-to-Action



# Gestalt: Continuity

Items arranged on **a line or smooth curve** are perceived to be **related**



# Gestalt: Continuity

**This item:** The Design of Everyday Things: Revised and Expanded Edition

\$23.99 ✓prime

**Don't Make Me Think, Revised: A Common Sense Approach to Web Usability**

\$53.35 ✓prime

**Hooked: How to Build Habit-Forming Products**

\$29.95 ✓prime

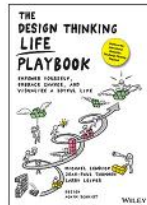
## Products related to this item

Page 1 of 35

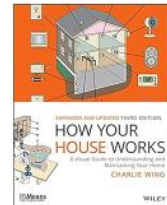
Sponsored



**The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, and Processes**  
Michael Lewrick  
★★★★★ 814  
Paperback  
\$46.00 ✓prime



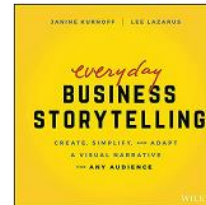
**The Design Thinking Life Playbook: Empower Yourself, Embrace Change, and Visualize Your Future**  
Michael Lewrick  
★★★★★ 125  
Paperback  
\$34.99 ✓prime



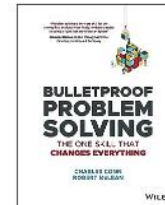
**How Your House Works: A Visual Guide to Understanding and Maintaining Your Home**  
Charlie Wing  
★★★★★ 1,161  
Paperback  
\$36.04 ✓prime



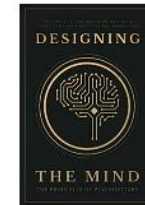
**The Creative Act: A Way of Being**  
Rick Rubin  
★★★★★ 3,830  
Hardcover  
\$26.59 ✓prime



**Everyday Business Storytelling: Create, Simplify, and Adapt A Visual Narrative for Your Business**  
Janine Kurnoff  
★★★★★ 274  
Paperback  
**Limited time deal**  
\$35.70 ✓prime  
List: \$41.99 (15% off)



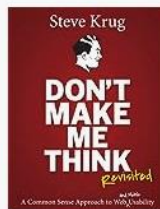
**Bulletproof Problem Solving: The One Skill That Changes Everything**  
Charles Conn  
★★★★★ 556  
Paperback  
\$35.95 ✓prime



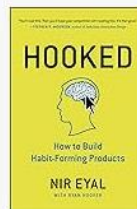
**Designing the Mind: The Principles of Psychitecture**  
Charles Conn  
★★★★★ 2,170  
Paperback  
\$25.55 ✓prime

## Customers who bought this item also bought

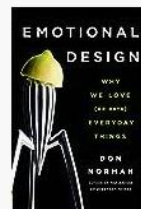
Page 1 of 17



**Don't Make Me Think, Revised: A Common Sense Approach to Web Usability**  
Steve Krug



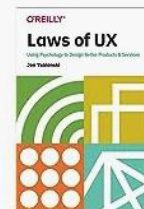
**Hooked: How to Build Habit-Forming Products**  
Nir Eyal



**Emotional Design: Why We Love (or Hate) Everyday Things**



**100 Things Every Designer Needs to Know About People**



**Laws of UX: Using Psychology to Design Better Products & Services**



**101 Things I Learned in Product Design School**  
Sung Jang

# Gestalt: Closure

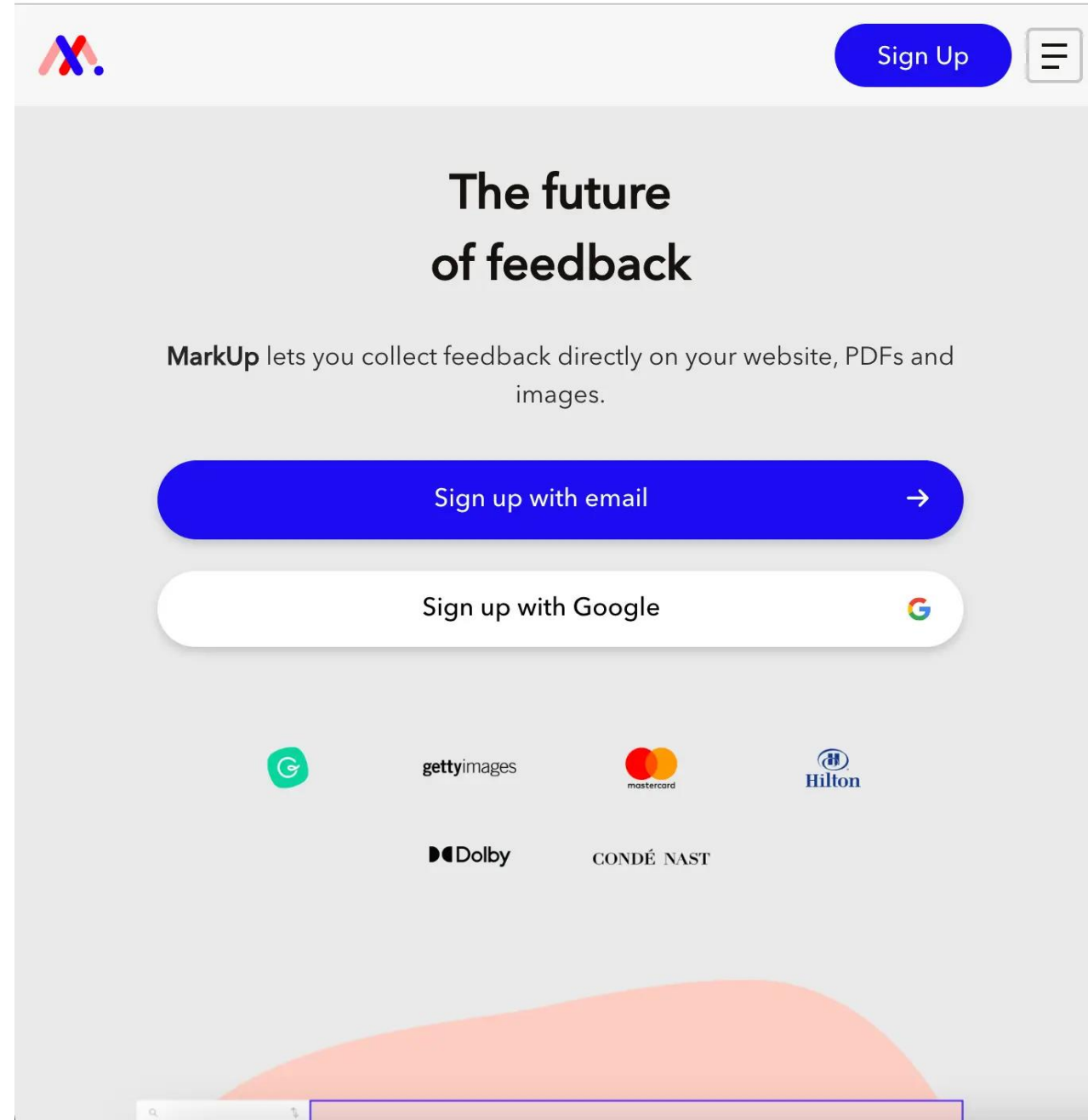
We tend to see **complete figures** even when part of the information is missing

Visual system will “**fill in**” the holes



# Gestalt: Closure

Brain looks for  
complete figures



# Gestalt: Area

The smaller of two overlapping figures is perceived as **figure** while the larger is regarded as **ground**.

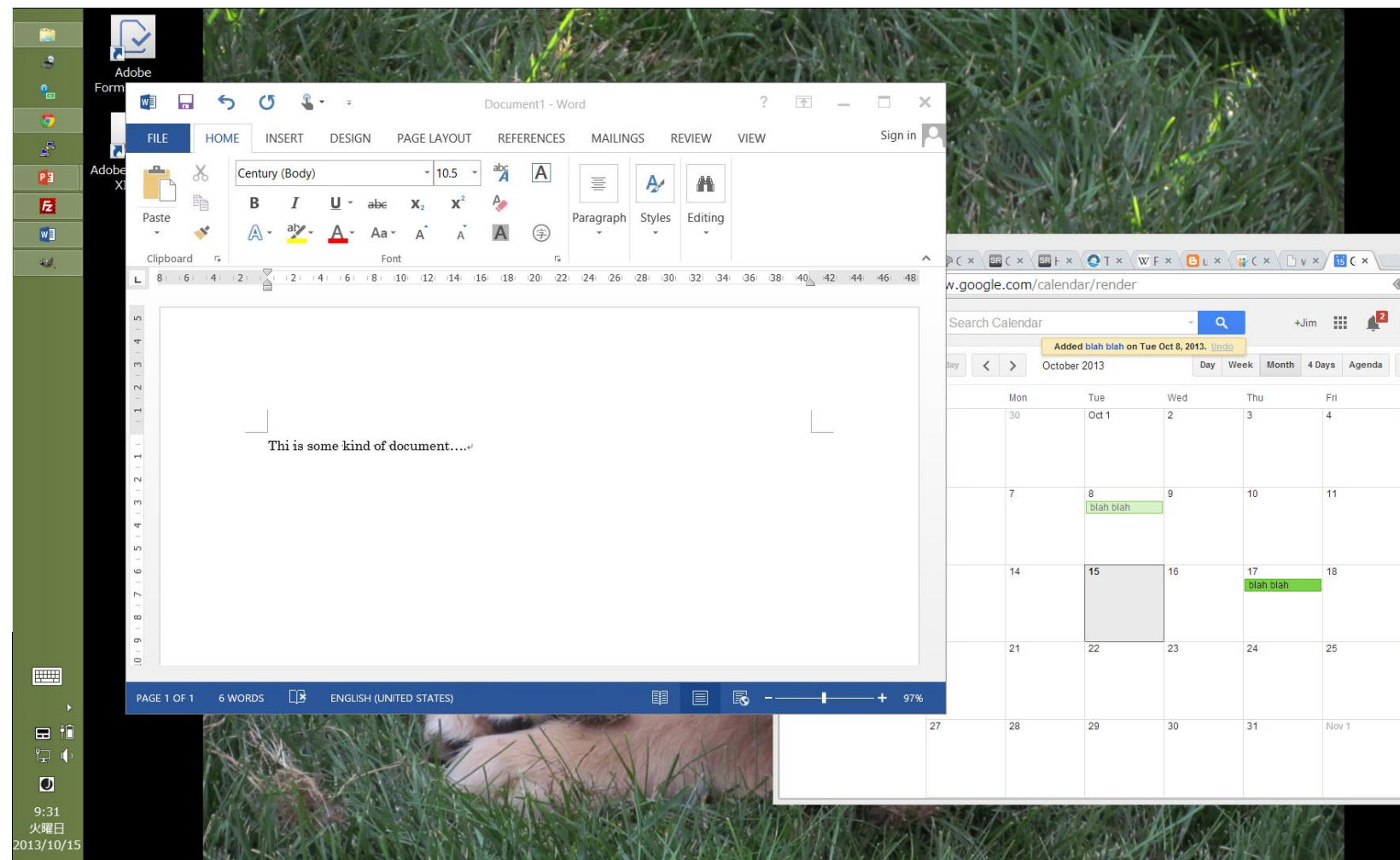
**Figure:** element that is interpreted as object of interest

**Ground:** area on which figure rests

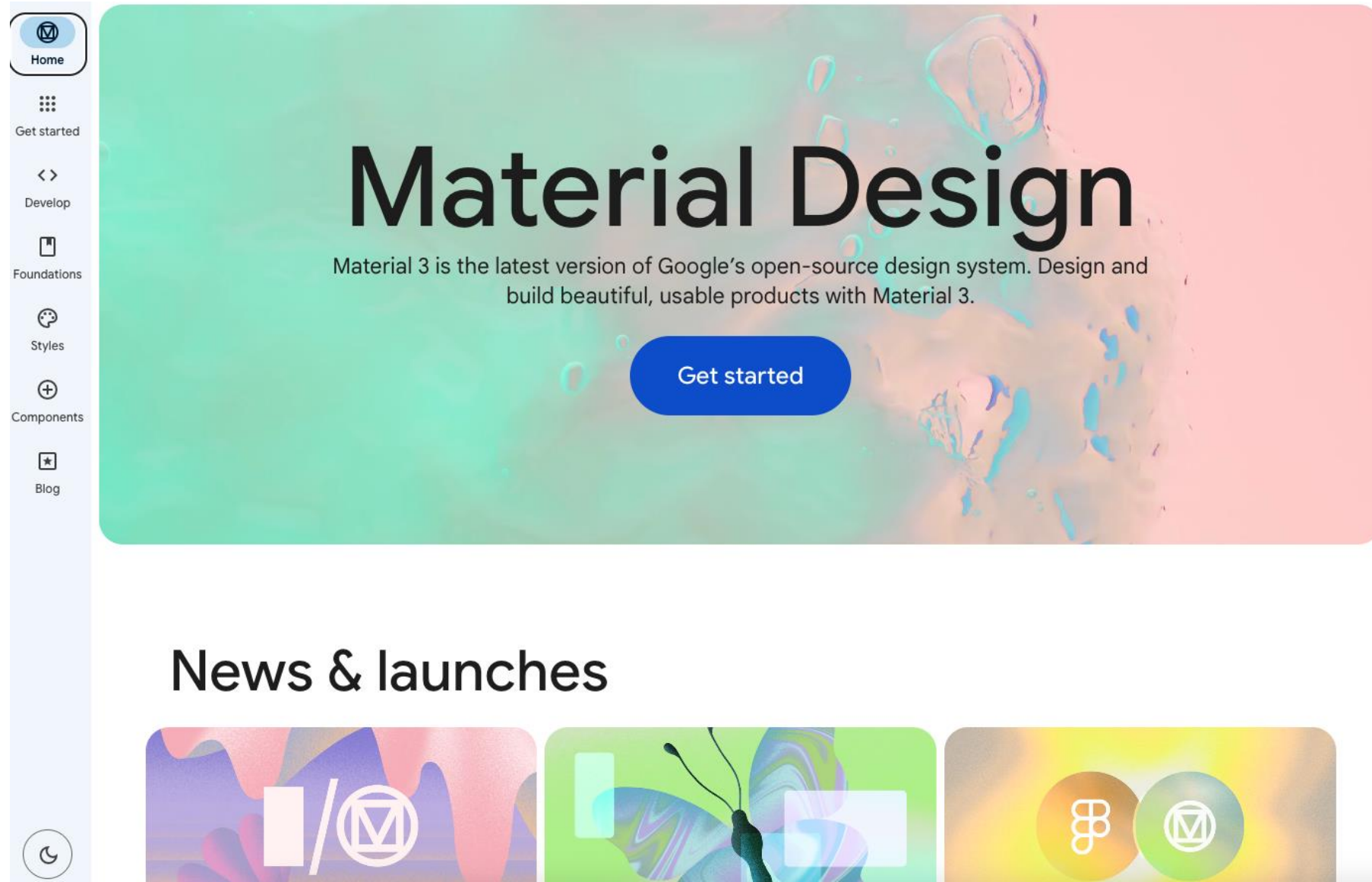


# Area: Figure and Ground

Focus on the  
content in the  
foreground areas



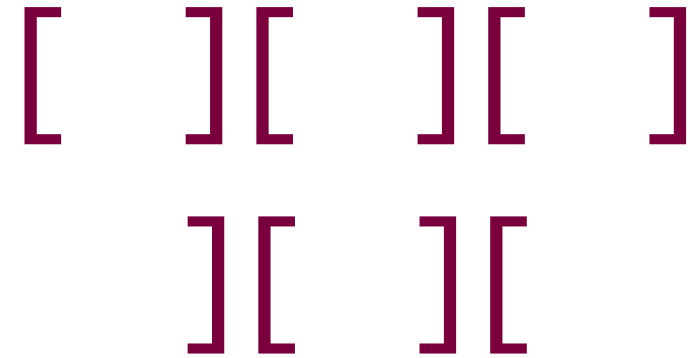
# Area: Figure and Ground



# Gestalt: Symmetry

**Symmetrical, unconnected elements** are integrated into **one coherent object**

**Symmetry across a page helps see it as a whole**



# Gestalt: Symmetry

## RESOURCES

### Get up and running fast

Our University, blog, and showcase give you the education, insights, and inspiration you need to succeed with Webflow — and as a business.

3-column  
design



#### University

Browse hundreds of in-depth videos, courses, and guides to get up and running fast.



#### Blog

Explore our blog detailed articles on trends, inspiration, and best practices.

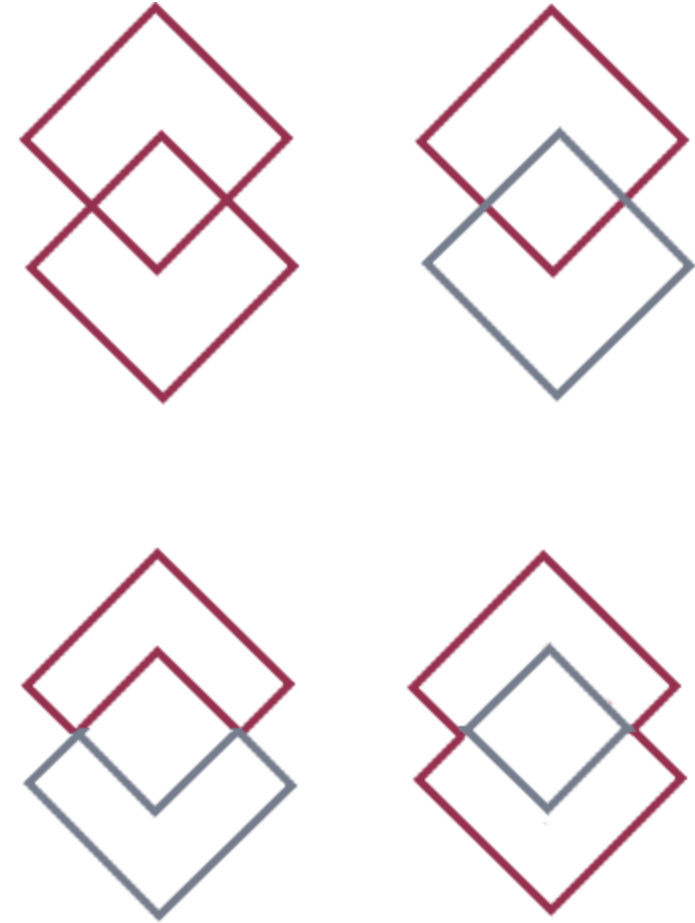


#### Showcase

Get inspired by the incredible websites built by members of the Webflow community.

# Gestalt: Symmetry

We **simplify complex forms** into **simple shapes**, based on symmetry



# What principles are present here and how?

The screenshot shows the "Paragraph" dialog box in Microsoft Word, specifically the "Indents and Spacing" tab. The "General" section has "Alignment" set to "Left" and "Outline level" set to "Body Text". In the "Indentation" section, "Left" is 1.27 cm, "Right" is 0 cm, and "Special" is "(none)". The "Mirror indents" checkbox is unchecked. The "Spacing" section has "Before" set to 0 pt, "After" set to 10 pt, "Line spacing" set to "Multiple", and "At" set to 1.15. The "Don't add space between paragraphs of the same style" checkbox is checked. The "Preview" section displays a sample paragraph with various indentations and line spacing. At the bottom are buttons for "Tabs...", "Default...", "OK", and "Cancel".

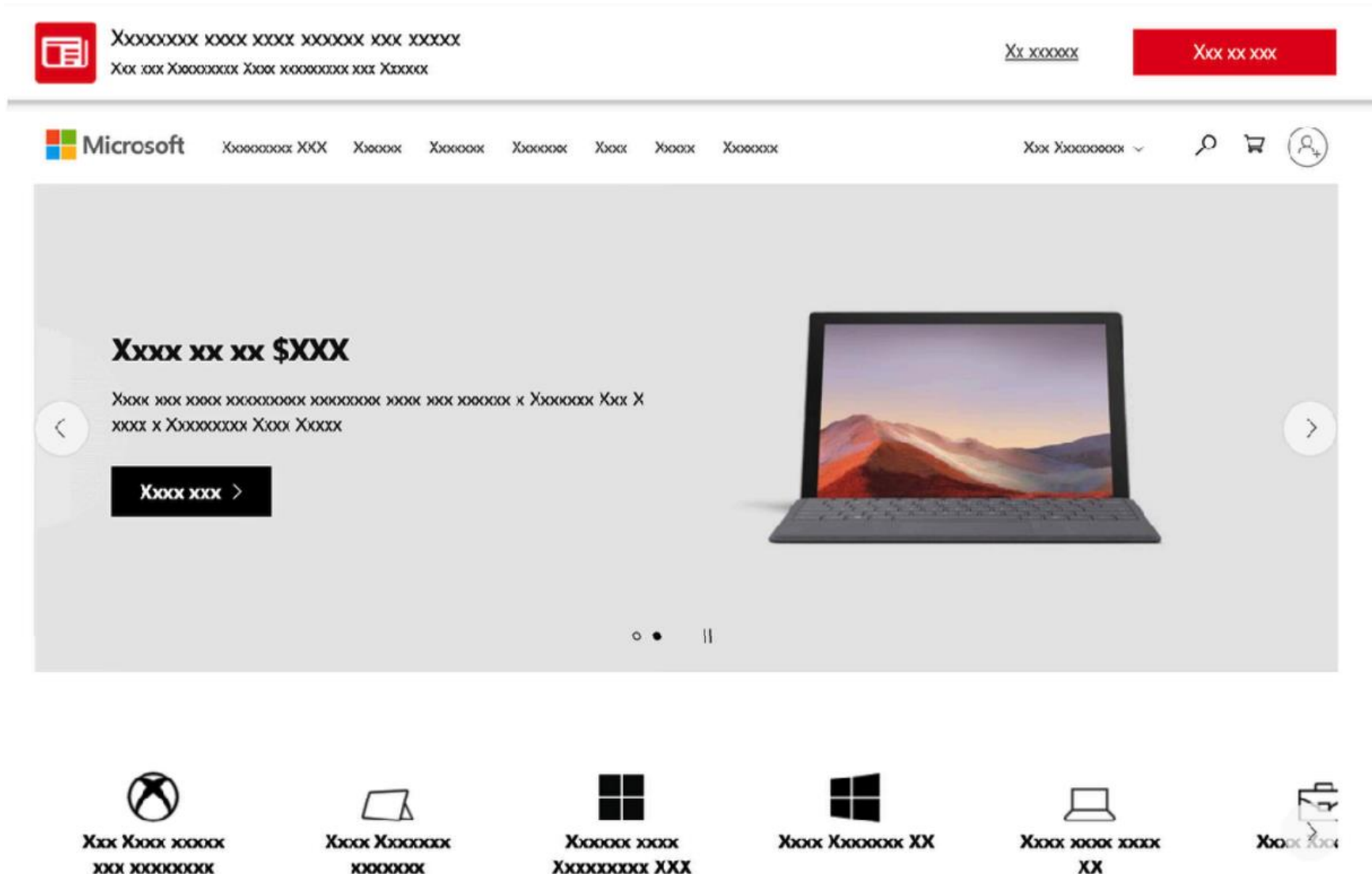
# Gestalt: Summary

- **Proximity:** place items that are related close to one another (use whitespace)
- **Similarity:** use similar visual design for similar items to help with grouping and comprehension
- **Continuity:** lay related items in lines or continuous curves to show that they are related
- **Closure:** expect the brain to “fill in the gaps”, e.g., you can use dotted lines or overlay panels
- **Area:** smaller shapes on larger ones become grouped on the larger shape
- **Symmetry:** lay out items in the same fashion to leverage clear grouping and relationship

# Gestalt and Vision

- Humans **perceive, store and process** information
- **Vision** is our dominant form of perception
- Cones are responsible for **color vision**
  - Most color processing happens at the **center** of the eye
  - **Some colors are more easily perceived** than others
- Rods are located in the **periphery**
  - Can function **on low levels** of illumination
  - Responsible for **motion** detection
- **Contrast** helps with fine detail, border detection and to draw attention
- Responses to color are governed by **individual differences** (e.g., emotions, age, culture, colour blindness)
- Gestalt principles help convey **structure**

# Quick Practice



The text on the page is obscured. Apply what we talked today:

- What principles you see from this page and how do these principles convey structures?
- Any of the principles might confuse people?

# Week 8 Overview

- **Monday**
  - ~~Perceptions: Gestalt~~
- **Wednesday**
  - **Memory**
- **Friday**
  - **Cognition**