**USA**
GDP grew 119%

South America
GDP grew 108%

Key

1980 GDP
(black dots)

2009 GDP
(all dots)

Color indicates gross domestic
product per person (2009).

More than $40,000

$25,000 to $40,000

$9,514 to $24,999

$3,000 to $9,513

Less than $3,000

World
average:
$9,514

DATA
DETECTIVES

Many analysts use gross domestic product (GDP) as a way of assessing a country's economic performance. GDP is the amount of goods and services that a country's businesses, residents, and government produce in one year. In this map, each country is sized according to its GDP rather than its physical area.

China
GDP grew 1,506%

Japan
GDP grew 74%

Africa
GDP grew 151%
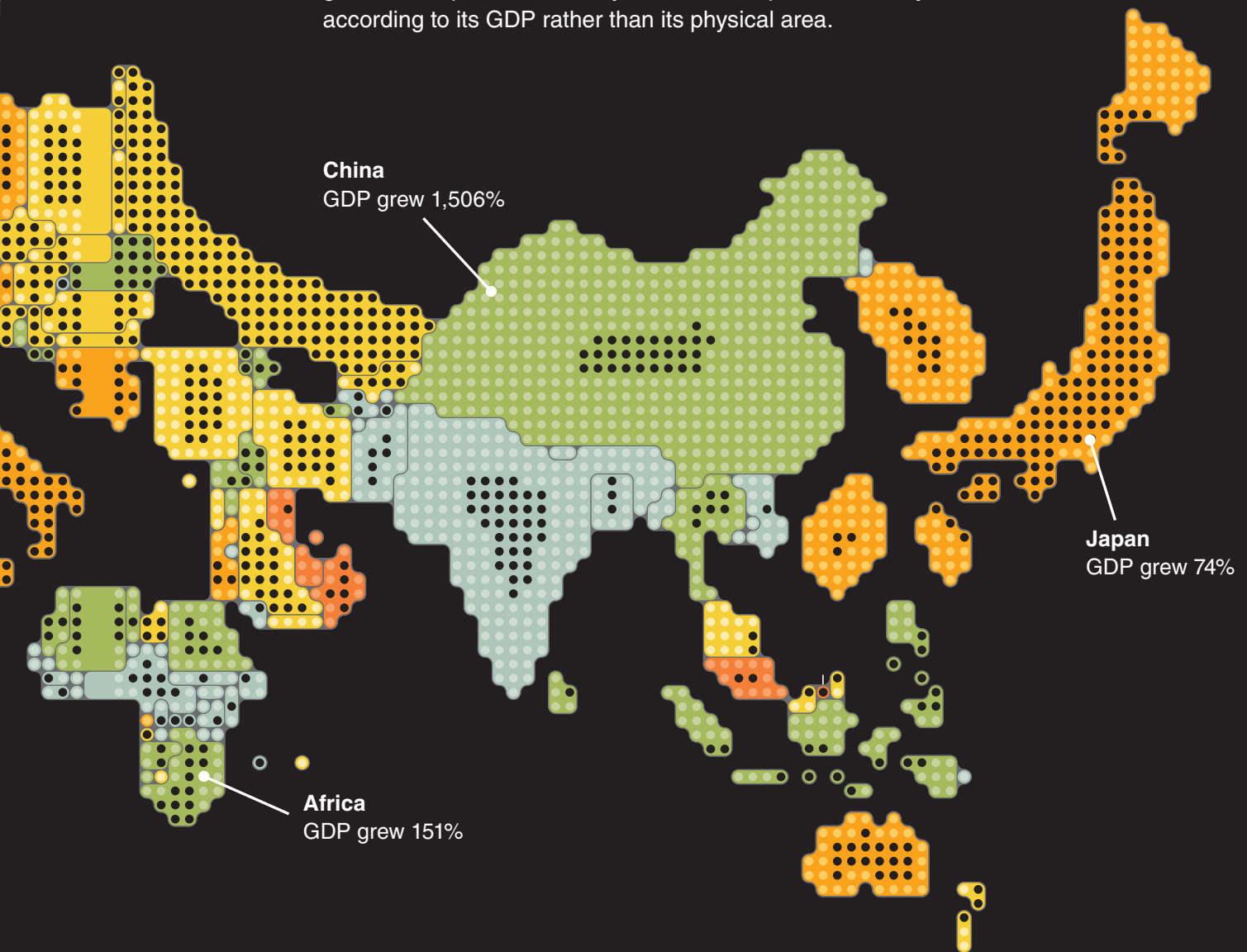
GOALS

IN THIS UNIT, YOU WILL:

- Read about someone who works with data.
- Learn about the benefits of visual data.
- Explore your own social data.

THINK AND DISCUSS

1. Look at the map. What does it show? Read the caption to check your answer.

2. What are the advantages of showing data in this way?

PRE-READING

A. **What does the infographic on these pages show? Choose the best three answers.**

   1. Selected cities' heights above sea level

   2. Predicted height of sea levels over time

   3. When selected cities will be below sea level

   4. Why ice sheets are getting smaller and sea levels are rising

B. **What message, or story, does this infographic tell? Write your ideas and then discuss with a partner.**

_____

_____

_____

C. **Look at the Venn diagram and caption on page 138. Do you think the "When Sea Levels Attack!" infographic is an example of effective information design? Why or why not? Discuss with a partner.**

D. **Read the introductory paragraph on page 137. Why do you think David McCandless thinks information is beautiful? Discuss your ideas with a partner.**

years   sea level

8000   80m

When Sea Levels Attack!
How long have we got?

1000   20m

8m

7m

400   6m

5m
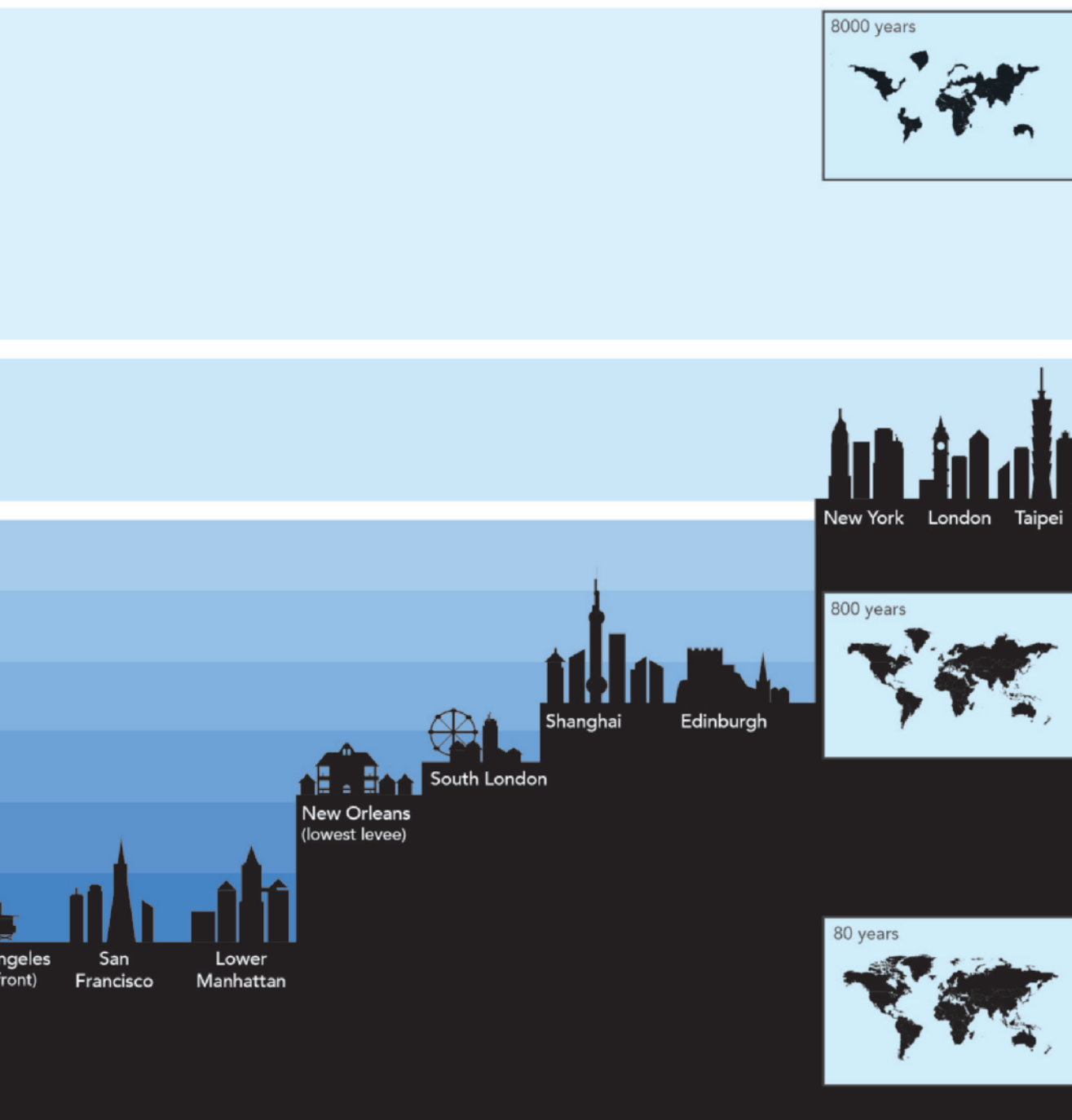
300   4m

200   3m

2m

100   1m

Venice

Amsterdam

Hamburg

Saint Petersburg

Los A(Sea...

Note: Heights above sea level vary across cities. Lowest points used.

Source: IPCC, NASA, Realclimate.org, NewScientist.com, Potsdam Institute, Sea Level Explorer

8000 years

Antarctic ice sheet
(South Pole)
73m

Greenland ice sheet
6.5m

New York   London   Taipei

800 years

Shanghai   Edinburgh

South London

New Orleans
(lowest levee)

ngeles
ront)

San
Francisco

Lower
Manhattan

80 years

All other ice
(Arctic included)
0.5m

by 2100,
worst case
scenario: 1m

Already happened
since 1870
20cm

INFORMATION
IS BEAUTIFUL

With the vast amount of data available today, some of us may be suffering from data glut. Journalist David McCandless thinks that the solution lies in well-designed visuals that can help us make sense of a **complex** world.

1 "There's something almost quite **magical** about visual information," says David McCandless. He and his team use software to scrape—collect—data from lots of different sources online. They try to find hidden **connections**, patterns, and stories that connect the pieces of data. Then they **create** infographics that people might find interesting and useful. Also, as McCandless says, infographics can "just look cool!"

2 For example, a world map usually represents the size of countries by land area. But what does the world look like if we see nations according to their population size, or how much they **consume**? This kind of visual not only helps us understand the world better; it can also change our perspective about it. By connecting different data, we can get a more complete picture of the world.

3 According to McCandless, by **visualizing** information, we turn it into a landscape that we can explore with our eyes—"a sort of information map." As McCandless explains, the human eye easily notices and **appreciates** visual patterns. McCandless calls patterns the "language of the eye." On the other hand, words and numbers are the "language of the mind." McCandless believes that if you combine patterns with words and numbers, you can speak two languages at the same time, "each **enhancing** the other."
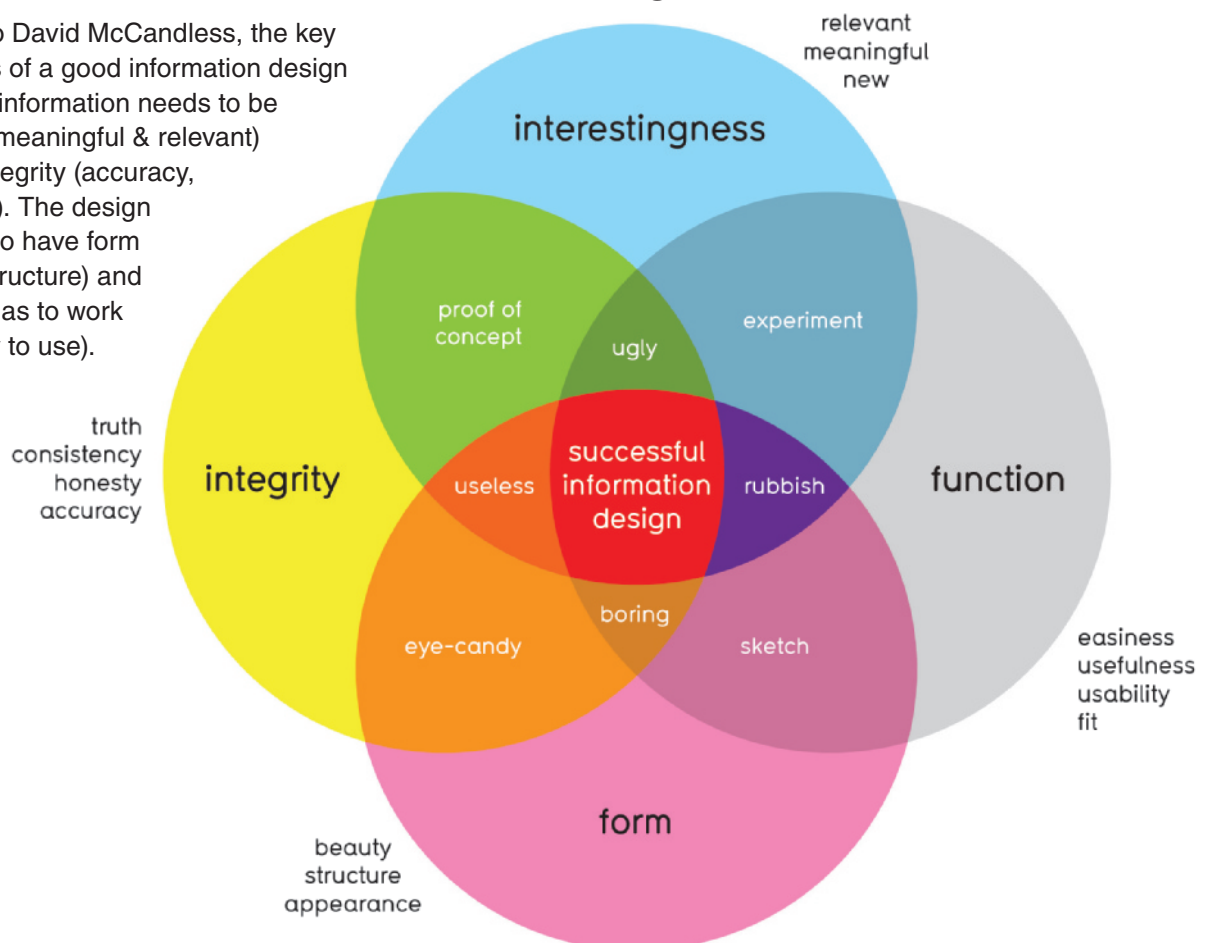
4 The solution to information overload, according to McCandless, is using our eyes more. By visualizing information, we can understand it better. McCandless compares the act of reading a large amount of data to the experience of finding your way through the wilderness. When you come across a beautiful graphic, he says, it's a relief. "It's like coming across a clearing in the jungle."

---

glut: *n.* too much of something that cannot all be used

wilderness: *n.* an area of natural land unused by people

What Makes Good Information Design?

According to David McCandless, the key components of a good information design are that the information needs to be interesting (meaningful & relevant) and have integrity (accuracy, consistency). The design also needs to have form (beauty & structure) and function (it has to work and be easy to use).

relevant
meaningful
new

interestingness

proof of concept

ugly

experiment

truth
consistency
honesty
accuracy

integrity

useless

successful information design

rubbish

function

eye-candy

boring

sketch

easiness
usefulness
usability
fit

beauty
structure
appearance

form

GETTING THE MAIN IDEAS

Use information from the passage on pages 136–138 to answer each question. Choose the best answer.

1. What does David McCandless do?

   a. He studies visual data and explains it with words.

   b. He collects data and presents it visually.

   c. He reviews visual data for large organizations.

2. What problem does McCandless want to solve?

   a. We don't get enough data every day.

   b. We get too much data every day.

   c. We ignore online data unless it is in an infographic.

UNDERSTANDING DETAILS

A. **Why is presenting information visually useful? Choose the four ideas that are stated in the passage.**

Infographics help us understand information better because they ＿＿＿＿＿＿.

   1. can be understood by people who speak different languages

   2. tell a story

   3. change our perspective

   4. connect different sources of data together

   5. let us focus only on the important information

   6. are more entertaining to look at

   7. give us a more complete picture of the world

   8. take less time to read than words and numbers

B. **Look at the choices in Exercise A that are not mentioned in the reading. Do you think that these are also examples of the benefits of visual data? Discuss with a partner.**

C. **What do McCandless and his team do when they look at different sources of data? Complete each sentence.**

   a. They gather together ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿.

   b. They try to discover ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿.

   c. They produce ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿.

UNDERSTANDING INFOGRAPHICS

Many people use infographics to tell a story or explain complex information visually. Most infographics include a mixture of text, pictures, and statistics. Being able to read infographics is an important 21st-century skill.

Use information from the infographic on pages 134–135 to answer each question. Discuss your answers with a partner.

1. What do the size and color of each country represent?

2. What do the black dots and the light dots represent?

3. Circle the region whose GDP has grown the most since 1980.

    a. United States

    b. South America

    c. China

4. McCandless calls patterns the "language of the eye" and words and numbers the "language of the mind." How do you think this infographic uses both the language of the eye and the language of the mind? Discuss with a partner.

GETTING MEANING FROM CONTEXT

A. **The passage states that we are suffering from "data glut." What does this phrase mean? Write your idea and discuss with a partner.**

_____

B. **Find and circle the two-word expression in the passage that has the same meaning as _data glut_.**

BUILDING VOCABULARY

A. **Choose the word or phrase that has the closest meaning to the bolded word.**

    1. magical

        a. difficult   **b.** amazing   **c.** complete

    2. enhancing

        a. confusing the issue   **b.** changing the style   **c.** improving the quality

    3. consume

        a. use   **b.** like   **c.** want

    4. complex

        a. hard to understand   **b.** easy to understand   **c.** important to understand

B. Use the "Bandwidth of the Senses" infographic and the words below to complete the paragraph.
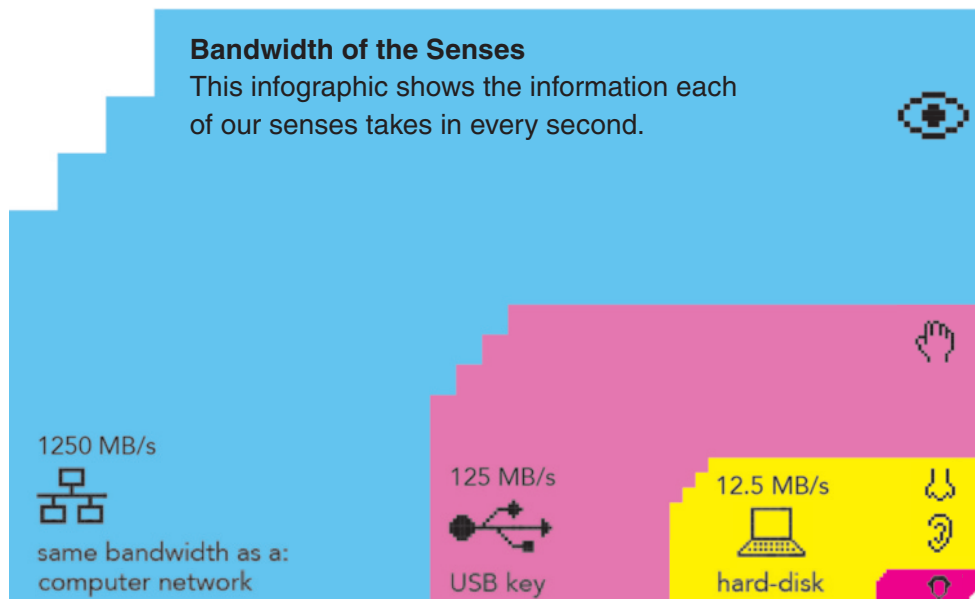
| appreciate | connection | created | visualize |

Danish physicist Tor Norretranders _____ this infographic to help us

_____ the power of our senses: sight, touch, smell, hearing, and taste.

Norretranders made a(n) _____ between our senses and computing equipment to

show how quickly we process information with each of our senses. Our sense of sight is

the fastest. It's like a computer network. Taste is the slowest. It processes information as

slowly as a pocket calculator. This infographic helps us better _____ how

powerful our sense of sight is in comparison with our other senses. Most importantly,

however, the tiny white section in the bottom right corner shows how much information

we are actually aware of: just 0.7 percent of what we see, smell, taste, touch, and hear.

Bandwidth of the Senses
This infographic shows the information each
of our senses takes in every second.

1250 MB/s
same bandwidth as a:
computer network

125 MB/s
USB key

12.5 MB/s
hard-disk

CRITICAL THINKING

1. Inferring. McCandless says that when you come across a beautiful graphic, "it's like coming across a clearing in the jungle." What do you think he means by this?

2. Personalizing. Think about how you spend a typical day. What do you do? How long do you do each thing? What kind of infographic do you think might best show this data? Make an infographic about your day and share it with a partner.

EXPLORE MORE

Go to McCandless's website, informationisbeautiful.net. Find an infographic that you think is particularly interesting and effective. Share it with your class.

TEDTALKS

THE BEAUTY OF DATA VISUALIZATION

DAVID McCANDLESS Data journalist, TED speaker

David McCandless makes infographics—simple, elegant ways to understand complex information. Surprisingly, McCandless started designing without formal instruction in art or design.

McCandless started working as a computer programmer and then wrote articles for magazines and websites for about 20 years. However, when he started designing infographics, he realized that he already knew a lot about design. As he explains, "I was sensitive to the ideas of grids and space and alignment and typography." Years of looking at media, like magazine articles and websites, gave McCandless a basic understanding of good design. His book *Information Is Beautiful* includes infographics about dozens of topics, from politics to pop music.

grids: *n.* patterns of straight lines that cross each other to make squares

alignment: *n.* arrangement in a straight line, or in appropriate positions

typography: *n.* the style and appearance of printed letters and words

In this lesson, you are going to watch segments from McCandless's TED Talk. Use the information above about McCandless to answer these questions.

1. Given McCandless's present job, what is surprising about his education and work experience?

   _____

2. How do you think the jobs of a journalist and an infographic designer are similar?

   _____

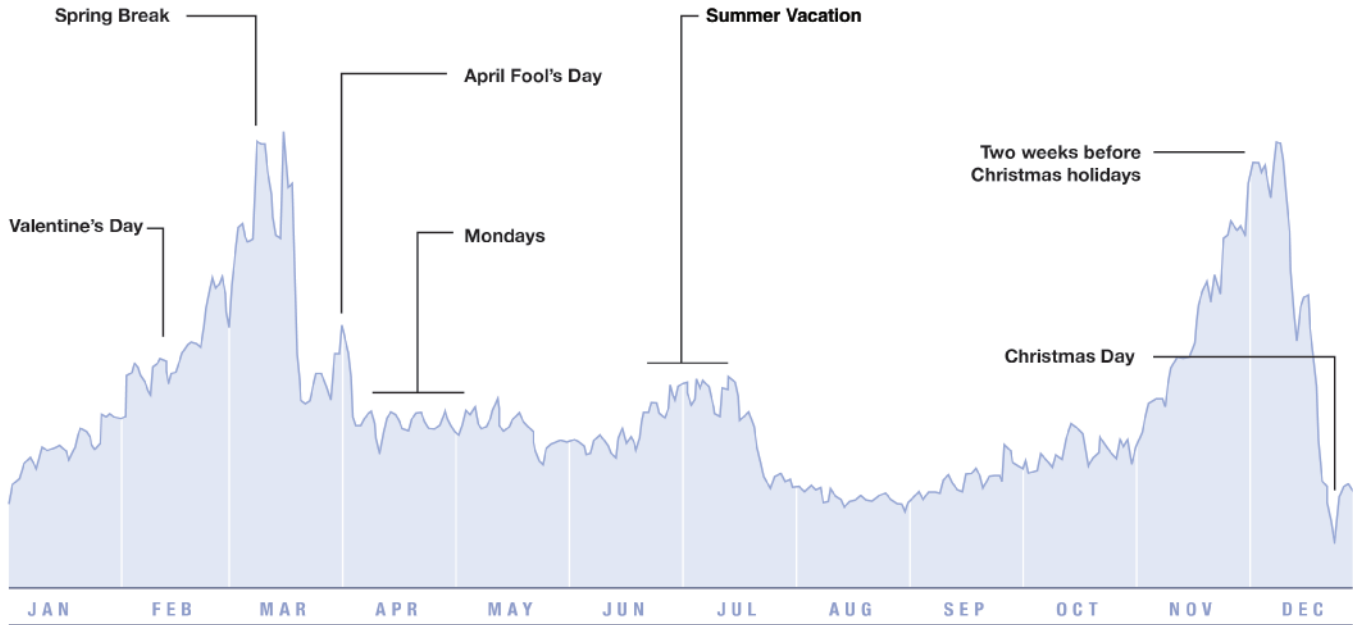3. What lessons did McCandless learn about designing infographics from his previous jobs?

   _____

McCandless's **idea worth spreading** is that visualizing data into beautiful designs can help us understand complex information.

Peak Break-Up Times
According to Facebook status updates

Spring Break · April Fool's Day · Summer Vacation · Valentine's Day · Mondays · Two weeks before Christmas holidays · Christmas Day

JAN · FEB · MAR · APR · MAY · JUN · JUL · AUG · SEP · OCT · NOV · DEC

MINING INFORMATION

PREVIEWING

A. **Look at the infographic above. What does *break-up* mean? Why do you think the number of posts about break-ups is higher or lower at certain times of the year? Discuss with a partner.**

B. **Read this excerpt from the talk. What words do you think are missing? Fill in each blank and share your ideas with a partner.**

» [Data] is a really fertile medium, and it feels like visualizations, infographics, data

visualizations, they feel like flowers blooming from this medium. But if you _____

at it directly, it's just a lot of _____ and disconnected facts. But if you start working

with it and playing with it in a certain way, interesting things can appear and different

_____ can be revealed. «

---

fertile: *adj.* full of possibilities; when used to describe land: able to produce plants

medium: *n.* a way of communicating with people

blooming: *v.* used to describe flowers: opening

GETTING THE MAIN IDEA

Watch (▶) the first segment of the talk and check your answers to the Previewing exercises. Then answer the questions below.

1. How did McCandless and Lee Byron collect the data for the infographic on page 144?

_____

2. What does McCandless do to find interesting things from this "titanic amount of data?"

_____

CRITICAL THINKING

1. Reflecting. Do you think the infographic tells the whole story about when people might break up with each other? Why or why not? Write your ideas and then discuss with a partner.

_____

_____

2. Analyzing. People say "data is the new oil," but McCandless changes it to "data is the new soil." How is data like oil? How is it like soil? Discuss with a partner.

PART 2

INTERACTING WITH DATA

UNDERSTANDING MAIN IDEAS

Read the quote below and choose the statement that best describes what McCandless means.

" . . . visualizing information like this is a form of knowledge compression. It's a way of squeezing an enormous amount of information and understanding into a small space. "

a. It's difficult to see the connections between different types of data.

b. Infographics let us represent a lot of data in pictures.

c. When you create an infographic, you have to do a lot of research.

UNDERSTANDING KEY DETAILS

A. **The statements below are about the "Snake Oil" infographic in McCandless's talk. Watch (▶) the next segment of McCandless's talk and write *T* for True and *F* for False.**

_____ **1.** There is less evidence that the supplements at the top are effective.

_____ **2.** McCandless found all of the information for this infographic from one study.

_____ **3.** It takes a long time to update the infographic with new information.

_____ **4.** With the interactive version, you can choose to see only certain supplements.

B. **Read this excerpt below from McCandless's talk. Match each bolded word with the correct definition.**

❝ [I]nformation design is about solving information problems. It feels like we have a lot of information problems in our society at the moment, from the overload and the saturation to the **breakdown** of trust and **reliability** and runaway **skepticism** and lack of **transparency**, or even just interestingness. I mean, I find information just too interesting. It has a magnetic quality that draws me in. ❞

_____ **1.** breakdown

_____ **2.** reliability

_____ **3.** skepticism

_____ **4.** transparency

a. doubt that something is true

b. ability to be trusted

c. openness

d. a situation in which something is failing

CRITICAL THINKING

1. Interpreting. McCandless says: "Let the dataset change your mindset." Explain this idea in your own words. How does the "Snake Oil" infographic illustrate this idea?
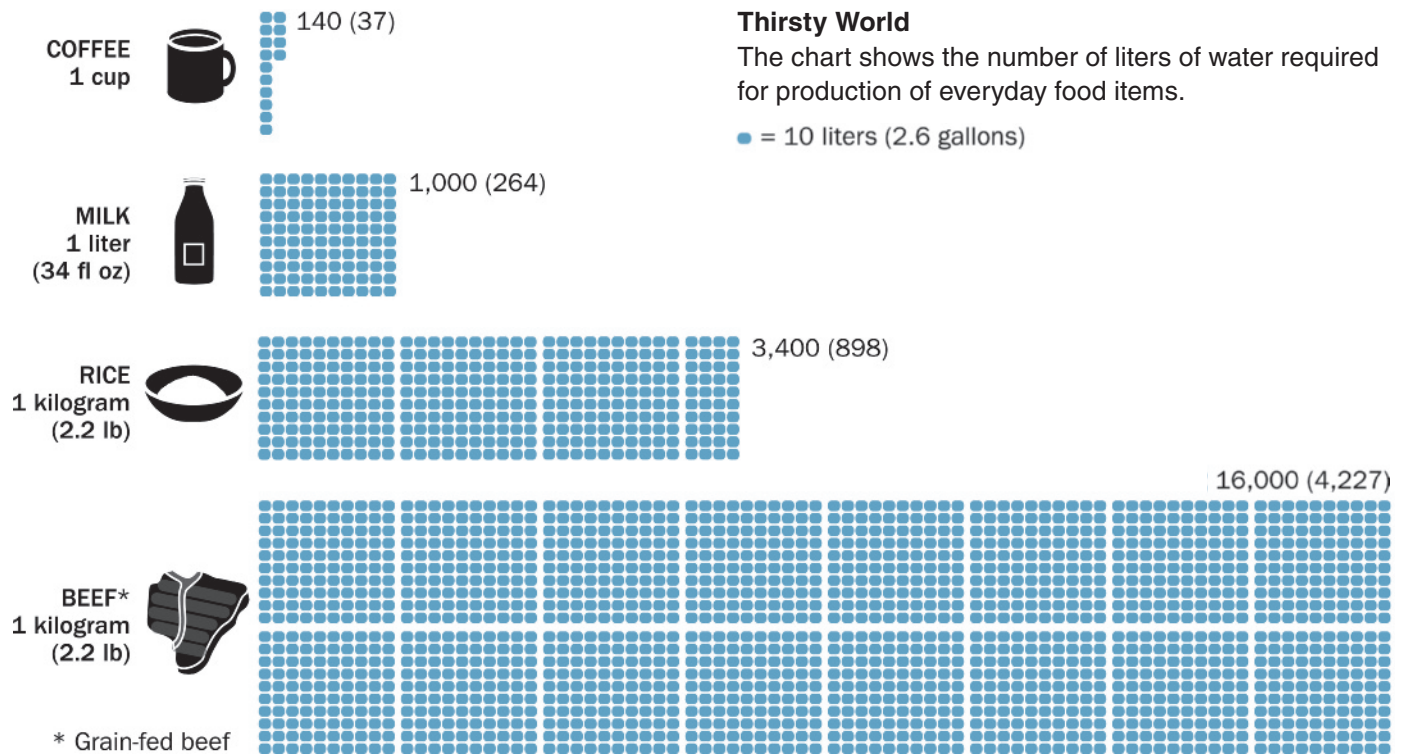
_____

_____

_____

2. Reflecting. In your opinion, which infographic from McCandless's TED Talk is the most effective? Why?

EXPLORE MORE

Watch McCandless's full TED Talk at TED.com. What did you learn from the other infographics he shows? Share your information with the class.

Thirsty World
The chart shows the number of liters of water required for production of everyday food items.

● = 10 liters (2.6 gallons)

COFFEE
1 cup
140 (37)

MILK
1 liter
(34 fl oz)
1,000 (264)

RICE
1 kilogram
(2.2 lb)
3,400 (898)

16,000 (4,227)

BEEF*
1 kilogram
(2.2 lb)

* Grain-fed beef

A. **Work with a partner. You are going to research and present an infographic. Follow the steps below:**

1. Find a topic to investigate. You can use one of the topics from this book.

2. Research your topic to find relevant and interesting data.

3. Plan the most important pieces of data you want to show visually. For example, if you have data representing a number of categories, you could present the information as a chart like the one above.

B. **Use the data you collected above to create an infographic. Use the information you learned in this unit about well-designed infographics.**

C. **Use your information to create a short presentation. Use your infographic to explain your information.**

EXPLORE MORE

Watch Aaron Koblin's TED Talk "Visualizing ourselves . . . with crowd-sourced data." Choose one of the infographics Koblin created and explain it to your class.