Dear High School Students,

This resource packet includes a range of activities that you can work on independently at home. Resources are categorized into two different types:

- **Independent Projects**
  - These projects cover a range of different topics and skills. They may be spread out over multiple days.
- **Enrichment Activities (including digital options)**
  - These activities are organized into Read, Write, Move, Design, and Solve categories so that you can engage in many different ways while at home.

You may work through these resources over multiple days and in any order.

### Independent Projects

**CPS Independent Civic Action Project - CENSUS 2020**

1. **PHASE 1: Understand and Connect to the question “How do we make sure everyone is counted?”**
2. **PHASE 2: Investigate the topic and any barriers to Census completion**
3. **PHASE 3: Plan and Take Action**

### Enrichment Activities

- **Digital Resources**
- **Non-Digital Resources**
  - Read
  - Write
  - Move
  - Design
  - Solve

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Read  Write  Move  Design  Solve
Independent Projects

CPS Independent Civic Action Project - CENSUS 2020

To the Student: This guide is designed to help you engage in an independent civic action project, and follows the CPS Informed Action Framework. You will understand, investigate, reflect, and act to answer the question, “How will you make sure everyone is counted in the 2020 census?”

Use a notebook or journal to track your research and reflections.

The 2020 U.S. Census begins NOW. EVERYONE can have a real impact in the census by using their expertise and knowledge of their community to make sure everyone is counted.

How will you make sure everyone is counted in the 2020 census?
This project has three phases of research and reflection before you take a final action. The project phases are:
● Phase 1: Understand and connect to the Call to Action question.
● Phase 2: Investigate the topic and any barriers to census completion.
● Phase 3: Plan and take action

DON’T FORGET TO SHARE and TAG US @CPSCivicLife

PHASE 1: Understand and Connect to the question “How do we make sure everyone is counted?”

Phase 1, Step 1: Explore what the census is and why it is important.

Watch this video (https://youtu.be/HMaaH6Suf98) OR read Source A included in this packet and then answer the following questions in your journal:

- What do you know about the U.S. Census now that you didn’t know before?
- Have you or your family ever participated in the Census? Why or why not?
- How will the census impact you or your family?
- What other information would be important to know/understand in order to answer the project question?

Phase 1, Step 2: Connect with and collect information from others

Now, interview two or more family in your household or community members by phone, email, or social media. Focus on different ages over 30 years old. Use the questions below, and other questions you want to ask. Write down the responses to each question. (Consider making a google form to document responses, or expand your research by sending a survey to many people.

Sample questions for interviews:
- What is the U.S. Census?
- Have you ever completed the Census? Why or why not? Do you intend to complete it this year?
- How will the census impact you or your family?

After you finish your interviews - complete the reflection below
Reflection
- What do you know now that you didn’t know before?
- Did the responses from any of the people you interviewed surprise you? Why or why not?
- Why do you think these individuals have had these experiences with the U.S. Census?
- Do you think other people in your community have had similar or different experiences from those you interviewed?

**PHASE 2: Investigate the topic and any barriers to Census completion**

**Phase 2, Step 1: Research Community Impact**

Use the maps provided in **Source D** to answer the questions below:

- What do the colors/shades on the map mean? What patterns do you notice?
- Was the percentage for your school/neighborhood/part of the city higher or lower than what you would have expected? Explain.
- Looking at the overall map, why do you think some areas of Chicago are harder to count than others?
- Is this data similar to what you learned from your family/community survey data?

**Phase 2, Step 2: Focus and narrow your research**

Here you will work to better understand the Census, and any causes to issues you’ve learned about in the previous steps. Document your answers in your journal, and make note of NEW questions.

A. Why is the Census important?
B. What is the U.S. Census information used for?
C. Who does and doesn’t get counted in your community and why?
D. Why don’t some people complete the census?
E. Why are some communities harder to count than others?

Use **Sources A, B and C** to answer the questions. You should also use your research from Phase 1 interviews, and Phase 2 map analysis to help you answer the questions. If you have access to the internet, also check out:

- Pew Research Center’s: How Census Race Categories Have Changed Over Time
- US Census Bureau’s “2020 Census Barriers, Attitudes and Motivators Study Survey Report”

**Reflection:**

F. What surprised you about some of the research you did?
G. Are there barriers that you identified that are more important than others? Explain.
H. How will knowing who doesn’t get counted help develop a way to get everyone counted in your community?

**Phase 2, Step 4: Analyze the issue(s) and assess possible solutions.**

List all the reasons you found why some people don’t complete the U.S. Census.

I. Which barrier seems the most important to address and why?
J. Is there a barrier you have identified that doesn’t seem to have a solution? Explain.
### Phase 3, Step 1: Plan and Take Action

Here you will take action to ensure everyone is counted in the census! You will create awareness for what the census is and why it is important, and get as many people as you can to complete the U.S. Census. Follow these steps to organize your awareness campaign:

**Step 1:** Reflect upon and summarize what you have learned about the census and why it’s important. Decide on the information that has the most significance or impact.

**Step 2:** Identify WHO needs to know this information and WHY they need to know it.

**Step 3:** Identify WHAT you want to say and HOW you want to say it. What could you say to this audience that will make them complete the census?

**Step 4:** Next, choose the best way to communicate with people to make sure they complete the US census. A letter or email? A tweet? A tik tok? A social media campaign? Phone calls?

**Step 5:** Finally, construct your MESSAGE. Consider what you have already decided, and how to bring that all together.

**Step 6:** Implement your plan and make sure to document your experience along the way! Track your outcomes if you can - did anyone complete the census because of your action?

### Phase 3, Step 2 - Reflect and Share!

After completing your action, share with others what you learned about the Census and why it’s important to engage in civic life!

- What did you learn throughout the process?
- What did you learn about yourself and your community?
- Why should young people be civically engaged?
- Why should everyone complete the census?

As a final action - connect with other CPS students working to get their communities counted by sharing your experience, ideas and thoughts either on social media @CPSCivicLife #EngageCPS or email us at SSCE@cps.edu

### SOURCE A: 2020census.gov

What is the 2020 Census? The 2020 Census counts every person living in the United States and five U.S. territories. The count is mandated by the Constitution and conducted by the U.S. Census Bureau, a nonpartisan government agency. The 2020 Census counts the population in the United States and five U.S. territories (Puerto Rico, American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands). Each home will receive an invitation to respond to a short questionnaire—online, by phone, or by mail—between March 12-20.

Why We Conduct This Count: The census provides critical data that lawmakers, business owners, teachers, and many others use to provide daily services, products, and support for you and your community. Every year, billions of dollars in federal funding go to hospitals, fire departments, schools, roads, and other resources based on census data.
The results of the census also determine the number of seats each state will have in the U.S. House of Representatives, and they are used to draw congressional and state legislative districts.

It's also in the Constitution: Article 1, Section 2, mandates that the country conduct a count of its population once every 10 years. The 2020 Census will mark the 24th time that the country has counted its population since 1790.


A little over one year from now, the United States will participate in a democratic tradition that stretches back to the founding of the republic: the once-a-decade census of its population.

From 1790 (U.S. population: 3.9 million) to 2010 (U.S. population: 309 million), the decennial census has changed alongside the nation itself. From the territory it covers, to the questions it asks, to how it collects the information, the census has reflected evolution in technology, the role of the federal government, and the size of the country itself.

As we approach 2020, however, both technical and political changes in the census are introducing unprecedented new challenges. The stakes are high for cities and regions, which depend on a full and accurate count of their populations to ensure their fiscal health and political strength. Three areas of concern stand out.

THE CENSUS IS MOVING (PARTIALLY) ONLINE: For the first time in 2020, the U.S. Census Bureau plans to allow households to respond to the decennial census survey via the internet. This move could help reduce the costs of the census (e.g., fewer paper forms to collect and process) and improve response rates among a U.S. population that’s increasingly online, all the time.

Yet a digital decennial census could cause complications for participation, particularly in areas with limited broadband access. My colleague Adie Tomer and co-authors find that in 2015, almost one in four Americans (74 million people) lived in neighborhoods where fewer than 40 percent of households subscribed to broadband. It’s not only rural areas where broadband’s reach is limited; major metro areas with large Hispanic populations—and/or significant areas of concentrated poverty—exhibit troubling subscription gaps as well. As CityLab’s Kriston Capps reports, many cities are leaning on libraries to connect those populations to the online census, but tests thus far suggest the fix won’t be easy.

The massive online data collection effort also introduces significant data quality, privacy, and security challenges for the Census Bureau. Viruses, impersonator websites, data breaches, and service disruptions could threaten the integrity and accuracy of the count. While the Bureau is investing in addressing potential security weaknesses, the Government Accountability Office recently flagged significant challenges and risks the Bureau still faces to mounting a successful online 2020 census.

THE CENSUS MAY BE UNDER-RESOURCED: The Census Bureau has estimated the full “life cycle” cost of the 2020 census at $15.6 billion. Much of its ramp-up funding over the past few years came in below projected needs, leading to reduced testing of new operations and procedures. As Capps from CityLab details, the Bureau cut two of its planned dress rehearsals, conducting only one end-to-end test in Providence County, R.I. Moreover, the Census Bureau went without a permanent director for 18 months during this critical period, with Congress finally confirming federal statistical agency veteran Steven Dillingham to the position in early January.

Signs are looking up that Congress will provide adequate funding for the 2020 census in the coming year. Still, other preparation challenges confront the Bureau, including the need to hire more than 500,000 enumerators—the workers who go door-to-door to make sure that people who don’t respond online or by mail to the survey get counted. Last time around in 2010, the U.S. unemployment rate was hovering near 10 percent, and...
workers looking for a decent-paying temporary gig were relatively easy to find. Now with the rate south of 4 percent, it may be harder to find such workers, and as a result more difficult to ensure that harder-to-count communities are accurately captured in the census.


Money: The Census count determines how the federal government allocates funding for more than 100 different services and programs, including: health and human services; education; roads and infrastructure; and a variety of programs focused on rural areas. In Fiscal Year 2016, under the 55 largest programs, nearly $35 billion was disbursed to the state of Illinois based on 2010 census data. Adjusted for inflation, this amounts to $36.2B today.

- Based on FY2015 data, a 1% undercount would result in the loss of $122M per year in Medicaid (Federal Medical Assistance Percentage) – the 5th highest loss in the nation, after Texas, Pennsylvania, Florida and Ohio
- Over a 10-year period, a 1% undercount would conservatively amount to a $1.2B cut in Medicaid Funding alone.
- More than 70% of census dollars allocated to Illinois (over $24B in FY 2015) was spent on just five programs, including Medicaid, student loans, SNAP benefits, and highway construction funding.
- Census derived allocations for rural programs in Illinois amounted to $425M in FY 2016, and Illinois ranked 6th in per capita allocations for rural programs among the 10 most populous states. These dollars are also at risk if there is an undercount.

Power. Illinois has lost population and is likely to lose at least one Congressional seat and perhaps two if there is an undercount in the state. The US Census is used to apportion political representation in Congress as well as in the electoral college. In 2010 Illinois lost one Congressional seat due to loss of population; From 2014-2017, Illinois has experienced population loss each year and population declined by more than 150,000 people, the largest decrease in the Midwest.

To avoid further loss of both money and power, it is essential to ensure that every resident in the state of Illinois is counted. An undercount in any part of the state – of any population – impacts both fiscal allocations from the federal government and political representation. Each Illinoisan is equally important in completing the census to retain our state’s money and power.
SOURCE D: Census Hard To Count Maps, 2020: The following images show the rate of people in CHICAGO that were counted in the last U.S. Census in 2010. The rates represent the number of households that filled out the census on their own. So 50% or higher means 50% of the people or more in that neighborhood completed the Census in 2010.
Enrichment Activities

Digital Resources
If you have access to the internet, please go to tinyurl.com/DigitalAtHome. This document contains links to multiple digital resources that you can use each day.

There are also more resources specific to high school at tinyurl.com/CPSHSEnrichment including some for Advanced Placement (AP) and International Baccalaureate (IB) courses.

Khan Academy has Official SAT Practice that is free and tailored to students. See the flyer (English, Spanish) for more information.

Non-Digital Resources
We’ve designed this section of the packet to provide you the opportunity to:

Directions:
1. Each day, pick at least one activity to complete from each category.
2. Keep track of your work on a separate sheet of paper or in a journal.
3. At the end of each day, write a journal entry answering the questions:
   a. What was my favorite activity today? Why?
   b. What is something new I learned today?
   c. What are my goals for tomorrow?

Read
Read the news with a critical eye.
Read from news sites online or grab a free newspaper like South Side Weekly, Chicago Reader, or Red Eye. Ask yourself these questions from The Center for Media Literacy:
- Who are the sources and what are their perspectives?
- Are significant questions left unasked or unanswered?
- Do quotes seem abridged or out of context?
- Are exaggerated or rhetorical claims reported uncritically without journalistic scrutiny?
- What stories or events are not covered?

Read your social media (or your friends’) with a critical eye.
Ask yourself these questions from The Center for Media Literacy:
- Who created this message?
- What creative techniques are used to attract my attention?
- How might different people understand this message differently than me?
What values, lifestyles, and points of view are represented in, or omitted from, this message?
Why is this message being sent?

Read for fun
Read whatever you have access to, including children’s books, books you have already read, books your friends can lend you. If you have younger siblings, read to them!

Read for language
Look over the texts you have read for school recently, including novels and other texts from English, science texts, social science reading, etc. Re-read with an eye for language:
- Read for craft and style and look for rhetorical devices. Stop and note not just what writers are stating, but how and why.
- Read for vocabulary
  o Look for familiar words and phrases that might be used in new ways.
  o Look for words parts; how can you use your understanding of roots, prefixes, and suffixes to expand your vocabulary?
  o Look for unfamiliar words and phrases; practice re-reading and use context to understand words and phrases you can’t readily define

Read for stamina
Read for as long as you can in one sitting. Time yourself. While you read or after, note when you got distracted, when you were focused. Keep track of how long you read, seeing if you can increase your reading stamina over time.

Write

Write a six-word story
At the end of the day, capture your day in a six word story.

Top-ten list
Construct a top-ten list for things you love and hate. Challenge those around you to do the same and compare lists.

Letter to yourself
Write yourself a letter that you will open on a significant day: your birthday, six months or a year from now, your first day of high school or college next year. Describe what you are doing, thinking, wearing, and hoping for now, and give yourself advice for the future.

Start a writing journal
Writing for five to ten minutes every day is a great way to focus your day, contemplate big ideas, express yourself, and work out problems. You can develop a habit of freewriting about whatever is on your mind, or you can use the prompts here for inspiration.
- When was the last time you did something that scared you?
- How do you deal with ‘haters’?
- Are you a good listener?
- What is your favorite place?
- What do you notice that no one else does? What have you noticed recently?
- What advice would you give your younger self?
- What is your favorite childhood memory, possession, or place?
- Is gossip good or bad?
Write a play
Use the template below to create a play based on one of your journal entries.

- Pick a **title** for your play.
- List and describe your **characters**.
- **Setting:** Where does your play take place?
- **Time:** What time does the play take place?
- **Curtain Up!** What are the characters doing when the curtain rises?
- **Major Conflict:** What major problem do the characters confront in this play?
- Write your **dialogue** and **stage directions**. Example below.

```
ANDREA
[Enters, holding a soccer ball] I can’t find it!

TRAVIS
I told you already: it’s in the car. [Takes the soccer ball]
```

**Move**

**Healthy Corners:** Identify four activities for the four corners of the room. Activities can include jumping jacks, chair dips, arm circles, calf raises, or squats. Rotate through each corner after doing each activity for 1–2 minutes.

- **Variations:** Play music and when the music stops, rotate between stations.

**Fitness Uno:** Before beginning the game, choose an exercise for each color. Example: Red is jumping jacks, green is squat jumps, blue is jog in place, and yellow is arm circles. Complete the appropriate exercise for each card that is played. When the card states WILD, pick your favorite exercise to perform.

- **Variations:** If playing the game with Uno cards, use the number on the deck to indicate how many reps to perform of each workout. You can also use a regular card deck and assign workout movements to each suit.

**Materials Needed:** Uno Cards or playing cards.

**Pulse Rate:** Your pulse rate is the result of blood being pumped through your arteries by your heart. When your heart contracts (pumps), blood moves through blood vessels in your body called arteries. The arteries pulsate as blood rushes through them. This pulsation can be felt in different locations of your body (wrist, neck, chest). During exercise, your heart muscle pumps harder to move oxygenated blood to your muscle cells. Normally at rest, your heart muscle works less because your muscles are not really active. Monitoring pulse rate is one way to evaluate one’s cardiovascular fitness. Generally, the healthier your cardiovascular system (heart, arteries), the lower your resting heart rate. While
sitting, use the second and third fingers of your right hand to find the radial pulse of your left wrist.

1. Once you find your radial pulse, count each pulsation for one minute. Record your result.
2. Repeat step #1 five times.
3. Once you have completed your five minutes of data collecting, organize it by forming a line graph.
4. Answer the following questions after organizing your data.
   - What is a pulse?
   - What can your resting pulse rate determine?
   - What effect does exercising have on your pulse rate?
   - What can you determine about your resting heart rate after collecting and charting your data?
   - Variations: Repeat daily and graph results. Take heart rate after movement and graph it.

**Physical Activity Calendar:** Complete the daily activity in the calendar. After finishing the activity for today’s date, pick any other activity you want and complete that too!

<table>
<thead>
<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
<th>SATURDAY</th>
</tr>
</thead>
</table>
| National Health Observances
  - National Autism Awareness Month
  - National Minority Health Month
  - National Osteoporosis Awareness Month
  - Stress Awareness Month
  - April 7: World Health Day |
| 1 Yoga is a great way to relieve stress. Try Savasana, considered to be the hardest yoga pose! Fully relax & clear your mind. |
| 2 Star Jumps
Jump up with your arms and legs spread out like a star. Do 10 then rest and repeat. |
| 3 Crane Pose
Here’s a challenge! Put your hands on the ground, lean forward & balance your knees on your elbows. |
| 4 4 Walls
Face each wall in a room and do a different exercise for 30 seconds—side shuffle/glide, toe touch, right-wide stance/jump, back—vertical jumps |
| 5 Mindful Snack
When eating a snack, really pay attention to the taste, feel, sound, smell, and look of the snack you’re eating. What do you notice? |
| 6 Balance
Stand on your right leg and lift your left knee at a 90-degree angle. Touch your toe without falling repeat 10 times then switch sides. |
| 7 World Health Day
Did you know regular, moderate-intensity physical activity can help prevent diabetes? Go for a walk with an adult & discuss other ways to prevent diabetes. |
| 8 10 Jump Lunges
Complete a right leg lunges, while in the down position jump up landing in a lunge position on the left leg. |
| 9 Tabata
Jump squats 20 seconds of work 10 seconds of rest 8 rounds |
| 10 Before Bed Breathing
While lying in bed, place your hands on your stomach and pay attention to the up and down of your belly as you breathe. |
| 11 Dribble Challenge
Dribble a ball 100 times with each hand. Can you successfully dribble 100 times with each hand while moving? |
| 12 Fish Pose
Hold the pose for 60 seconds. Take a break and hold for another 60 seconds |
| 13 Card Fitness
Take a deck of cards, flip the top card. Complete exercises based on the suit and number on the card. Face cards are worth 15, Spades—jumping jacks, Clubs—squat, Hearts—mountain climbers, Diamonds—jump rope. |
| 14 Wild Arms
As fast as you can complete: 10 Arm Circles front & back 10 Forward punches 10 Raise the Roof Reap 3x |
| 15 Mindful Sensations
What do you notice around you? Find: 5 things you see 4 things you feel 3 things you hear 2 things smell 1 thing you taste |
| 16 Jump rope to music!
Can you jump to an entire song without stopping? |
| 17 How Fast Can You Go?
Pick a distance and see how fast you can run the distance. |
| 18 Slide, Slide, Sprint
Slide to your left for 10 steps, slide to right for 10 steps then face forward and sprint for 10 seconds. |
| 19 Garland Pose
Practise your balance with this pose! |
| 20 Tabata
20 seconds of work 10 seconds of rest 8 rounds |
| 21 Commercial Break
Can you hold a plank for an entire TV commercial break? |
| 22 Nighttime Note
Empty your mind before you go to bed by writing a note about what you’re thinking and leave it for tomorrow. |
| 23 Chair Pose
Hold for 30 seconds, relax then repeat. |
| 24 Positive Talk
Be sure to talk to yourself today like you would talk to someone you love. |
| 25 Jump, Jump
Jump side to side over an object or line for 1 minute straight. Go again but jump front to back. Repeat each jump twice. |

**Variations:**

- **Physical Activity Calendar:** Complete the daily activity in the calendar. After finishing the activity for today’s date, pick any other activity you want and complete that too!
**Mini Design Challenges:** Gather a random selection of supplies from around your home. Try to find things like pencils, rubberbands, cardboard, aluminum foil, wax paper, play-doh, or anything else that can be donated to this project. Set a timer for 15 minutes. Then select a challenge from the list below. Try NOT to look ahead of time so that this is actually a CHALLENGE! Then start your timer and build a prototype for the challenge you select using only the materials you gathered. A prototype is a preliminary—usually quick—model of something. It doesn’t have to be perfect.

**Challenges**
- Design something that can help people learn a different language
- Design a way to drink water on the go
- Design a system for people to share food
- Design a way to block wind and sun in the desert
- Design a way to make training a pet easier
- Design a way to help children learn to swim
- Design a way to purify water from a stream
- Design a new communication system

**Designing Solutions:** Find a few short articles from magazines, newspapers, or other nonfiction texts. Identify a real-world problem in what you read and design a solution to address the problem. After drawing your design, look for items around the house that you can use to build a model of your solution. Then answer the following questions:
- What is the problem you are trying to solve?
- Who will your solution help?
- How will you convince others to use your solution?
- Share your solution with others and ask for feedback.
- Revise your design and model to address the feedback you heard.

**Rube Goldberg Machine:** Identify a simple task and use household items to design and build a multi-step machine to complete the task. Before building your machine, answer the following questions:
- What task are you trying to solve? (Closing a door is a great task to start with, but you can choose anything!)
- What steps will you include in your machine? (Try to include at least 10!)
- What materials will you need?
- What will you do if your machine doesn’t work at first?

**Musical Art:** Gather paper and any art supplies (crayons, markers, paints), and a music source. Play any song and listen to the music. What do you see in your mind? What do you hear? What do you feel? Use your art supplies to express what you are seeing/hearing/feeling on paper. Repeat with two more songs, trying to find songs that sound different from one another. After you finish, talk about (or write) about what you created. Do they look different based on what you heard? Develop titles for your artwork.
Solve

See the tasks below and others at youcubed.org/tasks.

Youcubed My Heart: Use the heart image below to respond to the questions. Then relax and color the heart!
- What is the area of the shape?
- What is the perimeter of the shape?
- How many rhombuses do you see?
- How many triangles do you see?
- What questions can you ask?

Penny Collection: Consider a collection of pennies with the following constraints:
- When the pennies are put in groups of two there is one penny left over.
- When they are put in groups of three, five, and six there is also one penny left over.
- But when they are put in groups of seven, there are no pennies left over.
How many pennies could there be?

Marbles in a Box: Imagine a three dimensional version of tic-tac-toe where two players take turns to place different colored marbles in a box. The box is made from 27 transparent unit cubes arranged in a 3-by-3 array. The object of the game is to complete as many winning lines of three marbles as possible. How many different ways can you make a winning line? (A winning line has three x’s or three o’s in a line).

Nine Colors: You have 27 small cubes, 3 each of 9 colors. Can you use all the small cubes to make a 3 by 3 by 3 cube so that each face of the bigger cube contains one of each color?
Exploring Exponents:
Part 1: Complete the table and make sure you can explain your answers. Use colors/highlighters to show connections and make your work clearer.

<table>
<thead>
<tr>
<th>Exponential Notation</th>
<th>No Exponential Notation</th>
<th>Numeric Result</th>
<th>Visual</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3^{-3}$</td>
<td></td>
<td>$\frac{1}{27}$</td>
<td></td>
</tr>
<tr>
<td>$3^{-2}$</td>
<td></td>
<td>$\frac{1}{3 \cdot 3}$</td>
<td></td>
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<tr>
<td>$3^{-1}$</td>
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<td>Graph $3^x$</td>
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<td>$3 \cdot 3$</td>
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<tr>
<td>$3^3$</td>
<td></td>
<td>$3 \cdot 3 \cdot 3$</td>
<td>$27$</td>
</tr>
</tbody>
</table>

Part 2: Figure out a rule for each of the following situations. Try out different numeric examples to find a pattern. Use $a=2$, $b=7$, $m=3$, and $n=5$ for your first example, then choose your own numbers for the other two. Once you have a conjecture for what the rule is, try proving it to yourself by using non-exponential notation (or think of a different way to show it!). Use colors and highlighters to show connections and make your work more clear.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Numeric Examples</th>
<th>Rule Conjecture</th>
<th>Demonstration</th>
</tr>
</thead>
<tbody>
<tr>
<td>$a^m \cdot a^n$</td>
<td>$2^3 \cdot 2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^8 = 256$</td>
<td>$a^m \cdot a^n = a^{m+n}$</td>
<td>$a \cdot \ldots \cdot a \cdot a \cdot \ldots \cdot a$ $m+n$ times</td>
</tr>
<tr>
<td>$(a^m)^n$</td>
<td></td>
<td></td>
<td>$a \cdot \ldots \cdot a \cdot a \cdot \ldots \cdot a$ $m$ times $n$ times</td>
</tr>
<tr>
<td>$(ab)^m$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\left(\frac{a}{b}\right)^m$</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>$a^m \div a^n$</td>
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**Ice Cream Scoop:** In shops with lots of ice cream flavors, there are many different flavor combinations, even with only a two-scoop cone. With one ice-cream flavor, there is one kind of two-scoop ice cream, but with two flavors, there are three possible combinations (e.g., vanilla/vanilla, chocolate/chocolate, and vanilla/chocolate). How many kinds of two-scoop cones are there with 10 flavors? What about “n” flavors?

**Leo the Rabbit:** Leo the Rabbit is climbing up a flight of 10 steps. Leo can only hop up one or two steps each time he hops. He never hops down, only up. How many different ways can Leo hop up the flight of 10 steps? Provide evidence to justify your thinking.