Lesson Plan: Create a Budget in Google Sheets

Overview

In *Create a Budget in Google Sheets*, students research and collect data about real-life expenses in Google Sheets.

Learning Objectives

By the end of these lessons, students should be able to:

- Identify and analyze real world issues and problems, develop ideas and theories, and pursue answers and solutions
- Utilize a database, such as a spreadsheet, to collect, organize, graph, and analyze data to facilitate problem-solving and decision-making
- Curate information from digital sources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions
- Apply basic formulas (add, subtract) and advanced formulas (example: using =SUMIF to calculate costs) to spreadsheets

Total Duration

- 7-9 hours

Materials

- Computer with internet access (per student)
- Headphones (per student)
- A Google account (create an account at accounts.google.com/signup)

Outline

	Lesson	Duration	Description
1	Make a Long Term Spending Decision	80-105 min	Students use spreadsheets to collect, organize, and analyze data about a long-term spending decision.
2	Develop a Budget	45-70 min	Students use spreadsheets to develop a budget for spending and saving.
3	Research Car Loans	85-110 min	Students use spreadsheets to collect, organize, and analyze data about financing a car.
4	Plan a Vacation	80-110 min	Students plan a vacation and create a spreadsheet to estimate and track expenses.
5	Wrap-up	10 min	Students watch a wrap-up video and complete a reflection.

Prep

Before introducing the lesson to students:

- set up a class account at g.co/applieddigitalskills
- create and distribute the class code to the students
- share a copy of the rubric with students before they begin their projects

Assessments

Applied Digital Skills offers two tools to help measure student learning -- the end-of-lesson quiz and the student project rubric.

- **The end-of-lesson quiz** contains multiple-choice and open response questions. Use the quiz to help measure students' ability to recall what was covered in the lesson and demonstrate their understanding of how to use digital skills in different scenarios.
    - Note that the answer key is only available here in the teacher lesson plan
- **The student project rubric example** includes example criteria to score and provide comments on student projects created for this lesson. The rubric is designed to measure students' understanding and their ability to apply the digital skills covered in the lesson. Add additional rubric criteria to meet your needs.

Tip: A lesson can be completed over the course of a few classes. Each lesson has multiple videos for students to watch and varies in duration.

Tip: Assign groups. Some lessons require students to work in pairs or groups. You can save time by assigning students before the lesson begins.

Tip: Reserve 5 minutes at the beginning and end of each class. Start each class with a 5 minute introduction and end each class with a 5 minute closing based on where most students are in the lesson.

Tip: Use the rubric to evaluate student work. Rubrics are linked in each lesson plan to evaluate student work. Share a copy of the rubric with students before they turn in their projects.

Tip: Use the "show formulas" feature to view formulas. Assessing formulas in spreadsheets can be difficult, so ask student to go to the View menu and select "Show formulas" to show all formulas without clicking on the cell.

Lesson 1: Make a Long Term Spending Decision

Overview

Students use spreadsheets to organize and analyze data about a long-term spending decision.

Learning Objectives

Simple

By the end of this lesson, students should be able to:

- Conduct an internet search
- Organize data in a spreadsheet
    - Sort columns
    - Freeze columns and rows
- Add and multiply using cell references
- Copy formulas in a spreadsheet to other cells

Advanced

By the end of this lesson, students should be able to:

- Use Google Sheets to record and organize data

Terms and Concepts

By the end of the lesson, students should be familiar with the following:

- Contract term

Skills Covered

- Spreadsheet formulas
- Analyze data
- Using data
- Google Sheets

Resources

- Example Project
- Student Project Rubric
- Appendix

Outcomes

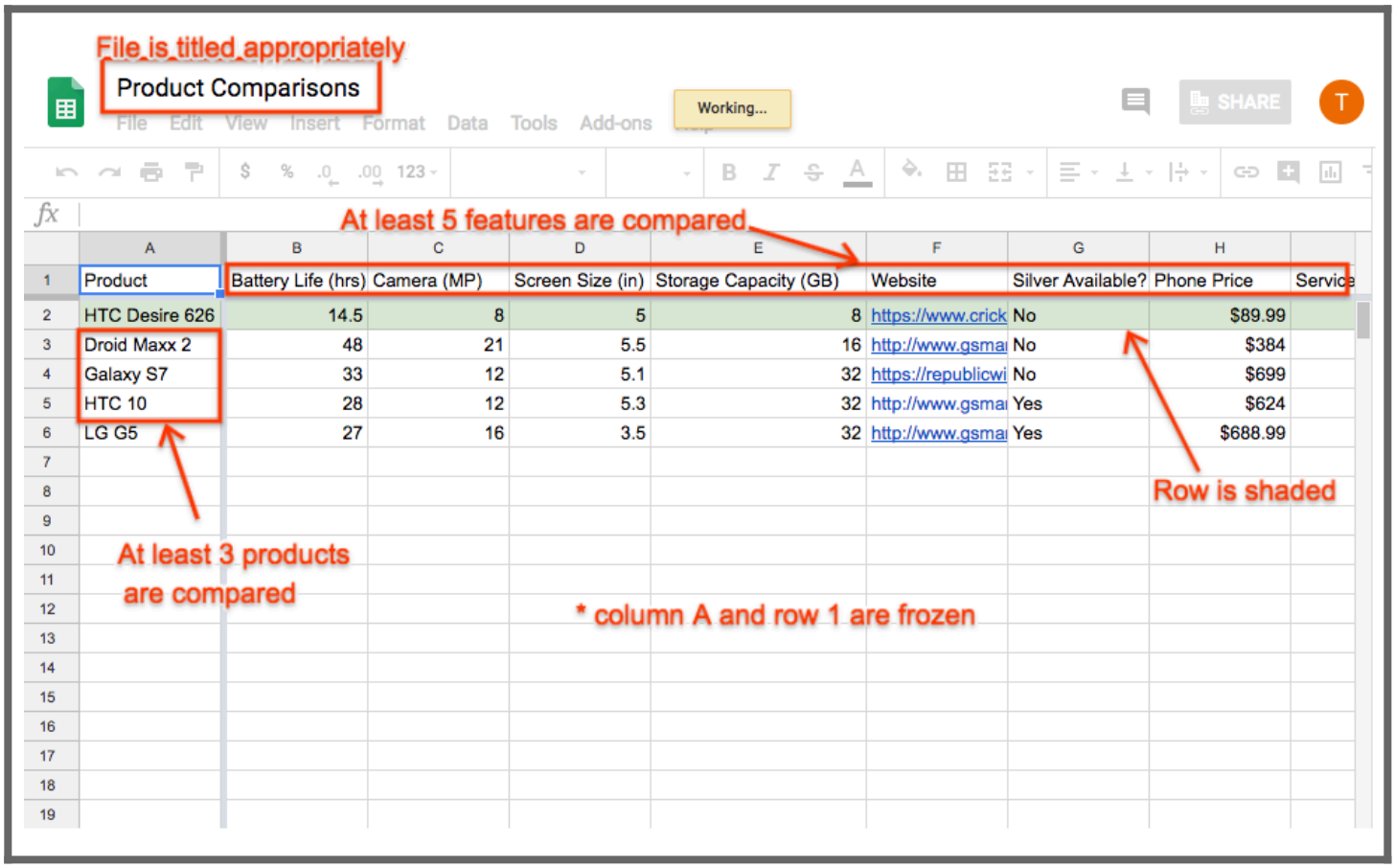
- Students create a new Google Sheet.
- Students organize their spreadsheet.
- Students search the internet for product features that are interesting and add data to appropriate columns.
- Students add data about additional products.
- Students sort and review the data.

Note: In this lesson, students make choices about a long-term purchasing decision (something with recurring payments). The example uses a cell-phone with a contract. If this purchase doesn't interest, or isn't appropriate for your students, encourage them to research a different option (rent-to-own electronics, cable/streaming services, etc.).

Procedures

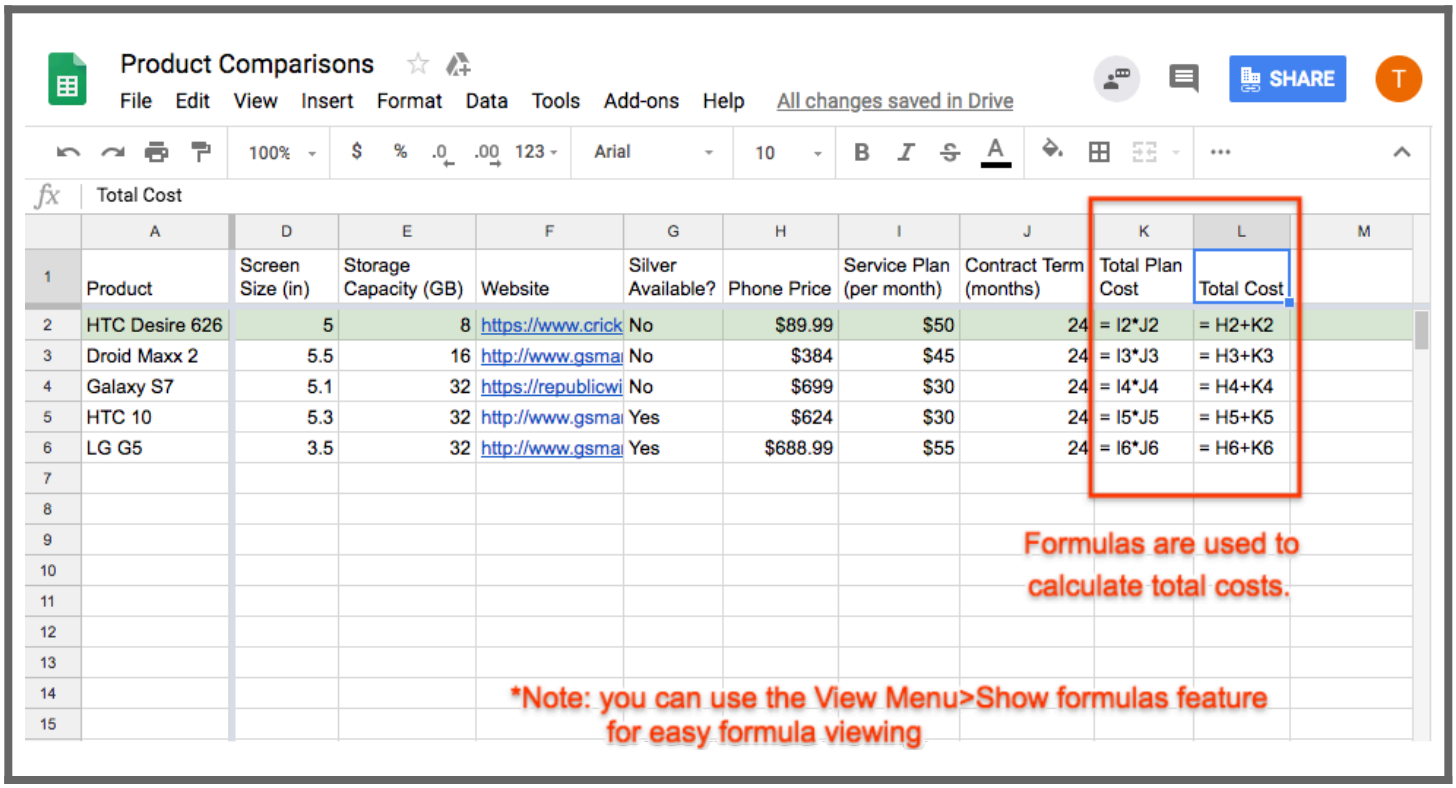
1. Introduction - Prompt students to think about how making informed financial decisions can affect their quality of life (see Appendix for suggested prompts)
2. Describe the lessons and outcomes (see Appendix for suggested prompts)
3. Assign each person a partner, and each pair to a group of 4. Guide students to sign in to log into their profile at g.co/applieddigitalskills
4. Check in with students as they watch videos 1-7
    - Video 1: Budget to Make Good Financial Decisions
    - Video 2: Long-Term Spending Decisions
    - Video 3: Research and Collect Data
    - Video 4: Research Costs
    - Video 5: Add Rows and Duplicate Formulas
    - Video 6: Use Data to Inform a Decision
    - Video 7: Using Formulas to Inform Decisions
5. Complete Wrap-Up / Discussion (see Appendix for suggested prompts)

Example Student Outcome



	A	B	C	D	E	F	G	H
1	Product	Battery Life (hrs)	Camera (MP)	Screen Size (in)	Storage Capacity (GB)	Website	Silver Available?	Phone Price
2	HTC Desire 626	14.5	8	5	8	https://www.crick	No	$89.99
3	Droid Maxx 2	48	21	5.5	16	http://www.gsmar	No	$384
4	Galaxy S7	33	12	5.1	32	https://republicwi	No	$699
5	HTC 10	28	12	5.3	32	http://www.gsmar	Yes	$624
6	LG G5	27	16	3.5	32	http://www.gsmar	Yes	$688.99

Example Student Outcome (continued)



	A	D	E	F	G	H	I	J	K	L	M
1	Product	Screen Size (in)	Storage Capacity (GB)	Website	Silver Available?	Phone Price	Service Plan (per month)	Contract Term (months)	Total Plan Cost	Total Cost	
2	HTC Desire 626	5	8	https://www.crick	No	$89.99	$50	24	= I2*J2	= H2+K2	
3	Droid Maxx 2	5.5	16	http://www.gsmai	No	$384	$45	24	= I3*J3	= H3+K3	
4	Galaxy S7	5.1	32	https://republicwi	No	$699	$30	24	= I4*J4	= H4+K4	
5	HTC 10	5.3	32	http://www.gsmai	Yes	$624	$30	24	= I5*J5	= H5+K5	
6	LG G5	3.5	32	http://www.gsmai	Yes	$688.99	$55	24	= I6*J6	= H6+K6	
7											
8											
9											
10											
11											
12											
13											
14											
15											

Lesson 2: Develop a Budget

Overview

Students develop a budget for spending and saving.

Learning Objectives

Simple

By the end of this lesson, students should be able to:

- Define “Income” and “Expenditure”
- Import data from a website into a spreadsheet
- Create a summary table in a spreadsheet
- Insert charts into a spreadsheet
- Compare income and expenditures in a personal budget
- Calculate totals using spreadsheet formulas

Advanced

By the end of this lesson, students should be able to

- Create and analyze a budget in Google Sheets
  - Create a drop-down menu using data validation
  - Calculate expenditures using the SUM-IF formula
  - Categorize and sum data
  - Insert and format appropriate charts

Terms and Concepts

By the end of the lesson, students should be familiar with the following:

- sum
- expenditure
- income
- credit
- debit
- balance
- categorize
- arguments (of a formula)
- relative cell reference
- absolute cell reference

Skills Covered

- Spreadsheet formulas
- Analyze data
- Using data
- Google Sheets

Resources

- Example project
- Project Evaluation Rubric
- Appendix

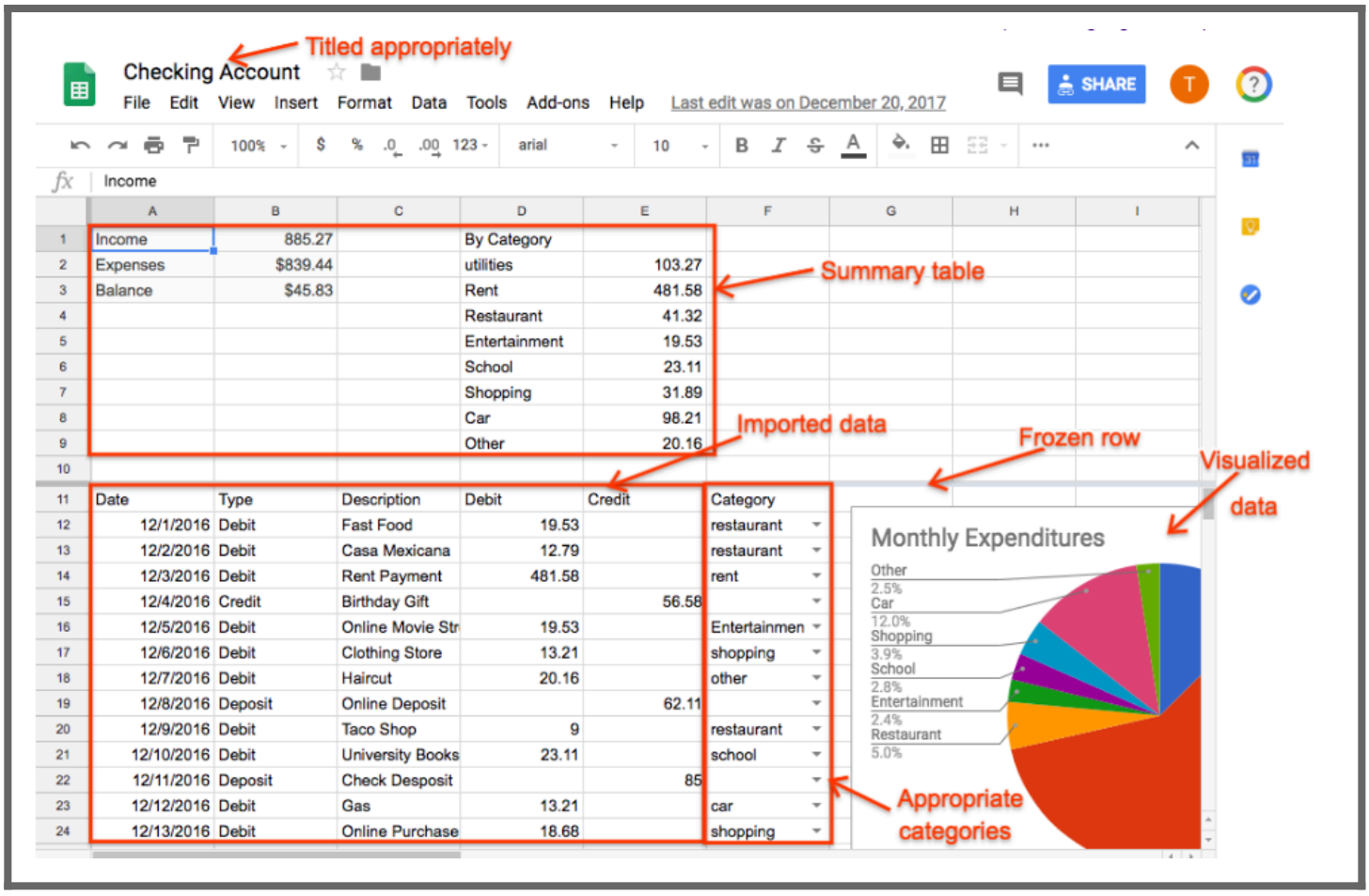
Outcomes

- Students import data from a banking website and create a summary table.
- Students calculate total expenditures in their spreadsheets.
- Students categorize the data from the simulated bank account in the spreadsheet.
- Students calculate the amount spent in each category using SUM IF formulas and absolute cell references.

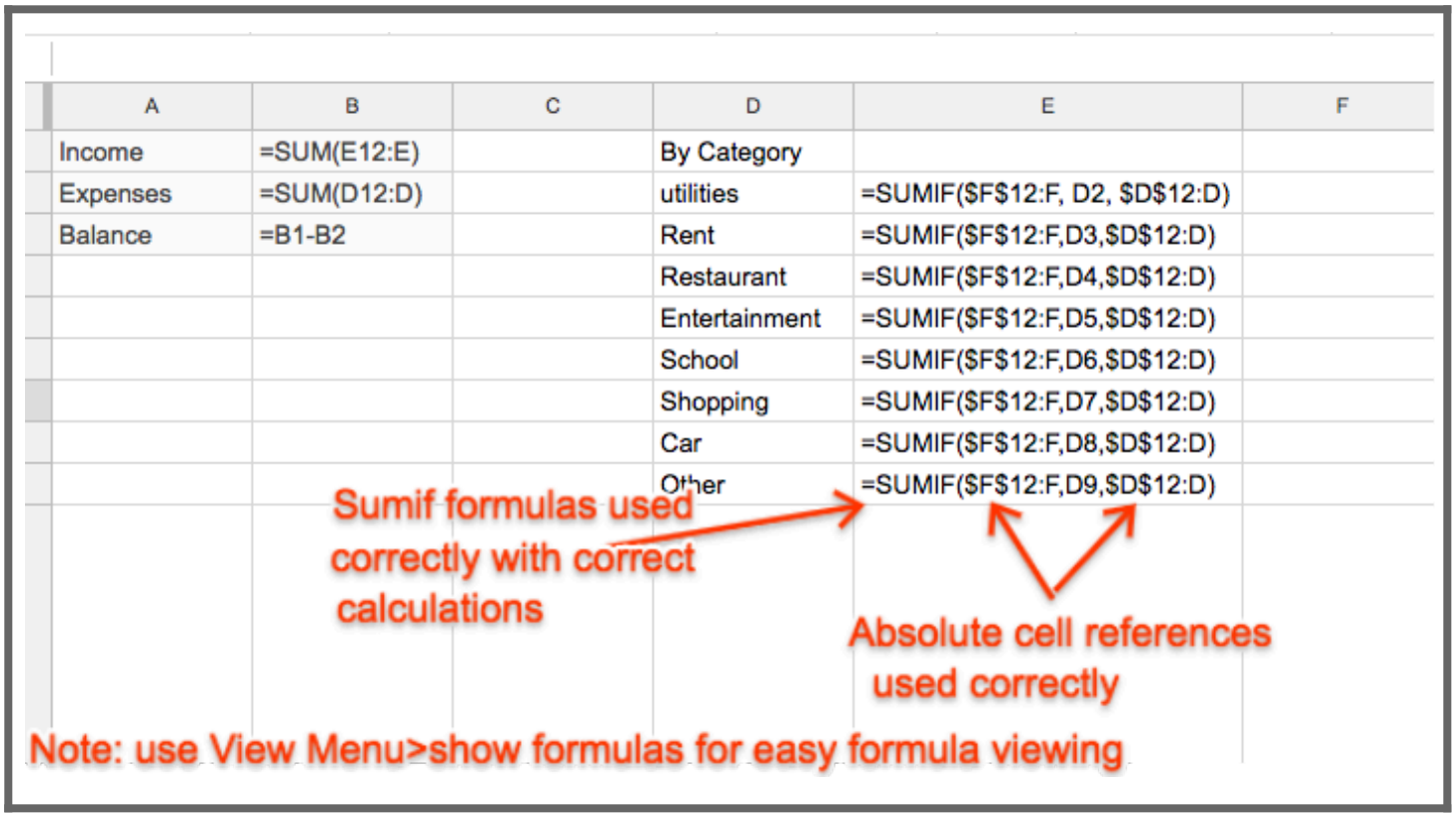
Procedure

1. Introduction (see Appendix for suggested prompts)
2. Check in with students. Meet 1:1 or in small groups as students watch videos 1-5 (see Appendix for suggested prompts)
   - Video 1: Develop a Budget
   - Video 2: Copy Data and Create a Summary Table
   - Video 3: Calculate Total Expenditures
   - Video 4: Categorize Expenditures
   - Video 5: Label and Calculate Category Totals
   - Video 6: Use Data Validation to Make Your Spreadsheet More Reliable
   - Video 7: Visualize the Data and Make Decisions
   - Video 8: Develop a Budget Wrap-up
3. Wrap-Up / Discussion (see Appendix for suggested prompts)

Example Student Outcome



Example Student Outcome (continued)



Lesson 3: Research Car Loans

Overview

Students learn about financing a car.

Learning Objectives

Simple

By the end of this lesson, students should be able to:

- Conduct an internet search
- Identify the fixed aspects of a loan
- Calculate loan costs
- Input and organize data in a spreadsheet
- Insert images into a spreadsheet
- Create a summary table in a spreadsheet

Advanced

By the end of this lesson, students should be able to:

- Use Google Sheets to record and organize product and loan information
  - Apply PMT and Absolute Value functions to calculate total monthly payments and total interest
  - Apply Relative Cell References to a specific range of cells

Terms and Concepts

By the end of the lesson, students should be familiar with the following:

- financing
- interest
- loan amount
- annual percentage rate (APR)
- loan term
- principal
- absolute value (formula)

Skills Covered

- Spreadsheet formulas
- Analyze data
- Using data

Resources

- Example project
- Project Evaluation Rubric
- Appendix

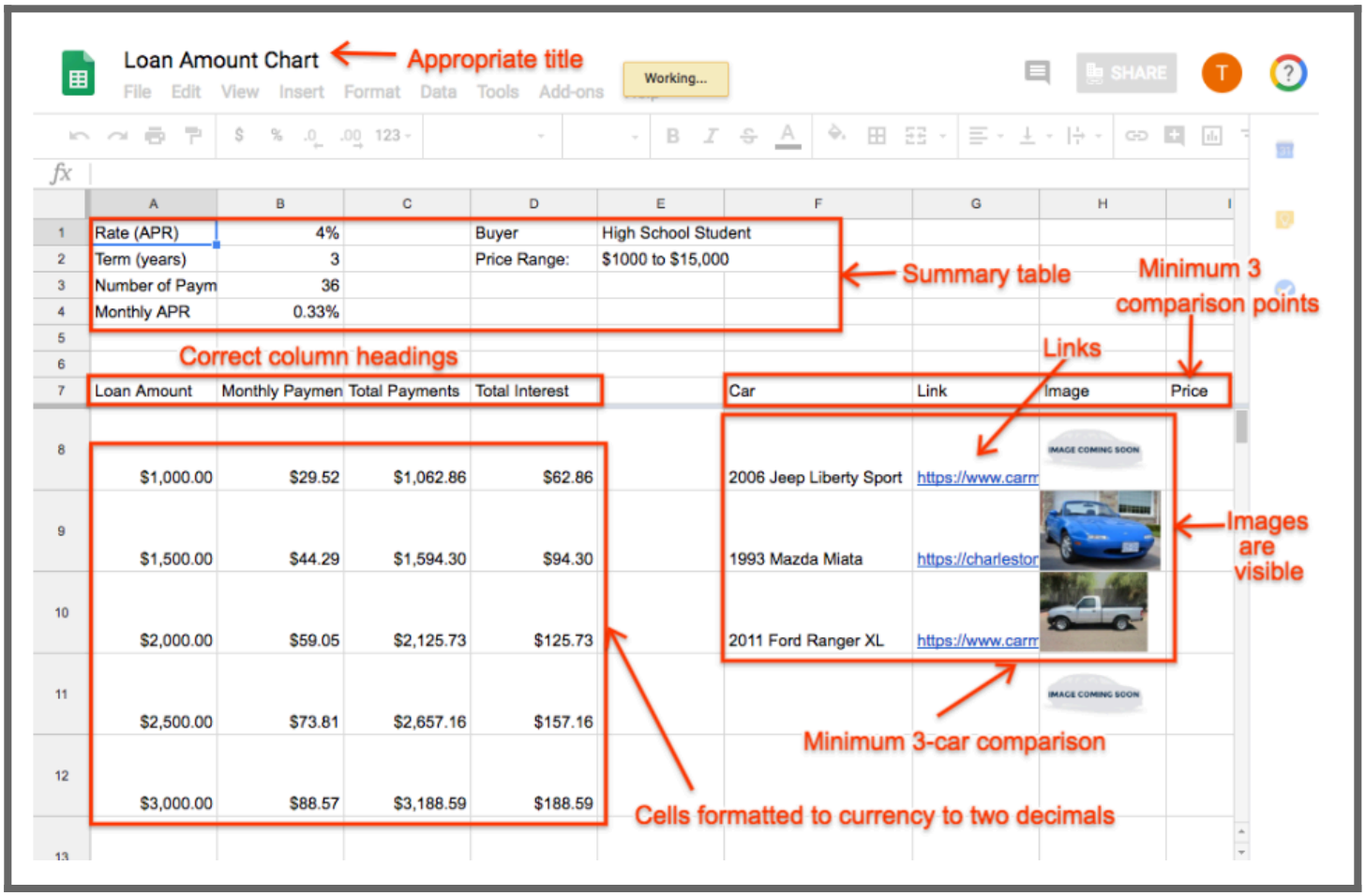
Outcomes

- Students create a new Google Sheet.
- Students create a summary table and select the fixed aspects of a loan.
- Students create a table to calculate and compare monthly payments for different loan amounts.
- Students convert negative values to absolute values.
- Students calculate the total payment (monthly payment amount * number of payments) of a loan term.
- Students Research at least 3 cars and add the year, model, URL, and an image to their spreadsheet.

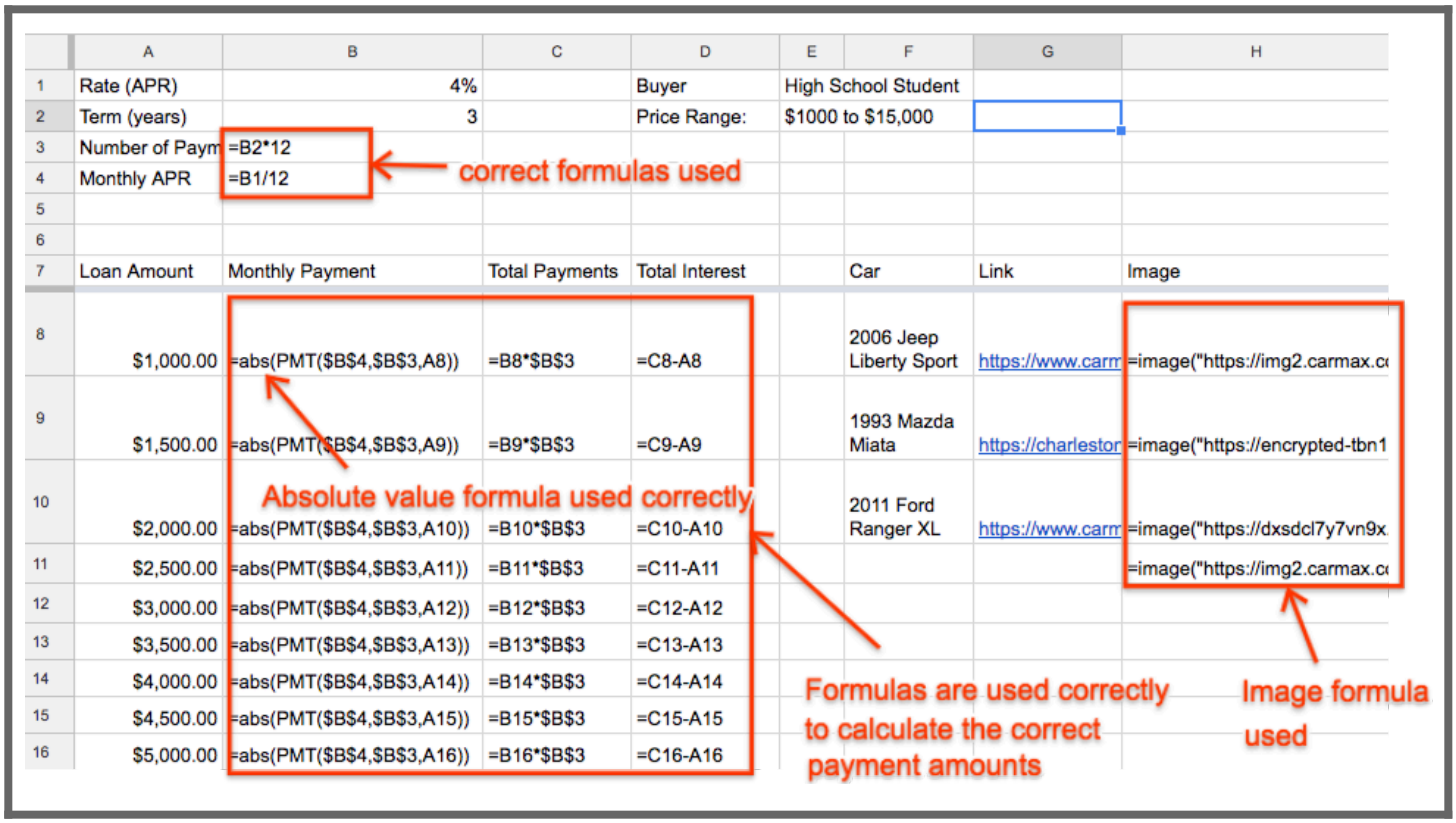
Procedure

1. Introduction (see Appendix for suggested prompts)
2. Check in with students. Meet 1:1 or in small groups as students watch videos 1-7 (see Appendix for suggested prompts)
    - Video 1: Introduction to Car Loans
    - Video 2: Loan Terms and APR
    - Video 3: Create a Loan Amounts Table
    - Video 4: Absolute Values and Currency Formatting
    - Video 5: Calculate Totals for Interest and Amount Paid
    - Video 6: Research Cars in Your Price Range
    - Video 7: Car Loans Wrap Up
3. Wrap-Up / Discussion (see Appendix for suggested prompts)

Example Student Outcome



Example Student Outcome (continued)



	A	B	C	D	E	F	G	H
1	Rate (APR)	4%		Buyer	High School Student			
2	Term (years)	3		Price Range:	$1000 to $15,000			
3	Number of Paym	=B2*12						
4	Monthly APR	=B1/12						
5								
6								
7	Loan Amount	Monthly Payment	Total Payments	Total Interest		Car	Link	Image
8	$1,000.00	=abs(PMT($B$4,$B$3,A8))	=B8*$B$3	=C8-A8		2006 Jeep Liberty Sport	https://www.carm	=image("https://img2.carmax.c
9	$1,500.00	=abs(PMT($B$4,$B$3,A9))	=B9*$B$3	=C9-A9		1993 Mazda Miata	https://charlestor	=image("https://encrypted-tbn1
10	$2,000.00	=abs(PMT($B$4,$B$3,A10))	=B10*$B$3	=C10-A10		2011 Ford Ranger XL	https://www.carm	=image("https://dxsdcl7y7vn9x
11	$2,500.00	=abs(PMT($B$4,$B$3,A11))	=B11*$B$3	=C11-A11				=image("https://img2.carmax.c
12	$3,000.00	=abs(PMT($B$4,$B$3,A12))	=B12*$B$3	=C12-A12				
13	$3,500.00	=abs(PMT($B$4,$B$3,A13))	=B13*$B$3	=C13-A13				
14	$4,000.00	=abs(PMT($B$4,$B$3,A14))	=B14*$B$3	=C14-A14				
15	$4,500.00	=abs(PMT($B$4,$B$3,A15))	=B15*$B$3	=C15-A15				
16	$5,000.00	=abs(PMT($B$4,$B$3,A16))	=B16*$B$3	=C16-A16				

Lesson 4: Plan a Vacation

Overview

Students plan a vacation and create a spreadsheet to estimate and track expenses.

Learning Objectives

Simple

By the end of this lesson, students should be able to:

- Identify the various costs associated with vacation planning
- Calculate total costs in a spreadsheet using formulas

Terms and Concepts

By the end of the lesson, students should be familiar with the following:

- budget
- total costs
- remaining balance

Skills Covered

- Spreadsheet formulas
- Analyze data
- Using data
- Google Sheets

Resources

- Example Project
- Project Evaluation Rubric
- Appendix

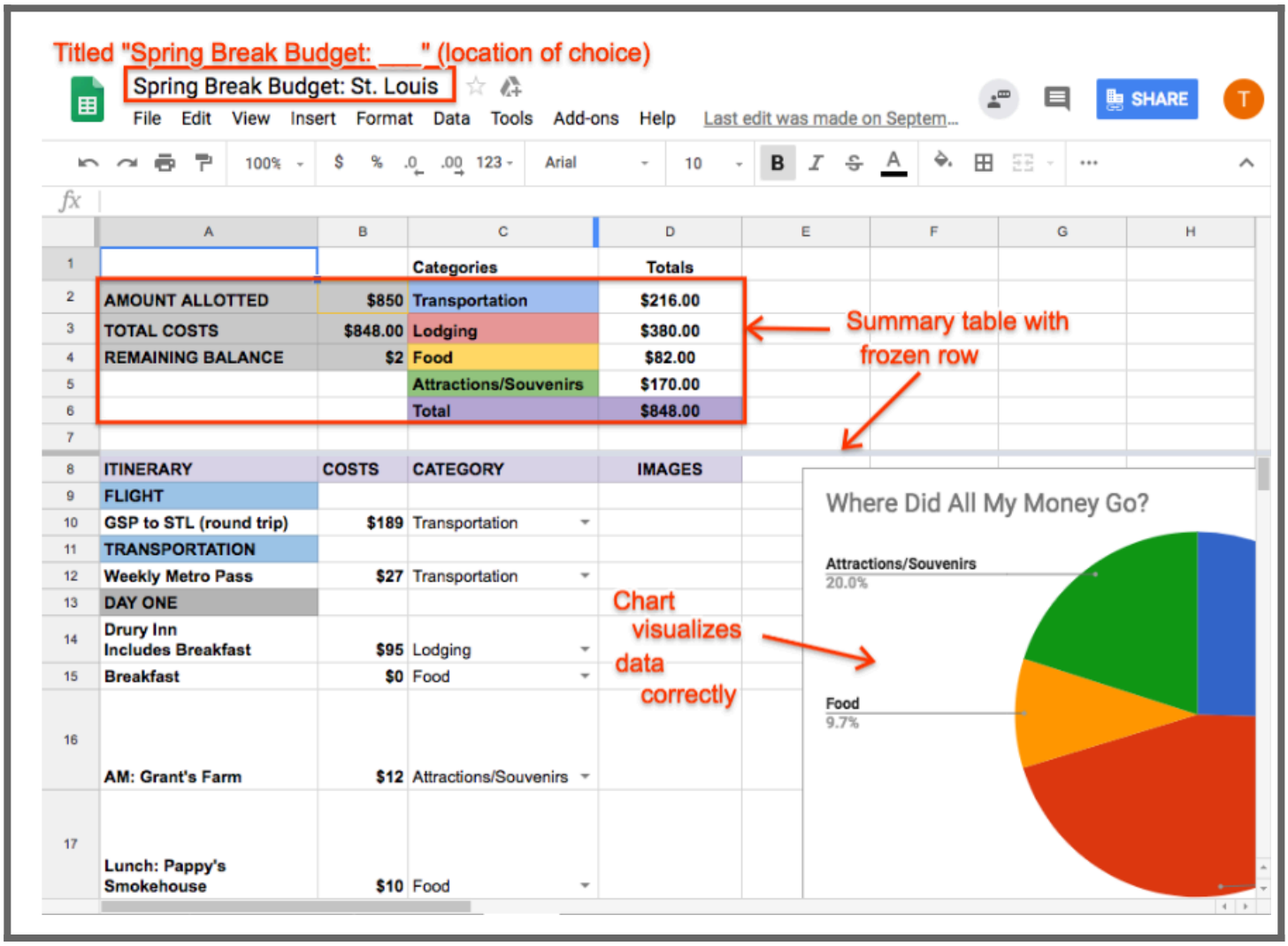
Outcomes

- Students create a new Google Sheet.
- Students organize the spreadsheet.
- Students complete Modules 1-4: Transportation, Lodging / Accommodation, Food Costs, and Attractions / Souvenirs.

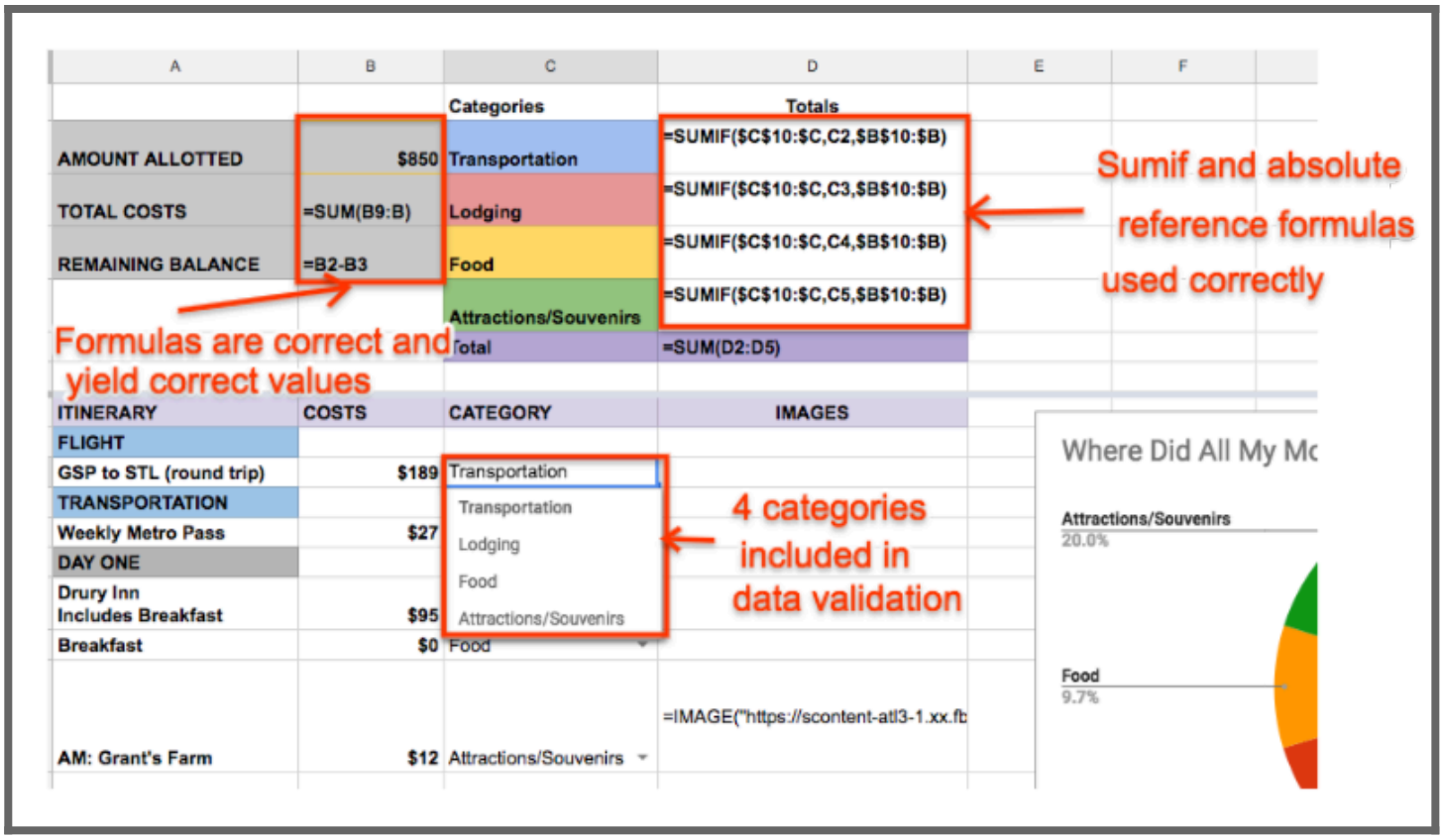
Procedure

1. Introduction (see Appendix for suggested prompts)
2. Students watch Videos 1 and 2 - then watch optional Modular Videos 1-5
    - Video 1: Plan a Vacation
    - Video 2: Set Up Your Spreadsheet and Start Your Research
    - Research Your Trip (Modular Videos)
        - Video 1: Transportation
        - Video 2: Lodging/Accommodations
        - Video 3: Food
        - Video 4: Attractions and Souvenirs
        - Video 5: Review of Formulas and Visuals
3. Wrap-Up/Discussion (see Appendix for suggested prompts)

Example Student Outcome



	A	B	C	D
1			Categories	Totals
2	AMOUNT ALLOTTED	$850	Transportation	$216.00
3	TOTAL COSTS	$848.00	Lodging	$380.00
4	REMAINING BALANCE	$2	Food	$82.00
5			Attractions/Souvenirs	$170.00
6			Total	$848.00
7				
8	ITINERARY	COSTS	CATEGORY	IMAGES
9	FLIGHT			
10	GSP to STL (round trip)	$189	Transportation	
11	TRANSPORTATION			
12	Weekly Metro Pass	$27	Transportation	
13	DAY ONE			
14	Drury Inn Includes Breakfast	$95	Lodging	
15	Breakfast	$0	Food	
16	AM: Grant's Farm	$12	Attractions/Souvenirs	
17	Lunch: Pappy's Smokehouse	$10	Food	


Categories
Totals
AMOUNT ALLOTTED
$850
Transportation
=SUMIF($C$10:$C,C2,$B$10:$B)
TOTAL COSTS
=SUM(B9:B)
Lodging
=SUMIF($C$10:$C,C3,$B$10:$B)
REMAINING BALANCE
=B2-B3
Food
=SUMIF($C$10:$C,C4,$B$10:$B)
Attractions/Souvenirs
=SUMIF($C$10:$C,C5,$B$10:$B)
Total
=SUM(D2:D5)
Sumif and absolute reference formulas used correctly
Formulas are correct and yield correct values
ITINERARY
COSTS
CATEGORY
IMAGES
FLIGHT
GSP to STL (round trip)
$189
Transportation
TRANSPORTATION
Weekly Metro Pass
$27
Transportation
Lodging
Food
Attractions/Souvenirs
4 categories included in data validation
DAY ONE
Drury Inn
Includes Breakfast
$95
Breakfast
$0
Food
=IMAGE("https://scontent-atl3-1.xx.fb
AM: Grant's Farm
$12
Attractions/Souvenirs
Where Did All My Mc
Attractions/Souvenirs
20.0%
Food
9.7%

Lesson 5: Wrap-Up

Overview

Students watch a wrap-up video and complete a reflection.

Learning Objectives

Simple

By the end of this lesson, students should be able to:

- Complete the reflection

Resources

- Reflection
- Reflection Answer Key
- Appendix

Outcomes

- Students watch Video 1, then complete the reflection

Procedure

1. Introduction (see Appendix for suggested prompts)
2. Students watch Video 1: Budgets: Life Has Many Financial Decisions
3. Students complete the Reflection - students who finish early can check out the Extensions
4. Complete a Wrap-Up/Discussion (see Appendix for suggested prompts)

Before Moving to the Next Set of Lessons:

Do not have students individually move onto the next set of lessons. The whole class should move on together. Encourage students who finished early to add more to their vacation budget, which will allow them to practice more skills.

Appendix

Lesson 1 Suggestions

Introduction

Prompt students to think about how making informed financial decisions can affect their quality of life:

Say	In this lesson, you'll conduct research and organize data in Google Sheets about a long-term, contractual purchase (like a cell phone and data plan), investigate housing options, categorize monthly expenses in a budget, and plan for a spring break vacation. Comparing costs, creating a budget, and thinking about why a purchase is important to you allows you to make wise financial decisions. For example, you might want the same cell phone that your friend has, but after doing the research, you decide on a different phone that has longer battery life and unlimited data. By comparing costs and other features and planning a budget, you will be able to purchase things that you can afford and that really matter to you.
Ask	• What are some major purchases you would like to make in the future? (Example: a gaming console or a vacation like the senior trip.) • How will you decide which one to purchase? • What is important to you about these purchases? (Example: color, size, having your own transportation, getting to live in a different city.)

Describe the lessons and their outcomes.

Say	In this lesson, you will use Google Sheets to compare products, investigate housing options, categorize monthly expenses, research car loans, conduct a cost-analysis, and create code to track changes to your budget. Then you will plan and budget for a spring break vacation of your choice.
Say	Go to g.co/applieddigitalskills and select "Sign In" to log into your profile. If you see "Wait," click it and move onto the next lesson. If you already see "Budget to Make Good Financial Decisions," then you are ready to begin watching the first video. Watch videos 1-6, and complete the steps described at your own computer before beginning work with your partner.
Intro & Closing Questions	• What is helpful about comparing the costs of similar products? • What did you learn from your partner when discussing their decision?
Engage	• What features have you chosen to include? • Are you surprised by any of the fine print? How much is the total cost affected? • What are the most important features you evaluated to make your final decision? • Which cell phone and data plan did you choose? What were some features your partner chose that were different from yours? Which ones were the same?

Lesson 2 Suggestions

Develop a Budget

Intro & Closing Questions	• How does creating a checking account help you make decisions about saving and spending money? • How does categorizing expenses help you stay organized?

Engage	• Have you created a budget before? How is this method different or helpful?
	• Ask about their budget evaluations:
	  ○ What did you spend the most money on?
	  ○ How much money was left over after expenses were paid?
	  ○ What is something you'd like to do with any surplus money?
	  ○ What is something you'd like to save for, and how will you change your spending in order to meet your goal?

Lesson 3 Suggestions

Research Car Loans

Intro & Closing Questions	• Why is it important to look at the loan amount and length of loan? • Why is important to look at monthly payments when determining whether or not to purchase a certain car?
Engage	• Who did you choose as the buyer of the car? • What happens when you change the loan amount or length of the loan? • What cars are you considering? • Which one best fits your budget? • Is there a car you really want but can't really afford? What changes would you have to make in your spending habits or other budgeted categories in order to buy it?

Lesson 4 Suggestions

Plan a Vacation

Intro & Closing Questions	• What is most difficult about planning your trip? • How did using Sheets help you plan your trip?
Engage	• What budget amount were you assigned? • What are some of your other vacation ideas? • Where are you going on vacation? • What aspects of the trip are most important to you? (Example: accommodations, food, cost, shopping, seeing a certain landmark/event, etc.)

Lesson 5 Suggestions

Wrap-Up

Summarize the lessons and celebrate that, as a result of the skills students learned, they created an exciting project:

Say	In this lesson you conducted research and organized data in Google Sheets to plan and budget for different types of major purchases. By comparing costs, creating a budget, and thinking about why a purchase is important to you, you were able to make appropriate financial decisions. You now know how to budget and plan for necessary items, like a phone, car, or place to live, AND for fun things like vacations, clothes, or a certain *type* of car or phone.
Ask	• How did you plan your vacation while staying within your budget? • Were any of your partners especially helpful in troubleshooting codes or formulas? • What was one problem that was difficult to solve and how did you manage to fix it?

Quiz Answer Key (Reflection)

1. C
2. B
3. A
4. A

Open-ended responses (Questions 5-7)

5. Advantages to using spreadsheets includes ability to easily sort and/or filter the information, easy to reorganize the information as you add new categories or additional information, ability to import that information into another app or platform (e.g., Maps), and ability to present that information in many different forms like tables or graphs.

6. Look for responses that include what expenditures the student prioritized/deprioritized.

7. Look for responses that indicate a specific digital skill (e.g., freezing/adding columns, importing data from a website to a spreadsheet, creating a formula, inserting charts into a spreadsheet) and whether the future uses of that skill are appropriate/feasible.