



PROJECT-BASED LEARNING UNIT

5-Day Unit • Aligned to 7.RP.A.3

PERCENT APPLICATIONS • REAL-WORLD MATH

Road Trip Budget *Project*

A five-day project-based learning unit in which Grade 7 students plan a 3-day road trip — applying **tax, tip, discount, markup, commission, simple interest, fees, percent change & percent error** to every financial decision along the way.

SALES TAX

TIP

DISCOUNT

MARKUP

COMMISSION

SIMPLE INTEREST

PERCENT CHANGE

PERCENT ERROR

Teacher Overview & How to Use This Resource

Welcome to *Percent Application Real-World Project: Road Trip Budget*, a five-day project-based learning (PBL) unit designed to give every Grade 7 student a meaningful reason to use every percent application named in the Common Core standard **7.RP.A.3**. Instead of drilling isolated percent problems on a worksheet, students step into the role of a junior travel agent and plan a complete three-day road trip for a family of four. Along the way they must apply sales tax, tip, discount, markup, commission, simple interest, fees, percent of change, and percent error to make defensible financial decisions. By the end of Day 5, each student has a trip portfolio, a written reflection, and a three-minute “Travel Agent Pitch” in which they justify their budget to peers using proportional reasoning.

This resource is engineered to be flexible enough for a single classroom teacher to run with one prep period of planning, yet rigorous enough to serve as a summative performance task. Every page is print-ready, but the student packet has also been written so that you can copy-paste each section into Google Slides for a 1:1 classroom. The state sales-tax reference table is editable so you can refresh it with the rates your students will actually encounter, and the simple-interest calculator template works equally well on paper, in a spreadsheet, or as a Google Sheets formula practice.

What’s Inside This Resource

Below is a complete inventory of the components included in this packet. Each one is also listed in the table of contents and can be printed independently of the others.

#	Component	Pages	What it is for
1	Teacher Overview	2	How to use the unit, materials, alignment
2	Pacing Guide & Daily Learning Targets	2	5-day flow linked to 7.RP.A.3
3	Editable State Sales-Tax Reference Table	2	All 50 states + DC; update as needed
4	Simple Interest Calculator Template	1	$I = P \times r \times t$ with worked rows
5	Student Project Packet	12	Days 0–5: planning → reflection → pitch
6	Differentiated Version (Struggling Learners)	4	Sentence frames, scaffolds, fewer problems
7	Extension Menu (Advanced Learners)	2	6 challenge tasks with point values
8	4-Criterion Analytic Rubric	2	Accuracy, reasoning, justification, presentation
9	Complete Answer Key & Sample Exemplars	5	Every problem worked, plus annotated samples
10	Travel Agent Pitch Presentation Guide	1	Slide-by-slide structure & scoring

Pacing Guide & Daily Learning Targets

The unit is designed for five 45–50 minute class periods. If your blocks are longer (75–90 minutes), consider running Day 1 and Day 2 in a single block, then splitting Day 5 across two days so students have ample rehearsal time for the Travel Agent Pitch. Each day below lists the learning target written in student-friendly “I can” language, the 7.RP.A.3 sub-skill addressed, the materials you will need on hand, the recommended formative assessment, and a differentiation note that points you to the appropriate support or extension.

Five-Day Pacing Snapshot

Day	Learning Target (“I can...”)	7.RP.A.3 Sub-Skill	Materials	Formative Check
1	calculate sales tax on a multi-item purchase using any state’s tax rate, and explain why the same item costs a different amount in different states.	Sales tax (multi-state)	State tax table, Day 1 packet	Exit ticket: 1 multi-state problem
2	calculate a tip as a percent of a restaurant bill, split a total bill among diners, and compare tipping on the pre-tax vs post-tax amount.	Gratuuity / tip	Day 2 packet, optional menus	Peer-checked split-bill card
3	apply a percent discount to attraction tickets, stack discounts responsibly, and compute a markup percent from cost and selling price.	Discount, markup, markdown	Day 3 packet, attraction websites	Markup analysis short write-up
4	calculate commission earnings on sales and compute simple interest on a rental-car loan using $I = P \times r \times t$.	Commission, simple interest, fees	Day 4 packet, simple-interest calculator	Loan comparison Venn diagram
5	compute percent of change between planned and actual spending and compute percent error on a fuel-economy estimate, then justify which category had the largest overage.	Percent increase/decrease, percent error	Day 5 packet, Days 1–4 student work	Travel Agent Pitch (summative)

Day-by-Day Detail

Day 1 — Sales Tax on Snacks & Travel Gear

Launch (5 min): Show students a receipt from any recent purchase and ask, “Why is the number at the bottom bigger than the number next to ‘subtotal’?” Use the discussion to surface the idea that tax is a percent of the price *added* to it. **Mini-lesson (10 min):** Introduce the formula $Total = Price \times (1 + r)$ and the alternative two-step form

Editable State Sales-Tax Reference Table

Students use this table on Day 1 (snacks and gear) and again on Day 5 (multi-state percent-of-change analysis). The rates below are the state-level base rates as commonly published; many states also allow counties and cities to add a local tax of 0–3%. The ‘Combined Avg’ column is a representative state-wide average that includes those local levies. Because tax rates change, this table is **intentionally editable** — the entire page is laid out so you can white-out any number and replace it before photocopying, or open the source script and update the dictionary directly. Always verify current rates with your state’s department of revenue before using the table as the basis for a graded assessment.

State	State Rate	Avg Local	Combined Avg	Notes
Alabama	4.00%	5.25%	9.25%	Local rates vary widely
Alaska	0.00%	1.43%	1.43%	No state sales tax
Arizona	5.60%	2.80%	8.40%	
Arkansas	6.50%	2.95%	9.45%	
California	7.25%	1.43%	8.68%	Highest base state rate
Colorado	2.90%	4.87%	7.77%	Low base, high local
Connecticut	6.35%	0.00%	6.35%	No local sales tax
Delaware	0.00%	0.00%	0.00%	No sales tax
Florida	6.00%	1.00%	7.00%	
Georgia	4.00%	3.32%	7.32%	
Hawaii	4.00%	0.44%	4.44%	Often classified as excise
Idaho	6.00%	0.02%	6.02%	
Illinois	6.25%	2.49%	8.74%	
Indiana	7.00%	0.00%	7.00%	No local sales tax
Iowa	6.00%	0.94%	6.94%	
Kansas	6.50%	2.21%	8.71%	
Kentucky	6.00%	0.00%	6.00%	No local sales tax
Louisiana	4.45%	5.00%	9.45%	High local add-ons
Maine	5.50%	0.00%	5.50%	No local sales tax
Maryland	6.00%	0.00%	6.00%	No local sales tax

Simple-Interest Calculator Template

This single-page reference is the workhorse of Day 4. Print one per student (or pair) and have students keep it next to their packet as they work through the rental-car loan problems. The formula is isolated in the equation card below, followed by a fully worked example, then a blank calculator table students fill in for each loan scenario they evaluate.

$$I = P \times r \times t$$

Interest = Principal $\times$ annual rate $\times$ time in years

Variable Key

Variable	Meaning	Units	Watch out for
I	Interest (the cost of borrowing)	Dollars (\$)	Always the answer, never an input
P	Principal (amount borrowed)	Dollars (\$)	Use the loan amount, not the monthly payment
r	Annual interest rate (as a decimal)	Decimal (e.g., 0.045)	Convert 4.5% $\rightarrow$ 0.045 before multiplying
t	Time	Years	18 months = 1.5 years; 36 months = 3 years

Worked Example

Maya borrows \$12,000 to buy a used car. The bank charges 5% simple interest per year, and she agrees to pay it back over 4 years. How much interest will she pay? What is the total amount she will repay?

Step	Work	Result
1. Identify P, r, t	$P = \$12,000$, $r = 5\% = 0.05$, $t = 4$ years	—
2. Substitute into $I = P \times r \times t$	$I = 12,000 \times 0.05 \times 4$	—
3. Multiply	$I = 600 \times 4$	$I = \$2,400$
4. Total repayment = $P + I$	$\text{Total} = 12,000 + 2,400$	$\text{Total} = \$14,400$
5. Monthly payment (optional)	$\text{Monthly} = 14,400 \div 48$	\$300/month

0

DAY 0 • PROJECT LAUNCH

Plan Your Route, Set Your Budget

Congratulations — you have just been hired as a junior travel agent! Your first client is a family of four who wants to take a three-day road trip from a starting city of your choice to a destination of your choice anywhere in the United States. They have given you a total budget of **\$1,800** to cover snacks, travel gear, restaurant meals, attraction tickets, gas, and rental-car financing. They want you to plan every dollar, show your math, and be ready to pitch the trip to them in a three-minute presentation on Day 5.

Over the next five class periods you will use every percent skill in the 7.RP.A.3 standard — sales tax, tip, discount, markup, commission, simple interest, fees, percent of change, and percent error — to build a trip portfolio you can defend. Each day has a short mini-lesson, a worked example, and four problems. Show your work in the boxes provided; the rubric rewards visible proportional reasoning, not just final answers.

What You Will Turn In

- A completed **Student Project Packet** (this 12-page document) with all calculations, work shown, and final answers in the spaces provided.
- A one-page **Written Reflection** answering four prompts about your financial decisions and what surprised you.
- A three-minute **Travel Agent Pitch** delivered to a small group of peers playing the role of your client family, scored with the rubric.

Trip Planning Sheet

Before Day 1, fill in the planning sheet below. Choose a starting city and a destination that are realistically reachable in one day of driving (under 600 miles). Use a mapping website to estimate the one-way distance and total driving time. You will reuse this information on every Day of the packet.

Field	Your Choice	Notes
Your name		
Date		
Starting city & state		Tax rate: ____ %
Destination city & state		Tax rate: ____ %
One-way distance (miles)		
Estimated driving time (one-way)		
States you will drive through		List every state — tax rates vary!

1

DAY 1 • SNACKS & GEAR

Budgeting with State Sales Tax

Learning Target

I can calculate sales tax on a multi-item purchase using any state's tax rate, and I can explain why the same item costs a different amount in different states.

$$\text{Total} = \text{Price} \times (1 + r)$$

r is the sales-tax rate written as a decimal (7% = 0.07)

Worked Example

A travel agent buys a \$30 cooler in Tennessee, where the combined sales-tax rate is 9.47%. What is the total cost?

Step 1: Convert the percent to a decimal: $9.47\% = 0.0947$.

Step 2: Add 1 to the rate: $1 + 0.0947 = 1.0947$.

Step 3: Multiply: $\$30 \times 1.0947 = \$32.841$.

Step 4: Round to the nearest cent: **\$32.84**.

Work space — try the worked example again on your own.

Your Day 1 Problems

Problem 1 • Snacks basket

Your client family wants the following snacks for the road: trail mix \$4.50, granola bars \$5.25, a 12-pack of bottled water \$6.99, beef jerky \$7.50, and dried fruit \$5.75. They buy everything at a gas station in Tennessee (combined rate 9.47%). (a) Find the subtotal. (b) Calculate the sales tax. (c) Find the total cost.

Show your work (P1).

DAY 4 • GAS & RENTAL CAR

Learning Target

I can calculate commission earnings on sales and compute simple interest on a rental-car loan using $I = P \times r \times t$.

c = commission rate; I = interest; P = principal; r = annual rate; t = years

Worked Example

A rental-car agent sells \$9,500 worth of upgrades in a week. She earns a 2.5% commission on upgrades. (a) How much commission does she earn that week? (b) If her base salary is \$500/week, what is her total pay?

Step 1: Commission = $\$9,500 \times 0.025 = \$237.50$.

Step 2: Total pay = \$500 + \$237.50 = **\$737.50.**

Your Day 4 Problems

Problem 1 • Gas station attendant commission

A full-service gas station attendant earns a 1.5% commission on every dollar of fuel she pumps. On a busy travel day she pumps \$4,800 worth of fuel. (a) How much commission does she earn that day? (b) If she works 5 equally busy days, what is her total commission for the week? (c) If she also earns a \$120/day base wage, what is her total weekly pay?

Show your work (P1).

Problem 2 • Rental-car simple-interest loan

5

DAY 5 • REVIEW & REFLECT

Percent of Change & Percent Error

Learning Target

I can compute percent of change between planned and actual spending and compute percent error on a fuel-economy estimate, and I can justify which category had the largest overage.

$$\% \text{ Change} = (\text{New} - \text{Old}) / \text{Old} \times 100\% \quad \% \text{ Error} = |\text{Estimate} - \text{Actual}| / \text{Actual} \times 100\%$$

Percent change can be negative; percent error is always positive (absolute value).

Worked Example

Maya planned to spend \$200 on gas but actually spent \$230. (a) What is the percent of change? (b) Is it an increase or decrease?

Step 1: Change = \$230 – \$200 = +\$30.

Step 2: Divide by the original (planned): $\$30 \div \$200 = 0.15$.

Step 3: Convert to percent: $0.15 \times 100 = \mathbf{+15\% \text{ increase}}$.

Your Day 5 Problems

Problem 1 • Planned vs actual spending

Use the table below to compute the percent of change for each category. Show the sign (+ for increase, – for decrease).

Category	Planned	Actual	Change (\$)	% Change
Snacks & gear	\$45	\$52.50		
Restaurant meals	\$180	\$215		
Attraction tickets	\$250	\$225		
Gas	\$120	\$135		
Lodging	\$300	\$300		
Rental car (interest)	\$80	\$80		
Total				

Differentiated Version for Struggling Learners

This parallel version of the student packet is designed for students who need additional scaffolding to access 7.RP.A.3. It uses the same five-day structure and the same percent applications, but reduces the problem count from four to two per day, provides sentence frames for every calculation, partially completes the first row of each table, and includes a visual diagram of each percent relationship. Calculator use is explicitly permitted and built into the scaffolds — the cognitive load is on *setting up* the percent relationship, not on performing the arithmetic.

How to Use This Section

Print this section for students who have an IEP, 504 plan, or MTSS Tier 2/3 math goal that includes percent problem-solving. Pair it with the same state sales-tax table and simple-interest calculator used by on-grade peers. The rubric (Section 8) applies equally; struggling learners should aim for Level 2 (approaching) on Mathematical Accuracy and Level 3 (meeting) on Real-World Justification, where the sentence frames provide the support they need to succeed.

Day 1 — Sales Tax (Scaffolded)

$$\text{Total} = \text{Price} \times (1 + r)$$

Step 1: write r as a decimal. Step 2: add 1. Step 3: multiply.

Sentence frame for every sales-tax problem:

“The total cost is \$_____ because \$_____ $\times (1 + \underline{\hspace{1cm}}) = \$\underline{\hspace{1cm}}.$ ”

Problem 1 (modeled)

Trail mix costs \$4.50. Tennessee tax is $9.47\% = 0.0947$.

Frame: The total cost is \$_____ because $\$4.50 \times (1 + \underline{\hspace{1cm}}) = \$\underline{\hspace{1cm}}$.

Solution shown: $1 + 0.0947 = 1.0947$. Total = $\$4.50 \times 1.0947 = \$4.93$.

Try it: \$5.25 granola bars in Tennessee. Use the same frame.

Problem 2 (you try)

A \$30 cooler bought in Michigan (6.00% tax = 0.06). Fill in the frame:

“The total cost is \$_____ because \$_____ $\times (1 + \text{_____}) = \$\text{_____}.$ ”

4-Criterion Analytic Rubric

This rubric is used to score the Student Project Packet (Days 0–5), the Written Reflection, and the Travel Agent Pitch together as a single summative. Each of the four criteria is scored on a 1–4 scale. The four scores are added to produce a total out of 16, then converted to a letter grade using the table at the bottom of this section. The rubric is designed so that a student who computes every answer correctly but cannot justify their decisions earns at most a B; conversely, a student whose arithmetic is imperfect but whose proportional reasoning and real-world justification are strong can still earn a B. This intentional balance reflects the unit’s PBL philosophy: percent fluency without judgement is not the goal.

The Four Criteria

Score	Mathematical Accuracy	Proportional Reasoning	Real-World Justification	Presentation
4 Exceeding	All calculations correct. Answers properly rounded to the cent or tenth of a percent. No arithmetic errors.	Sets up every percent relationship with a clear proportion or formula. Identifies the whole (denominator) correctly in every percent-change and percent-error problem.	Justifies every financial decision with at least one specific percent. Anticipates client questions and answers them with proportional reasoning.	Pitch is 2:45–3:15. Speaks clearly. Shows Trip Planning Sheet and at least one page of work. Cites ≥ 2 specific percents during the pitch.
3 Meeting	1–2 minor arithmetic errors that do not affect the underlying percent relationship. Rounding is correct in concept.	Sets up most percent relationships correctly. May confuse numerator/denominator once but corrects it when prompted.	Justifies most decisions with a percent. Some justifications are vague (‘it was cheaper’) rather than specific.	Pitch is 2:30–3:30. Shows the Trip Planning Sheet. Cites ≥ 1 specific percent. Answers ≥ 1 client question.
2 Approaching	3–4 arithmetic errors OR one conceptual error (e.g., forgot to convert percent to decimal). Most percent relationships still recognisable.	Sets up percent relationships inconsistently. Confuses percent change with percent error, or forgets to divide by the original value.	Justifications are mostly descriptive (‘we picked the cheaper one’) without specific percents.	Pitch is 2:00–4:00. Shows some work. May forget to cite specific percents. Answers ≤ 1 client question.
1 Beginning	More than 4 arithmetic errors OR multiple conceptual errors. Percent relationships are not recognisable in the work.	Rarely sets up percent relationships correctly. Treats percent as an absolute quantity rather than a relative one.	Justifications are missing or do not reference percents at all.	Pitch is under 2:00 or over 4:00. Does not show work. Cannot answer client questions.

Score Conversion

Complete Answer Key & Sample Student Exemplars

Every problem in the Student Project Packet is fully worked below. For each Day, after the canonical solution you will find one or two **annotated sample student exemplars** showing a different strategy or a common-but-correct alternative approach. The annotations explain *why* the work earns full credit so you can recognise equivalent reasoning in your own students' packets. Common misconceptions are flagged in callout boxes — these are the mistakes you are most likely to see and the most productive ways to address them.

Day 1 — Sales Tax

Problem 1 • Snacks basket (Tennessee 9.47%)

Step	Work	Result
(a) Subtotal	$4.50 + 5.25 + 6.99 + 7.50 + 5.75$	\$29.99
(b) Sales tax	$\$29.99 \times 0.0947 = \$2.838$	\$2.84
(c) Total	$\$29.99 + \$2.84$ (or $\$29.99 \times 1.0947 = \$32.83$)	\$32.83

Exemplar A (one-step): “Total = $\$29.99 \times (1 + 0.0947) = \$29.99 \times 1.0947 = \$32.8276 \approx \$32.83$. I prefer one step because it avoids a rounding error from the intermediate tax.” ✓ **Full credit — explicitly justifies method choice.**

Exemplar B (two-step): “Subtotal = \$29.99. Tax = $\$29.99 \times 0.0947 = \$2.84$. Total = $\$29.99 + \$2.84 = \$32.83$.” ✓ **Full credit — tax amount visible for receipt analysis.**

Misconception — Forgetting to Convert Percent to Decimal

A student who writes $\$29.99 \times 9.47 = \$283.99$ has forgotten to convert the percent to a decimal. The tell-tale sign is an answer roughly 100× too large. Fix: rewrite 9.47% as $9.47 \div 100 = 0.0947$ before substituting into the formula.

Problem 2 • Travel gear on sale (Michigan 6.00%)

Step	Work	Result
(a) Sale price	$\$89.99 \times (1 - 0.25) = \$89.99 \times 0.75$	\$67.49
(b) Sales tax	$\$67.49 \times 0.06 = \$4.0494$	\$4.05
(c) Total	$\$67.49 + \$4.05$	\$71.54

Exemplar A: “Discount first: $\$89.99 \times 0.25 = \$22.50$ off. Sale price = $\$89.99 - \$22.50 = \$67.49$. Then tax: $\$67.49 \times 1.06 = \$71.54$. The order matters — you tax the sale price, not the original.” ✓ **Full credit — explicit reasoning about order of operations.**

GRADE 7 MATH • 7.RP.A.3 • PROJECT-BASED LEARNING

What's Inside the *Full Resource*

A complete 59-page, five-day Grade 7 percent-applications PBL unit

Students plan a three-day road trip for a family of four while applying real-world percent skills to financial decisions.

59

TOTAL PAGES

5

DAY PBL UNIT

9

PERCENT SKILLS

4

RUBRIC CRITERIA

COMPLETE RESOURCE CONTENTS

01 Teacher Overview

How to use • materials • 7.RP.A.3 alignment

02 Pacing Guide

Five-day learning targets • formative checks

03 State Sales-Tax Reference Table

All 50 states + DC • editable combined rates

04 Simple-Interest Calculator

$I = P \times r \times t$ • variable key • worked example

05 Student Project Packet

12-page packet • Days 0–5 planning and percent work

06 Reflection & Pitch Materials

Written reflection • Travel Agent Pitch planner

07 Differentiated Version

Five scaffolded days • sentence frames • visual supports

08 Extension Menu

Six advanced challenges • bonus point values

09 4-Criterion Analytic Rubric

Accuracy • reasoning • justification • presentation

10 Complete Answer Key

Every core problem worked • annotated exemplars

PERCENT APPLICATIONS COVERED • 7.RP.A.3

Sales Tax

Tip / Gratuity

Discount

Markup

Commission

Simple Interest

Fees

Percent Change

Percent Error

Explore the Complete 59-Page Resource

[UMPRINTABLES.COM](https://umprintables.com)