MATH INVESTIGATIONS

LONDON CALLING

A Real-World Trip Planning & Currency Conversion Challenge

—

Unit Rates • Currency Conversion • Elapsed Time • Budgeting

Grades 6–8

Includes Student Packet, Teacher Guide & Answer Key

Ryan Smith

2021 Rosenthal Prize Recipient – Innovation & Inspiration in Math Teaching

Teacher Guide

At a Glance

Subject: Math – Unit Rate, Currency Conversion, Elapsed Time, Budgeting
Grade Band: 6–8 (adaptable for advanced 5th grade or introductory Algebra 1)
Time: One 90-minute block, or two 45-minute class periods
Format: Independent, partners, or small groups of 3–4

Overview

Students step into the role of a traveler planning a five-day trip to London. Using a fixed list of activities, opening hours, showtimes, and a currency exchange rate, they must build a realistic hour-by-hour itinerary and calculate a full trip budget in both U.S. dollars and British pounds. The task is intentionally over-scheduled — there is more to do than time allows — so students must prioritize, make trade-offs, and justify their choices, just like a real traveler on a budget.

Learning Objectives

- Convert between two currencies using a given exchange rate.
- Apply unit rate reasoning to scale per-person costs to a group.
- Calculate elapsed time and reason about a variable-rate constraint (traffic bands) when sequencing events.
- Construct and justify a multi-day schedule that satisfies several simultaneous constraints.
- Add decimal values accurately to produce a final budget total.

Standards Alignment

This task supports standards such as:

- CCSS.MATH.CONTENT.6.RP.A.3 – Use ratio and rate reasoning to solve real-world problems.
- CCSS.MATH.CONTENT.7.RP.A.3 – Use proportional relationships to solve multistep ratio and percent problems.
- CCSS.MATH.CONTENT.6.NS.B.3 – Fluently add, subtract, multiply, and divide multi-digit decimals.

Adjust rigor by grade: younger students can use a calculator for conversions and focus on sequencing; older students can be asked to find the best value trip under a fixed budget cap (see Extension below).

Materials

- One Student Packet per student or group (pages included in this file)
- Calculator (recommended for grades 6–7)
- Optional: printed London map or digital map for visual sequencing

Facilitation Tips

- Read the scenario aloud and confirm students understand that NOT every activity needs to fit — the goal is to fit as many as possible while respecting every hard constraint (fixed showtimes, opening hours, sleep window, meals).

- Remind students that travel time depends on when they leave, not when they arrive — this catches most groups on their first pass.
- Encourage students to convert every price to a single currency before adding their final budget total, rather than converting at the end.
- If time is short, assign the itinerary as the in-class task and the budget calculation as homework, or vice versa.

Extension Ideas

- Cap the budget at $1,200 for two travelers and ask students to decide what to cut.
- Add a third traveler and have students recompute all per-person totals.
- Research real current London hotel and flight prices to add to the budget.
- Have students design their own 3-activity “bonus day” with invented prices in both currencies for a partner to solve.

A Note on the Answer Key

Because several activities are flexible, there is no single correct itinerary. The answer key provides one fully valid sample schedule and the resulting budget total — use it to check currency conversions, math accuracy, and constraint logic, not to grade against an exact match.

STUDENT PACKET

London Calling

A Real-World Trip Planning & Currency Conversion Challenge

Name: _____

Date: _____

Your Mission

You are planning a five-day trip to London with your travel partner. You arrive on Saturday, June 1st at 6:36 a.m. and depart on Wednesday, June 5th at 9:46 p.m. Your goal is to build an itinerary that fits in as many of your researched activities as possible, and to calculate exactly how much money you'll need to bring — in both U.S. dollars and British pounds.

The Rules

- Every activity, including meals, must be scheduled somewhere in your itinerary. You do not have to schedule every optional activity, but you must fit in as many as reasonably possible.
- You must sleep from 11:00 p.m. to 6:30 a.m. every night.
- Travel time between activities depends on what time you leave — not what time you arrive. Use the Travel Time table below.
- You do not need to budget for your flight or hotel.

Exchange Rate

$1.41 USD = £1.00 GBP

Travel Time in London

The amount of time it takes to get anywhere in London depends on the time of day you leave:

Time of Day	Traffic	Travel Time
Before 7:30 a.m.	Light	20 minutes
7:30 a.m. – 9:30 a.m.	Rush hour	45 minutes
9:31 a.m. – 4:39 p.m.	Moderate	20 minutes
4:40 p.m. – 6:30 p.m.	Rush hour	50 minutes
After 6:30 p.m.	Light	25 minutes

Your Researched Activities

Some of the prices below were researched in dollars, and some in pounds. Fill in the missing “Cost in Other Currency” column for every activity before you begin budgeting.

Activity	Given Cost	Cost in Other Currency	Time Needed	Starting Time(s)
Average Breakfast	$12 per person		30 minutes	Any
Average Lunch	$16 per person		35 minutes	Any
Average Dinner	$30 per person		1 hour 15 minutes	Any
Special Dinner at The Ledbury (with friends)	£200 per person		1 hour 45 minutes	June 2nd at 8:00 p.m.

Activity	Given Cost	Cost in Other Currency	Time Needed	Starting Time(s)
Special Lunch at BAO	£35		1 hour 12 minutes	June 5th at 12:30 p.m.
London Zoo	£27.04 per person		2 hours 32 minutes	Open 10:00 a.m. – 6:00 p.m.
Windsor Castle	£21.20 per person		1 hour 30 minutes	Open 9:30 a.m. – 5:15 p.m.
Thames River Cruise	$26.50 per person		1 hour 50 minutes	9:15, 11:15, 1:15, 3:15, 5:15
Tower of London	£24.80 per person		30 minutes	Every 30 min, 10:00 a.m. – 3:30 p.m.
Day Trip: London to Stonehenge	$65 per person		7 hours 18 minutes	Daily – 8:00 a.m. or 1:30 p.m.
Aladdin the Musical – Prince Edward Theatre	£65.93 per person		2 hours 23 minutes	Daily – 7:30 p.m.
The Lion King – Lyceum Theatre	£79.12 per person		2 hours 20 minutes	Daily – 2:30 p.m.

Build Your Itinerary

Use one table per day to plan your trip hour by hour. Remember to account for travel time, meals, and your 11:00 p.m. – 6:30 a.m. sleep window.

Day 1 – Saturday, June 1 (Arrival Day)

Time	Activity	Notes / Travel

Day 2 – Sunday, June 2

Time	Activity	Notes / Travel

Day 3 – Monday, June 3

Time	Activity	Notes / Travel

Time	Activity	Notes / Travel

Day 4 – Tuesday, June 4

Time	Activity	Notes / Travel

Day 5 – Wednesday, June 5 (Departure Day)

Time	Activity	Notes / Travel

Calculate Your Budget

Using your completed itinerary and the activity table, calculate your total trip cost in both currencies. Show your work below or on a separate sheet.

Category	Total in USD ($)	Total in GBP (£)
Food (breakfast, lunch, dinner × 5 days)		
Special Reservations (Ledbury, BAO)		
Attractions (Zoo, Windsor, Cruise, Tower)		
Day Trip (Stonehenge)		
Shows (Aladdin, Lion King)		
TOTAL		

Reflection

- Which activities did you have to leave out, and why?
- Was it more expensive to convert dollars to pounds or pounds to dollars? Explain using an example from your budget.
- If you had to cut $200 from your budget, what would you remove first, and why?

ANSWER KEY

Your Mission

You are planning a five-day trip to London with your travel partner. You arrive on Saturday, June 1st at 6:36 a.m. and depart on Wednesday, June 5th at 9:46 p.m. Your goal is to build an itinerary that fits in as many of your researched activities as possible, and to calculate exactly how much money you'll need to bring — in both U.S. dollars and British pounds.

The Rules

- Every activity, including meals, must be scheduled somewhere in your itinerary. You do not have to schedule every optional activity, but you must fit in as many as reasonably possible.
- You must sleep from 11:00 p.m. to 6:30 a.m. every night.
- Travel time between activities depends on what time you leave — not what time you arrive. Use the Travel Time table below.
- You do not need to budget for your flight or hotel.

Exchange Rate

$1.41 USD = £1.00 GBP

Travel Time in London

The amount of time it takes to get anywhere in London depends on the time of day you leave:

Time of Day	Traffic	Travel Time
Before 7:30 a.m.	Light	20 minutes
7:30 a.m. – 9:30 a.m.	Rush hour	45 minutes
9:31 a.m. – 4:39 p.m.	Moderate	20 minutes
4:40 p.m. – 6:30 p.m.	Rush hour	50 minutes
After 6:30 p.m.	Light	25 minutes

Your Researched Activities

Some prices below were researched in dollars and some in pounds. Convert each to the other currency using the exchange rate above.

Activity	Given Cost	Cost in Other Currency	Time Needed	Starting Time(s)
Average Breakfast	$12 per person	£8.51 per person	30 minutes	Any
Average Lunch	$16 per person	£11.35 per person	35 minutes	Any

Activity	Given Cost	Cost in Other Currency	Time Needed	Starting Time(s)
Average Dinner	$30 per person	£21.28 per person	1 hour 15 minutes	Any
Special Dinner at The Ledbury (with friends)	£200 per person	$282.00 per person	1 hour 45 minutes	June 2nd at 8:00 p.m.
Special Lunch at BAO	£35	$49.35	1 hour 12 minutes	June 5th at 12:30 p.m.
London Zoo	£27.04 per person	$38.13 per person	2 hours 32 minutes	Open 10:00 a.m. – 6:00 p.m.
Windsor Castle	£21.20 per person	$29.89 per person	1 hour 30 minutes	Open 9:30 a.m. – 5:15 p.m.
Thames River Cruise	$26.50 per person	£18.79 per person	1 hour 50 minutes	9:15, 11:15, 1:15, 3:15, 5:15
Tower of London	£24.80 per person	$34.97 per person	30 minutes	Every 30 min, 10:00 a.m. – 3:30 p.m.
Day Trip: London to Stonehenge	$65 per person	£46.10 per person	7 hours 18 minutes	Daily – 8:00 a.m. or 1:30 p.m.
Aladdin the Musical – Prince Edward Theatre	£65.93 per person	$92.96 per person	2 hours 23 minutes	Daily – 7:30 p.m.
The Lion King – Lyceum Theatre	£79.12 per person	$111.56 per person	2 hours 20 minutes	Daily – 2:30 p.m.

Sample Itinerary (Answer Key)

This is one valid solution. Because several activities are flexible, students may reasonably build a different schedule — check that their version respects every hard constraint (fixed showtimes, opening hours, the sleep window, and realistic travel bands).

Day 1 – Saturday, June 1 (Arrival Day)

Time	Activity	Notes / Travel
6:36 a.m.	Arrive in London	—
7:00–7:30 a.m.	Breakfast	30 min
8:45–9:30 a.m.	Travel to Windsor Castle	45 min (7:30–9:30 a.m. band)
9:30–11:00 a.m.	Windsor Castle	1 hr 30 min
11:00–11:20 a.m.	Travel to lunch	20 min (9:31 a.m.–4:39 p.m. band)
11:20–11:55 a.m.	Lunch	35 min
12:55–1:15 p.m.	Travel to dock	20 min
1:15–3:05 p.m.	Thames River Cruise	1 hr 50 min
3:05–3:25 p.m.	Travel to Tower of London	20 min
3:30–4:00 p.m.	Tower of London	30 min (last entry 3:30)
6:00–7:15 p.m.	Dinner	1 hr 15 min
11:00 p.m.	Sleep	—

Day 2 – Sunday, June 2

Time	Activity	Notes / Travel
7:00–7:30 a.m.	Breakfast	30 min
9:15–10:00 a.m.	Travel to London Zoo	45 min (7:30–9:30 a.m. band)
10:00 a.m.–12:32 p.m.	London Zoo	2 hr 32 min
12:32–12:52 p.m.	Travel to lunch	20 min
12:52–1:27 p.m.	Lunch	35 min
Afternoon	Free time / rest before dinner	—
7:35–8:00 p.m.	Travel to The Ledbury	25 min (after 6:30 p.m. band)
8:00–9:45 p.m.	Special Dinner at The Ledbury	1 hr 45 min
9:45–10:10 p.m.	Travel back to hotel	25 min
11:00 p.m.	Sleep	—

Day 3 – Monday, June 3

Time	Activity	Notes / Travel
7:00–7:30 a.m.	Breakfast	30 min
8:00 a.m.–3:18 p.m.	Day Trip: London to Stonehenge	7 hr 18 min (round trip)
6:30–7:45 p.m.	Dinner	1 hr 15 min
11:00 p.m.	Sleep	—

Day 4 – Tuesday, June 4

Time	Activity	Notes / Travel
7:00–7:30 a.m.	Breakfast	30 min
11:30 a.m.–12:05 p.m.	Lunch	35 min
1:50–2:10 p.m.	Travel to Lyceum Theatre	20 min
2:30–4:50 p.m.	The Lion King	2 hr 20 min
4:50–5:40 p.m.	Travel to dinner	50 min (4:40–6:30 p.m. band)
5:40–6:55 p.m.	Dinner	1 hr 15 min
6:55–7:20 p.m.	Travel to Prince Edward Theatre	25 min (after 6:30 p.m. band)
7:30–9:53 p.m.	Aladdin the Musical	2 hr 23 min
9:53–10:18 p.m.	Travel back to hotel	25 min
11:00 p.m.	Sleep	—

Day 5 – Wednesday, June 5 (Departure Day)

Time	Activity	Notes / Travel
7:00–7:30 a.m.	Breakfast	30 min
12:10–12:30 p.m.	Travel to BAO	20 min
12:30–1:42 p.m.	Special Lunch at BAO	1 hr 12 min
Afternoon	Pack / check out / free time	—
5:00–6:15 p.m.	Dinner	1 hr 15 min
6:15–7:05 p.m.	Travel to airport	50 min (4:40–6:30 p.m. band)
9:46 p.m.	Depart London	—

Sample Budget (Answer Key)

Totals below assume both travelers complete every activity in the list — a maximum-spend scenario. If students build a lighter itinerary, their totals should be lower. *Attraction total assumes the group visits the Zoo, Windsor Castle, the Thames Cruise, and the Tower of London once each.

Category	Total in USD ($)	Total in GBP (£)
Food (breakfast, lunch, dinner – average meals only)	$488.00	£346.10
Special Reservations (Ledbury, BAO)	$613.35	£435.00
Attractions (Zoo, Windsor, Cruise, Tower)	$258.97*	£183.67*
Day Trip (Stonehenge)	$130.00	£92.20
Shows (Aladdin, Lion King)	$409.04	£290.10
TOTAL (both travelers, every activity)	**$1,899.36**	**£1,347.07**

Currency Conversion Notes

Pounds ⟶ Dollars: multiply by 1.41

Dollars ⟶ Pounds: divide by 1.41

Example: £200 × 1.41 = $282.00 Example: $65 ÷ 1.41 = £46.10

Note: each row is totaled in its native currency first, then converted — this is why the sum of converted row totals may be a few cents off from converting the grand total directly. That's expected with rounding, and worth pointing out to students.