Small Choices, Big Totals

Calculate daily impacts and plan measurable changes.

ENV.3.4 "Enrichment: Determine mathematically an individual's impact on the environment (carbon footprint, water usage, landfill contribution) and develop a plan to reduce personal contribution."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the daily amounts and impact rates in the table. Circle the time spans and changed amounts in the passage so you can use them to calculate impacts and savings.

Maya Measures Her Impact

1. Maya wants to test whether small daily choices add up. For one week, she tracks three activities: a car ride she takes alone, the length of her shower, and the mass of trash she sends to a landfill. The table gives her typical daily amounts and estimated impact rates. These rates are simplified estimates, not exact measurements for every household.

MAYA'S TYPICAL DAILY ACTIVITIES

Activity	Daily amount	Estimated impact rate
Car ride	8 km	0.20 kg carbon dioxide per km
Shower	10 min	9 L water per min
Trash sent to landfill	0.6 kg	1 kg landfilled per kg of trash

2. To estimate an impact, multiply an activity amount by its impact rate, then multiply by the number of days the activity occurs. Keep units attached so you do not confuse kilometers with kilograms or minutes with liters. For example, a lamp using 0.5 kilowatt-hours daily at 0.4 kilograms of carbon dioxide per kilowatt-hour produces an estimated 0.2 kilograms daily.

3. Maya considers two changes. On four days next week, she could shorten her shower from ten minutes to six. She could also take a bus instead of her usual car ride each day; that bus trip produces an estimated 0.6 kilograms of carbon dioxide. She compares each change with her usual activity over the same number of days.

2 ANSWER WITH EVIDENCE

Use the passage

1. How many kilograms of carbon dioxide does Maya's usual car ride produce in seven days? Show your calculation.

2. If Maya shortens her shower on four days as described, how many liters of water will she save? Show your calculation.

3. How many kilograms of trash does Maya send to a landfill in seven days at her usual rate? Show your calculation.

4. If Maya takes the bus instead of her usual car ride every day for seven days, how many kilograms of carbon dioxide will she avoid producing? Show your calculation.

3 YOUR TURN

Your own words

Make your own seven-day plan using two of the three impact categories in the table. For each category, give a current daily amount, a realistic new daily amount, and the seven-day reduction calculated with the table's rate; explain how you will track both changes.

Small Choices, Big Totals

PART 1 · READ AND MARK

Underline the daily amounts and impact rates in the table. Circle the time spans and changed amounts in the passage so you can use them to calculate impacts and savings. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How many kilograms of carbon dioxide does Maya's usual car ride produce in seven days? Show your calculation.	**8 km/day × 0.20 kg/km × 7 days = 11.2 kg of carbon dioxide.**
2	If Maya shortens her shower on four days as described, how many liters of water will she save? Show your calculation.	**(10 min − 6 min) × 9 L/min × 4 days = 144 L saved.**
3	How many kilograms of trash does Maya send to a landfill in seven days at her usual rate? Show your calculation.	**0.6 kg/day × 7 days = 4.2 kg landfilled.**
4	If Maya takes the bus instead of her usual car ride every day for seven days, how many kilograms of carbon dioxide will she avoid producing? Show your calculation.	**The car ride produces 8 × 0.20 = 1.6 kg per day. The bus saves 1.6 − 0.6 = 1.0 kg per day, or 7.0 kg over seven days.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I will reduce my daily car travel from 5 km to 2 km, saving (5 − 2) × 0.20 × 7 = 4.2 kg of carbon dioxide in seven days. I will shorten my daily shower from 8 minutes to 6 minutes, saving (8 − 6) × 9 × 7 = 126 L of water. I will record my kilometers and shower minutes each night.

Accept equivalent calculations with correct units. For the plan, accept reasonable personal amounts if both seven-day reductions use the table's rates and the student names a way to track each change.