

Grade 6 • Unit 9 Worksheet

Putting It All Together

Name: _____

Date: _____

Part A • Fermi Problems

Fermi problems require ESTIMATION, multiple steps, and reasonable assumptions. There is no single right answer — but there are unreasonable ones.

1. Estimate how many heartbeats you've had in your lifetime so far. State your assumptions and show your work.

My assumptions (rate per minute, your age, etc.):

Calculations:

Final estimate (with units): _____

2. Estimate how many breaths a person takes in a year. Then compare with a classmate or family member. If your estimates differ a lot, explain what assumptions caused the difference.

Estimate:

Comparison & reflection:

Part B • Voting & Fairness

3. A class of 30 students voted for one of four field-trip options. Zoo: 12 votes. Museum: 10 votes. Park: 6 votes. Aquarium: 2 votes.

- a. Which option wins under PLURALITY (most votes)? _____
- b. Does the winner have a MAJORITY (more than 50%)? ☐ Yes ☐ No. Show:

-
- c. What percent of the class voted for the winning option? _____ %
 - d. Discuss: is it 'fair' that the winning option has support from less than half the class? When is plurality fair?

Part C • Connections — Rectangles, Fractions, Decimals

4. A rectangle measures 12 cm by 5 cm.

- a. What is its area? _____ sq cm
- b. Find the dimensions of a SQUARE with the same area. Side length = _____ cm
- c. Find the dimensions of a different rectangle with the same area, using fractional dimensions.

5. Write $\frac{7}{8}$ as a decimal, as a percent, and use it to describe a real situation.

Decimal: _____
Percent: _____ %

A real situation involving $\frac{7}{8}$:

Part D • Year-End Synthesis

6. Lin walks $\frac{3}{4}$ mile in $\frac{1}{3}$ hour. At this rate, how far can she walk in 1 hour? In 2.5 hours?

Distance in 1 hour (rate): _____ miles

Distance in 2.5 hours: _____ miles

Show your work:

7. A rectangular swimming pool is 25 m long and 12 m wide. The water level is 2 m deep.

a. What is the volume of water in cubic meters? _____ m^3

b. If the pool drains at a rate of 600 L per minute ($1 \text{ m}^3 = 1000 \text{ L}$), how long until the pool is empty?

8. The temperature dropped from 5°C to -12°C overnight. How many degrees did it drop?

Show your reasoning (a number line may help):

Answer: _____ $^\circ\text{C}$

Part E • Reflection

9. Of the topics this year — ratios, percentages, dividing fractions, decimals, expressions/equations, negative numbers, statistics — which one made the BIGGEST shift in how you think about numbers? Explain.

10. Write your OWN multi-step problem that uses TWO different ideas from Grade 6 (e.g., a ratio + a percentage; an equation + negative numbers). Provide a solution.

My problem:

Solution:
