LESSON MAKER PRO

Plan, Solve, Check

Use math tools to make and defend decisions.

GRADE 8 · TEKS 8.1

8.1 "Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: apply mathematics to problems arising in everyday life, society, and the workplace..."

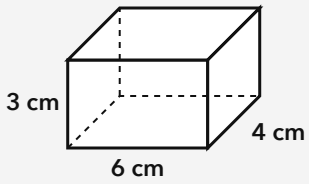
NAME _____ DATE _____

A USEFUL PROBLEM-SOLVING PLAN

First, list what you know and what you need to find. Choose a tool or operation, solve, then check whether your answer has the right unit and makes sense. Explain your choice with numbers, words, or a diagram.

WORKED EXAMPLE

A library packs books in the shown rectangular box, 6 cm long, 4 cm wide and 3 cm high. Find its volume. Then check whether an estimate near 70 cm^3 is reasonable.



1. Use V = l × w × h.
2. Substitute: V = 6 × 4 × 3.
3. Multiply: V = 72 cm^3.
4. Since 72 is near 70, the estimate is reasonable.

Answer: 72 cm^3

PRACTICE 4 problems

1 Plan, solve, and check: A drama club sells 7 tickets for $8 each. What is the revenue? Give a multiplication check.

ANSWER _____

2 Plan, solve, and check: A team has 45 players. Each van holds 8 players. What is the least number of vans needed? Explain why.

ANSWER _____

3 Plan, solve, and check: A music app has 18 songs. You make playlists of 5 songs each. How many full playlists can you make, and how many songs are left?

ANSWER _____

_____

4 Plan, solve, and check: A 12-ounce juice costs $3. A 20-ounce juice costs $4. Which is the better buy per ounce? Show both unit prices.

ANSWER _____

_____

APPLY IT Show your work

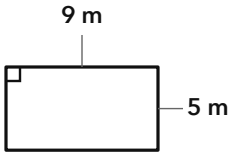
1 The table shows a skate shop's rental bills. Use the pattern to predict the cost for 5 hours. Explain your pattern and check it against the table.

SKATE RENTAL COSTS

Hours	Cost
1	$6
2	$10
3	$14
4	$18

ANSWER _____

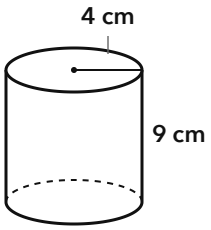
2 A garden club will put edging around the shown rectangular garden, 9 m long and 5 m wide. Edging costs $2 per meter. Find the total cost and explain why your perimeter is reasonable.



ANSWER _____

CHALLENGE One step up

The cylinder shown has radius 4 cm and height 9 cm. It will hold sand for a lab model and must hold at least 450 cm^3. Use pi = 3.14. Does it qualify? Show the volume calculation and an estimate-based check.



WORK SPACE AND ANSWER

ANSWER KEY # Plan, Solve, Check

GRADE 8 · TEKS 8.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Plan, solve, and check: A drama club sells 7 tickets for $8 each. What is the revenue? Give a multiplication check.	**$56; 7 × 8 = 56.**
2	Plan, solve, and check: A team has 45 players. Each van holds 8 players. What is the least number of vans needed? Explain why.	**6 vans; 5 vans hold 40 players, but 6 vans hold 48.**
3	Plan, solve, and check: A music app has 18 songs. You make playlists of 5 songs each. How many full playlists can you make, and how many songs are left?	**3 full playlists and 3 songs left; 3 × 5 + 3 = 18.**
4	Plan, solve, and check: A 12-ounce juice costs $3. A 20-ounce juice costs $4. Which is the better buy per ounce? Show both unit prices.	**The 20-ounce juice; $3/12 = $0.25 per ounce and $4/20 = $0.20 per ounce.**

PART 2 · APPLY IT

1. **$22** The cost increases by $4 for each additional hour. Adding $4 to the 4-hour cost of $18 gives $22.
2. **$56** The perimeter is 2(9 + 5) = 28 meters. At $2 per meter, the cost is 28 × 2 = $56.

CHALLENGE

Yes. $V = 3.14 \times 4 \times 4 \times 9 = 452.16$ cm^3. An estimate, $3 \times 16 \times 9 = 432$ cm^3, shows 452.16 cm^3 is reasonable.

Accept equivalent multiplication, division, perimeter, and volume expressions. For explanations, accept a correct numerical check that supports the stated answer.