

Plan, Solve, Check

Use facts, a strategy, and a check.

GRADE 7 • TEKS 7.1.B

7.1.B "use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;"

NAME _____

DATE _____

A STRONG PROBLEM-SOLVING PLAN

First, identify the facts and the question. Choose operations that fit, solve carefully, then check whether your answer makes sense in the situation.

WORKED EXAMPLE

The art club buys 13 admission tickets for \$11 each and uses a \$9 coupon. What is the total cost?

1. Plan: Multiply for the ticket cost, then subtract the coupon.
2. $13 \times 11 = 143$
3. $143 - 9 = 134$
4. Check: $134 + 9 = 143$, so the coupon was subtracted correctly.

Answer: \$134

PRACTICE 5 problems

- 1** Ava has \$24. She buys 3 pens that cost \$4 each. State a plan, find how much money is left, and check with addition.

ANSWER _____

- 2** Jordan puts 32 trading cards equally into 8 sleeves. State a plan, find the number of cards in each sleeve, and check.

ANSWER _____

- 3** At sunrise, the temperature is -10 C. By noon, it rises 18 C. State a plan, find the noon temperature, and check using subtraction.

ANSWER _____

- 4** A \$40 game controller is 15% off. State a plan, find the sale price, and check by adding the discount back.

ANSWER _____

- 5** A shop charges \$3 for delivery plus the cost of 8 identical binders. The total is \$35. State a plan, find the cost of one binder, and check.

ANSWER _____

APPLY IT Show your work

- 1** A music app costs \$18 for 3 months. At the same monthly rate, how much will 8 months cost? A student has a \$50 app-store credit. State a plan, solve, and decide whether the credit is enough.

WORK SPACE

ANSWER _____

- 2** An esports team wants 90 ranking points. It earns 27 points in one match and 16 points in another match, then loses 8 points for a penalty. State a plan, find how many more points the team needs, and check your result.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two mobile data plans are compared. Plan A costs \$14 plus \$3 per gigabyte. Plan B costs \$30 for unlimited data. For what first whole-number number of gigabytes does Plan A cost more than Plan B? Show a plan and explain why your answer is the first amount.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Ava has \$24. She buys 3 pens that cost \$4 each. State a plan, find how much money is left, and check with addition.	Plan: Multiply, then subtract. $3 \times 4 = 12$ and $24 - 12 = 12$, so Ava has \$12 left. Check: $12 + 12 = 24$.
2	Jordan puts 32 trading cards equally into 8 sleeves. State a plan, find the number of cards in each sleeve, and check.	Plan: Divide the cards by the sleeves. $32 \div 8 = 4$, so each sleeve has 4 cards. Check: $8 \times 4 = 32$.
3	At sunrise, the temperature is -10°C . By noon, it rises 18°C . State a plan, find the noon temperature, and check using subtraction.	Plan: Add the rise to the starting temperature. $-10 + 18 = 8$, so the noon temperature is 8°C. Check: $8 - 18 = -10$.
4	A \$40 game controller is 15% off. State a plan, find the sale price, and check by adding the discount back.	Plan: Find the discount, then subtract it. 15% of 40 is 6, and $40 - 6 = 34$. Check: $34 + 6 = 40$, so the sale price is \$34.
5	A shop charges \$3 for delivery plus the cost of 8 identical binders. The total is \$35. State a plan, find the cost of one binder, and check.	Plan: Subtract the delivery fee, then divide. $(35 - 3) \div 8 = 4$, so each binder costs \$4. Check: $8 \times 4 + 3 = 35$.

PART 2 • APPLY IT

- The monthly cost is \$6. Eight months cost \$48, so the \$50 credit is enough and \$2 remains.** Divide 18 by 3 to find the monthly cost, then multiply by 8. Check that 48 is less than 50.
- The team has 35 points and needs 55 more points. Check: $35 + 55 = 90$.** Add the earned points and subtract the penalty: $27 + 16 - 8 = 35$. Subtract 35 from 90.

CHALLENGE

At 6 GB, Plan A costs $14 + 3(6) = \$32$, so Plan A is already more than \$30. The first whole-number amount is 6 GB. At 5 GB, Plan A costs \$29, so 6 GB is the first amount.

Accept equivalent equations, organized work, and reasonable checks that use the situation. For the challenge, students must show that the previous whole-number amount does not make Plan A cost more.