

Plan, Solve, Check

Use math to make and test decisions.

GRADE 8 • TEKS 8.1.B

8.1.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 MATH PLAN

For each situation, list what you know and what you need. Choose an operation or equation, solve it, then check your result against the facts. State why the result is reasonable.

WORKED EXAMPLE

An art club has \$35 to spend on buttons. A shop charges an \$11 setup fee and \$3 per button. How many buttons can the club buy? Use an equation, then check.

1. Let x = the number of buttons.
2. Write $11 + 3x = 35$.
3. Subtract 11: $3x = 24$.
4. Divide by 3: $x = 8$.

Answer: 8 buttons. Check: $11 + 3(8) = 35$, so the answer fits the budget.

PRACTICE 5 problems

- 1** Two friends split \$18 equally to buy game passes. How much does each pay?

ANSWER _____

- 2** A skate rental charges \$10 plus \$2 per hour. Your bill is \$22. How many hours did you rent skates?

ANSWER _____

- 3** A livestream uses 54 MB in 6 minutes at a steady rate. How many MB does it use per minute?

ANSWER _____

- 4** A hoodie costs \$36 and is 25% off. What is the sale price?

ANSWER _____

- 5** At 19 degrees C, a temperature drops 2 degrees each hour for 6 hours. What is the final temperature?

ANSWER _____

APPLY IT Show your work

- 1** At a concert, the student council sold 18 tickets. Adult tickets cost \$13, student tickets cost \$9, and sales totaled \$198. How many adult and student tickets were sold?

WORK SPACE

ANSWER _____

- 2** Your tablet has 128 GB of storage. Four games use 18 GB each, and all remaining space stores 2-GB video clips. How many clips fit?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A music app has Plan A, \$15 plus \$4 per download, and Plan B, \$27 plus \$2 per download. At how many downloads do the plans cost the same? Which plan costs less before and after that point? Explain with a check.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Two friends split \$18 equally to buy game passes. How much does each pay?	\$9 each. Check: $2(9) = 18$, so the split is equal.
2	A skate rental charges \$10 plus \$2 per hour. Your bill is \$22. How many hours did you rent skates?	6 hours. Check: $10 + 2(6) = 22$, so the total matches the bill.
3	A livestream uses 54 MB in 6 minutes at a steady rate. How many MB does it use per minute?	9 MB per minute. Check: $6(9) = 54$, so the rate fits the total data used.
4	A hoodie costs \$36 and is 25% off. What is the sale price?	\$27. Since 25% of 36 is 9, $36 - 9 = 27$, which is less than the original price.
5	At 19 degrees C, a temperature drops 2 degrees each hour for 6 hours. What is the final temperature?	7 degrees C. Check: $19 - 2(6) = 7$, so the total drop is 12 degrees.

PART 2 • APPLY IT

- 9 adult tickets and 9 student tickets.** Check: $9 + 9 = 18$ and $9(13) + 9(9) = 198$. Let x be adult tickets. Then $13x + 9(18 - x) = 198$, so $4x = 36$ and $x = 9$; the other 9 tickets are student tickets.
- 28 clips.** The games use 72 GB, leaving 56 GB, and $56/2 = 28$. Calculate $4(18) = 72$ GB used by games. Subtract from 128, then divide the 56 GB left by 2 GB per clip.

CHALLENGE

The plans cost the same at 6 downloads, when each costs \$39. Plan A costs less for 0 to 5 downloads, and Plan B costs less for more than 6 downloads. Check: $15 + 4(6) = 27 + 2(6) = 39$.

Accept equivalent equations, tables, or organized calculations. Require a plan, a check using the situation, and a brief reasonableness statement for each response.