

Story Math Models

Turn real situations into math that makes sense.

GRADE 4 • 4.MP.4

4.MP.4 "Model with mathematics."

NAME _____

DATE _____

BUILD A MATH MODEL

A math model is an equation or labeled set of steps that matches a story. First identify what each number means and choose an operation. Solve, then check by using an inverse operation or by deciding whether the answer fits the story.

WORKED EXAMPLE

A library places 8 books on each of 6 carts. How many books are on the carts?

1. There are 6 equal groups of 8 books.
2. Model: $8 \times 6 = \underline{\quad}$.
3. Multiply: $8 \times 6 = 48$.
4. Check: $48 \div 6 = 8$.

Answer: 48 books.

PRACTICE 6 problems

- 1** A class puts 9 markers in each of 4 supply bags. Model with an equation, solve, and check with division. How many markers are in the bags?

ANSWER _____

- 2** A student council places 42 stickers equally on 3 poster pages. Model with an equation, solve, and check with multiplication. How many stickers are on each page?

ANSWER _____

- 3** A student council shares 45 postcards equally among 9 helpers. Model with an equation, solve, and check. How many postcards does each helper get?

ANSWER _____

- 4** A bracelet maker has 83 beads and uses 29 beads for one bracelet. Write an equation with a blank, solve, and check by adding. How many beads are left?

ANSWER _____

- 5** A theater club sets 11 chairs in each of 13 rows. Model with an equation, solve, and check with division. How many chairs does the club set out?

ANSWER _____

- 6** A comic book club uses $\frac{3}{4}$ of 44 stickers for prize envelopes. Model with fraction steps, solve, and check by finding the unused $\frac{1}{4}$. How many stickers are used?

ANSWER _____

APPLY IT Show your work

- 1** The school garden club packs 126 seed packets equally into 9 trays. It sells 4 trays at the spring fair. Show an equation or labeled steps, solve, and check whether your model uses all 126 packets. How many seed packets does the club sell?

WORK SPACE

ANSWER _____

- 2** At a school game night, Maya has 96 tickets. Each game costs 12 tickets, and she plays 3 games. She divides all her remaining tickets equally among 4 friends. Show an equation or labeled steps, solve, and check. How many tickets does each friend get?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A game club has 168 cards. It puts 12 cards in each prize pack and saves 3 prize packs for new members. The club shares all the other cards equally among 4 teams. How many cards does each team get? Write a model and explain why you subtract before dividing.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A class puts 9 markers in each of 4 supply bags. Model with an equation, solve, and check with division. How many markers are in the bags?	$4 \times 9 = 36$; 36 markers. Check: $36 / 4 = 9$.
2	A student council places 42 stickers equally on 3 poster pages. Model with an equation, solve, and check with multiplication. How many stickers are on each page?	$42 / 3 = 14$; 14 stickers per page. Check: $14 \times 3 = 42$.
3	A student council shares 45 postcards equally among 9 helpers. Model with an equation, solve, and check. How many postcards does each helper get?	$45 / 9 = 5$; 5 postcards per helper. Check: $9 \times 5 = 45$.
4	A bracelet maker has 83 beads and uses 29 beads for one bracelet. Write an equation with a blank, solve, and check by adding. How many beads are left?	$83 - 29 = 54$; 54 beads are left. Check: $54 + 29 = 83$.
5	A theater club sets 11 chairs in each of 13 rows. Model with an equation, solve, and check with division. How many chairs does the club set out?	$11 \times 13 = 143$; 143 chairs. Check: $143 / 13 = 11$.
6	A comic book club uses $\frac{3}{4}$ of 44 stickers for prize envelopes. Model with fraction steps, solve, and check by finding the unused $\frac{1}{4}$. How many stickers are used?	$44 / 4 = 11$, and $11 \times 3 = 33$; 33 stickers are used. Check: $33 + 11 = 44$.

PART 2 • APPLY IT

- 56 seed packets. Model: $(126 / 9) \times 4 = 56$. Check: $126 / 9 = 14$, and $9 \times 14 = 126$.** Divide 126 packets among 9 trays to find 14 packets per tray, then multiply 14 by 4 sold trays. The club sells 56 packets.
- 15 tickets per friend. Model: $(96 - 12 \times 3) / 4 = 15$. Check: $12 \times 3 = 36$, $96 - 36 = 60$, and $60 / 4 = 15$.** First find the 36 tickets Maya spends on games, then subtract from 96 and divide the 60 remaining tickets among 4 friends. Each friend gets 15 tickets.

CHALLENGE

33 cards per team. Model: $(168 - 3 \times 12) / 4 = 33$. Subtract 36 first because those cards are saved and cannot be shared, then divide the 132 remaining cards among 4 teams.

Accept equivalent equations and labeled step models that show the correct operations and units. For the challenge, accept a clear explanation that saved cards must be removed before the remaining cards are shared equally.