LESSON MAKER PRO

Quantities in Action

Model real situations with numbers, units, and equations.

GRADE 8 · 8.MP.2

8.MP.2 "Reason abstractly and quantitatively."

NAME _____ DATE _____

MAKE QUANTITIES MEANINGFUL

First, identify what each number measures and include its unit. Use a variable for an unknown quantity, write an equation that matches the situation, and solve. Then check whether your answer makes sense in the context.

WORKED EXAMPLE

The drama club sells 17 buttons for $6 each. Write an equation for the total earned and solve.

1. Let t represent the total dollars earned.
2. Write t = 17 x 6.
3. Multiply to get t = 102.

Answer: $102

PRACTICE 6 problems

1 Each arcade game costs 5 tokens. Maya plays 8 games. Write and solve an equation for t; check the unit.

ANSWER _____

2 A reader has 63 pages left and reads 9 pages daily. Write and solve an equation for the number of days d.

ANSWER _____

3 A phone plan costs $14 monthly plus $3 per gigabyte. For 5 gigabytes, write and solve an equation for monthly cost c.

ANSWER _____

4 Shoes cost $95; a student has $38 and earns $19 per bracelet. Write and solve an equation for the bracelets needed.

ANSWER _____

5 A 2-minute video uses 150 MB. At the same rate, write and solve an equation for the storage needed for 7 minutes; label the unit.

ANSWER _____

6 A bus travels 84 miles in 2 hours at constant speed. Write and solve an equation for miles m traveled in 5 hours.

ANSWER _____

APPLY IT Show your work

1 Jordan has a $50 gift card for an online music store. Jordan buys headphones for $24 and 3 music downloads that cost $7 each. Does the gift card cover the purchase? How much money is left? Write an expression or equation to show your reasoning.

WORK SPACE

ANSWER _____

2 A digital art app charges $8 each month plus $3 for each sticker pack. A different app charges $23 for a month with any number of sticker packs. At how many sticker packs do the two apps cost the same? Write an equation and check your answer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student has a total storage allowance of 8 GB for the entire video project on a tablet. The project already uses 3.2 GB, and each new clip will use 1.2 GB. What is the greatest whole number of new clips the student can add? Write an inequality and explain why your answer fits the storage limit.

WORK SPACE AND ANSWER

ANSWER KEY

Quantities in Action

GRADE 8 · 8.MP.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Each arcade game costs 5 tokens. Maya plays 8 games. Write and solve an equation for t; check the unit.	**t = 5(8) = 40 tokens**
2	A reader has 63 pages left and reads 9 pages daily. Write and solve an equation for the number of days d.	**d = 63/9 = 7 days**
3	A phone plan costs $14 monthly plus $3 per gigabyte. For 5 gigabytes, write and solve an equation for monthly cost c.	**c = 14 + 3(5) = $29**
4	Shoes cost $95; a student has $38 and earns $19 per bracelet. Write and solve an equation for the bracelets needed.	**38 + 19x = 95; x = 3 bracelets**
5	A 2-minute video uses 150 MB. At the same rate, write and solve an equation for the storage needed for 7 minutes; label the unit.	**s = (150/2)(7) = 525 MB**
6	A bus travels 84 miles in 2 hours at constant speed. Write and solve an equation for miles m traveled in 5 hours.	**m = (84/2)(5) = 210 miles**

PART 2 · APPLY IT

1. **Yes. $5 is left.** The total cost is 24 + 3(7) = 45 dollars. Since 50 - 45 = 5, the gift card covers the purchase.
2. **5 sticker packs** Set 8 + 3x equal to 23, which gives x = 5. Checking gives 8 + 3(5) = 23.

CHALLENGE

4 clips. 3.2 + 1.2x <= 8 gives x <= 4, and 3.2 + 1.2(4) = 8 GB, so 4 clips fit exactly.

Accept equivalent equations and expressions when the quantities and units are correct. For explanation items, accept clear reasoning that connects the equation or inequality to the real-world limit.