LESSON MAKER PRO

# Find the Rate

*Connect unit rates, equations, tables, and graphs.*

**GRADE 7 · 7.RP.A.2.b**

**7.RP.A.2.b** "Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions."

NAME _____ DATE _____

## THE BIG IDEA

In a proportional relationship, y/x is the same for every pair where x is not 0. This unit rate is k, and the equation is y = kx.

## WORKED EXAMPLE

Use the table to find the stickers per minute and write an equation for y.

**MAKING STICKERS**

| x (minutes) | y (stickers) |
|---|---|
| 4 | 36 |
| 8 | 72 |

1. 36 / 4 = 9.
2. 72 / 8 = 9, so the rate is constant.
3. Put k = 9 in y = kx.

**Answer: 9 stickers per minute; y = 9x**

## PRACTICE 4 problems

**1** For y = 11x, find the unit rate k.

**ANSWER** _____

**2** A proportional relationship includes the point (12, 18). Find k.

**ANSWER** _____

**3** A proportional relationship includes the point (10, 25). Find k and write an equation.

**ANSWER** _____

**4** An arcade gives 13 tickets per game. Let x be games and y be tickets. Write an equation.

**ANSWER** _____

## APPLY IT Show your work

**1** A game shop sells sticker packs. Use the table to find the price per pack and an equation for total cost y.

**STICKER PACK PRICES**

| x (packs) | y (dollars) |
|---|---|
| 1 | 3 |
| 5 | 15 |
| 7 | 21 |

**ANSWER** _____

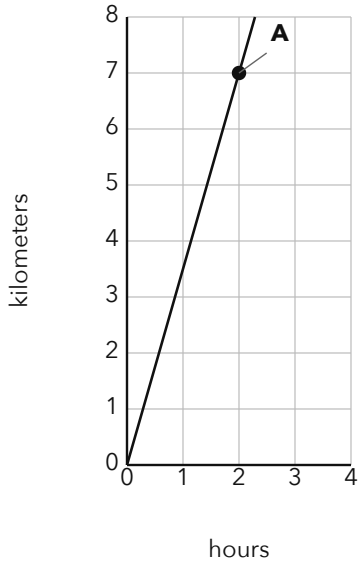
**2** A club buys 12 glow sticks for $18. Find the price per glow stick. Write an equation for the cost y of x glow sticks.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

The graph shows distance walked. Find the unit rate and write an equation. Explain how the marked point shows the rate.




WORK SPACE AND ANSWER

**ANSWER KEY**

# Find the Rate

**GRADE 7 · 7.RP.A.2.b**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | For y = 11x, find the unit rate k. | **k = 11** |
| 2 | A proportional relationship includes the point (12, 18). Find k. | **k = 3/2** |
| 3 | A proportional relationship includes the point (10, 25). Find k and write an equation. | **k = 5/2; y = (5/2)x** |
| 4 | An arcade gives 13 tickets per game. Let x be games and y be tickets. Write an equation. | **y = 13x** |

## PART 2 · APPLY IT

1. **$3 per pack; y = 3x** Divide cost by packs to get $3 per pack. Multiply the number of packs by 3 to get the total cost.
2. **$3/2 per glow stick; y = (3/2)x** Divide $18 by 12 to get $3/2 per glow stick. Use that rate as the coefficient of x.

## CHALLENGE

**7/2 kilometers per hour; y = (7/2)x. Point A shows 7 kilometers in 2 hours, so the rate is 7/2 kilometers per hour.**

Accept 1.5 for 3/2 and 3.5 for 7/2. Equations with equivalent coefficients are correct.