Rate Match-Up

Use unit rates to connect tables, contexts, and graphs.

6.PFA.2 · The student will identify and represent proportional relationships between two quantities, including those in context (unit rates are limited to positive values). Identify the unit rate of a proportional relationship represented by a table of values, a contextual situation, or a graph. Determine a missing value in a ratio table that represents a proportional relationship between two quantities using a unit rate. Determine whether a proportional relationship exists between two quantities, when given a table of values, context, or graph. When given a contextual situation representing a proportional relationship, find the unit rate and create a table of values or a graph. Make connections between and among multiple representations of the same proportional relationship using verbal descriptions, ratio tables, and graphs.

Name _____ Date _____

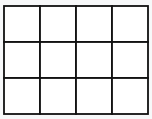
Spot the Constant Rate

A relationship y = kx is proportional. For nonzero inputs x, the ratio y/x stays constant and equals the unit rate k. The graph includes (0,0), where the quotient 0/0 is not defined.

Worked example

The array shows equal rows of tiles. Find the number of tiles per row.

1. Count 12 tiles.
2. Count 3 rows.
3. 12 / 3 = 4 tiles per row.



4 tiles per row

1. Practice

A ratio table pairs 2 notebooks with $10 and 6 notebooks with $30. What is the cost per notebook?

2. Practice

At a constant rate, 5 game tokens cost $15. How much do 9 game tokens cost?

3. Practice

Does this table show a proportional relationship? Explain briefly: (2, 8), (5, 20), (7, 29).

4. Practice

A candle burns 10 cm in 2 hours at a steady rate. Let x be hours and y be centimeters burned. Write an equation and find y when x = 7.

5. Apply

At a game club, the table shows prize tickets earned. How many tickets are earned per game? How many tickets are earned for 6 games?

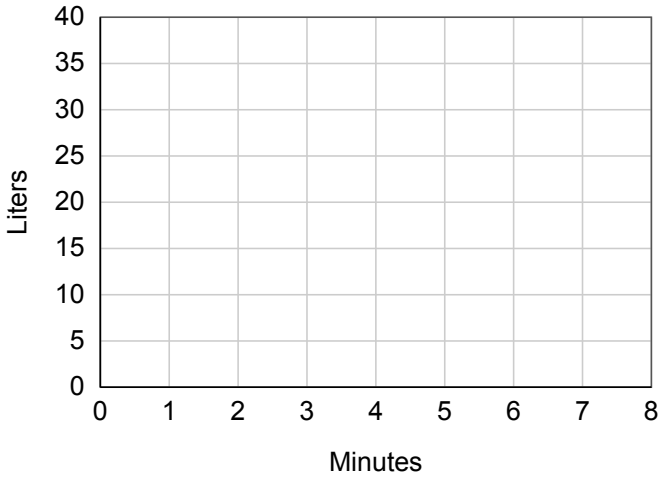
Prize Tickets

Games	Tickets
1	7
2	14
5	35

6. Apply

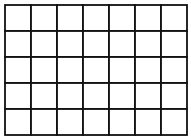
Water flows at 10 liters in 2 minutes. Create a table for 0, 2, 6 and 8 minutes. Write the equation y = kx, with x in minutes and y in liters. Plot the relationship on the grid and find the unit rate.

Minutes x	Liters y



7. Challenge

Let x be the number of rows and y be total tiles. The tile array shows equal rows. If every row always has the same number of tiles, which point is on its graph: (8, 56), (7, 40), or (8, 35)? Explain.



What to accept

Accept equivalent wording for unit rates and proportional reasoning. For equations, accept y = 5x or 5x = y.

1. Practice

$5 per notebook

2. Practice

$27

3. Practice

No; the first two pairs have a unit rate of 4, but 29/7 is not 4.

4. Practice

y = 5x; y = 35

5. Apply

7 tickets per game; 42 tickets for 6 games

Divide tickets by games to get 7 tickets per game. Multiply 6 by 7 to get 42 tickets.

6. Apply

Table (0,0), (2,10), (6,30), (8,40); y = 5x; unit rate 5 L/min.

For every nonzero x, y/x = 5. Continuous time and volume justify a line segment on the shown interval.



7. Challenge

(8, 56); there are 7 tiles in each row, and 8 × 7 = 56.