

Rule Match-Up

Spot multiplicative and additive patterns.

GRADE 6 • TEKS 6.4

6.4 "Proportionality. The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to: compare two rules verbally, numerically, graphically..."

NAME _____

DATE _____

TWO KINDS OF RULES

In $y = ax$, y is found by multiplying x by the same factor each time. In $y = x + a$, y is found by adding the same amount each time, so the relationship is additive rather than proportional.

WORKED EXAMPLE

A charity packs 4 cans in each box. Let x be the number of boxes and y be the number of cans. Write a rule and find y when $x = 3$.

1. Each box has 4 cans, so $y = 4x$.
2. Substitute 3 for x : $y = 4(3)$.
3. Multiply: $y = 12$.

Answer: $y = 4x$; 12 cans

PRACTICE 6 problems

- 1** Is $y = 6x$ multiplicative or additive? Find y when $x = 5$.

ANSWER _____

- 2** Is $y = x + 7$ multiplicative or additive? Find y when $x = 9$.

ANSWER _____

- 3** A table has x -values 5, 10, and 15. Its y -values are 35, 70, and 105. Write the rule.

ANSWER _____

- 4** A table has x -values 6, 11, and 16. Its y -values are 15, 20, and 25. Is the relationship additive or multiplicative? Write the rule.

ANSWER _____

- 5** A music service charges \$13 for each month. Let x be the number of months and y be the total cost. Write the rule.

ANSWER _____

- 6** A line on a graph goes through (7, 14) and (11, 22). Is the relationship additive or multiplicative? Write the rule.

ANSWER _____

APPLY IT Show your work

- 1** A music app downloads 18 songs in 6 minutes at a steady rate. How many minutes will it take to download 33 songs?

WORK SPACE

ANSWER _____

- 2** For a club fundraiser, Shop A charges \$21 for 7 sticker sheets. Shop B charges \$36 for 9 sticker sheets. Which shop has the lower cost per sheet, and how much less would 18 sheets cost there?

WORK SPACE

ANSWER _____

CHALLENGE One step up

In a game, Plan A gives $y = 5x$ coins after x rounds. Plan B gives $y = x + 24$ coins after x rounds. After how many rounds do the plans give the same number of coins? Which plan gives more coins before that number of rounds, and which gives more after?

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Is $y = 6x$ multiplicative or additive? Find y when $x = 5$.	Multiplicative; $y = 30$
2	Is $y = x + 7$ multiplicative or additive? Find y when $x = 9$.	Additive; $y = 16$
3	A table has x -values 5, 10, and 15. Its y -values are 35, 70, and 105. Write the rule.	$y = 7x$
4	A table has x -values 6, 11, and 16. Its y -values are 15, 20, and 25. Is the relationship additive or multiplicative? Write the rule.	Additive; $y = x + 9$
5	A music service charges \$13 for each month. Let x be the number of months and y be the total cost. Write the rule.	$y = 13x$
6	A line on a graph goes through (7, 14) and (11, 22). Is the relationship additive or multiplicative? Write the rule.	Multiplicative; $y = 2x$

PART 2 • APPLY IT

- 11 minutes** The unit rate is $18 / 6 = 3$ songs per minute. Then $33 / 3 = 11$ minutes.
- Shop A; \$18 less for 18 sheets** Shop A costs \$3 per sheet, and Shop B costs \$4 per sheet. For 18 sheets, the costs are \$54 and \$72, so Shop A costs \$18 less.

CHALLENGE

They are equal after 6 rounds. Plan B gives more coins when $x < 6$, and Plan A gives more coins when $x > 6$.

Accept equivalent equation order, such as $6x = y$. For classifications, accept proportional or multiplicative, and additive or nonproportional.