LESSON MAKER PRO

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 This table follows either y = ax or y = x + a. Write its rule.

x	y
0	0
1	2
2	4

ANSWER _____

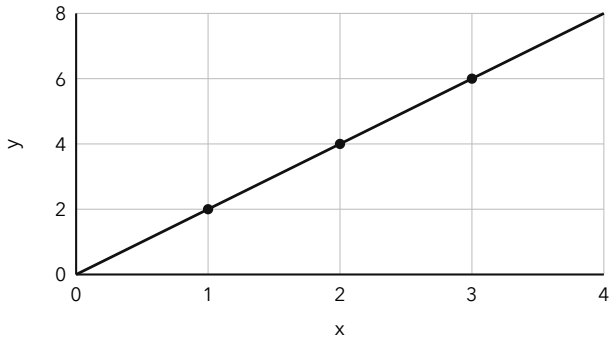
4 Assume the table follows either y = ax or y = x + a. A table has x-values 6, 11, and 16. Its y-values are 15, 20, and 25. Is the relationship additive or multiplicative? Write the rule.

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 Does this graph match the table in Problem 3? State the rule and use a plotted point to justify your answer.



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?

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?

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?

ANSWER KEY

Rule Match-Up

GRADE 6 · TEKS 6.4

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	This table follows either y = ax or y = x + a. Write its rule.	**y = 2x**
4	Assume the table follows either y = ax or y = x + a. 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	Does this graph match the table in Problem 3? State the rule and use a plotted point to justify your answer.	**Yes. y = 2x; for example (3, 6) gives 6 = 2 × 3. The graph passes through the origin.**

PART 2 · APPLY IT

1. **11 minutes** The unit rate is 18 / 6 = 3 songs per minute. Then 33 / 3 = 11 minutes.
2. **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.