LESSON MAKER PRO

Same Line, New View

Connect graphs, tables, rules, and situations.

HIGH SCHOOL · A1.F.3.1

A1.F.3.1 "Identify and generate equivalent representations of linear functions, graphs, tables, and real-world situations."

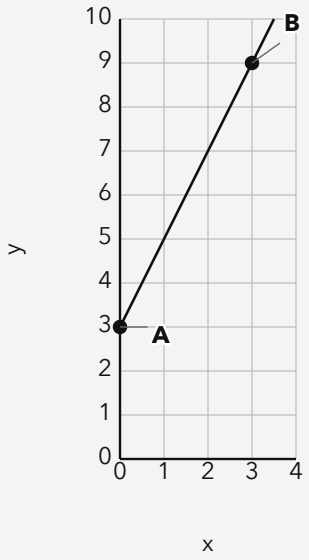
NAME _____ DATE _____

ONE FUNCTION, MANY FORMS

A linear rule has the form y = mx + b. In a graph or table, m is the change in y divided by the change in x. The value b is y when x = 0.

WORKED EXAMPLE

Write a rule for the graphed line.



1. From A to B, y rises 6 while x rises 3.
2. m = 6/3 = 2.
3. At x = 0, y = 3, so b = 3.

Answer: y = 2x + 3

PRACTICE 4 problems

1 For y = 2x + 1, find y when x = 0 and when x = 4.

ANSWER _____

2 A line passes through (1, 8) and (5, 16). Write its rule.

ANSWER _____

3 A club has 9 members and gains 4 members each month. Write a rule for its membership y after x months.

ANSWER _____

4 A linear function includes (2, 18) and (6, 34). Find its slope and y-intercept.

ANSWER _____

APPLY IT Show your work

1 Your savings follow the table. Write a rule for dollars saved y after x weeks. How much will you have after 5 weeks?

SAVINGS

Weeks, x	Dollars saved, y
0	10
2	30
4	50

ANSWER _____

2 A music app gives you 8 downloads, then adds 2 each month. Write a rule for your total downloads y after x months. How many will you have after 6 months?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The table shows Plan A's bike rental cost y for x hours. Plan B costs y = 2x + 10. After how many hours do the plans cost the same, and what is that cost? Show how you know.

PLAN A

Hours, x	Cost ($), y
1	8
4	20
7	32

WORK SPACE AND ANSWER

ANSWER KEY # Same Line, New View

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y = 2x + 1, find y when x = 0 and when x = 4.	**When x = 0, y = 1. When x = 4, y = 9.**
2	A line passes through (1, 8) and (5, 16). Write its rule.	**y = 2x + 6**
3	A club has 9 members and gains 4 members each month. Write a rule for its membership y after x months.	**y = 4x + 9**
4	A linear function includes (2, 18) and (6, 34). Find its slope and y-intercept.	**Slope: 4. y-intercept: 10.**

PART 2 · APPLY IT

1. **y = 10x + 10; $60 after 5 weeks.** Savings increase $20 in 2 weeks, or $10 per week. The starting amount is $10, so y = 10x + 10 and y = 60 when x = 5.
2. **y = 2x + 8; 20 downloads after 6 months.** The starting amount is 8 and the monthly increase is 2. Substitute x = 6 into y = 2x + 8 to get 20.

CHALLENGE

Plan A increases $12 in 3 hours, so its rule is y = 4x + 4. Set 4x + 4 = 2x + 10 to get x = 3. Both plans cost $16 after 3 hours.

Accept equivalent linear equations. For the challenge, accept a table-based explanation that shows both plans cost $16 at 3 hours.