LESSON MAKER PRO

Function Face-Off

Compare starting values and rates across representations.

HIGH SCHOOL · MT.CORE.ALG.FUN.3

MT.CORE.ALG.FUN.3 "Represent functions using tables, graphs with appropriate scales and labels, equations, and verbal situations, while using technology strategically by: Understanding that different representations highlight different aspects of functions..."

NAME _____ DATE _____

TWO USEFUL CLUES

A function's starting value is its output when x is 0. Find its rate in a table or from two points by dividing the change in output by the change in input. In an equation like y = 3x + 2, the rate is 3 and the starting value is 2.

WORKED EXAMPLE

The table shows A. B is y = 7x + 11. Which grows faster? Which starts higher?

FUNCTION A

x	y
0	13
2	23
4	33

1. A's rate is (23 - 13)/(2 - 0) = 5.
2. A starts at 13. B has a rate of 7 and starts at 11.
3. Compare the rates, then compare the starting values.

Answer: B grows faster. A starts higher.

PRACTICE 4 problems

1 A passes through (0, 4) and (2, 10). B is y = 2x + 5. Which grows faster, and by how much per x?

ANSWER _____

2 A is y = 4x + 1. B starts at $2 and adds $3 per hour. Which has the greater value after 2 hours?

ANSWER _____

3 A passes through (0, 12) and (2, 16). B is y = x + 14. Which starts higher? Which grows faster?

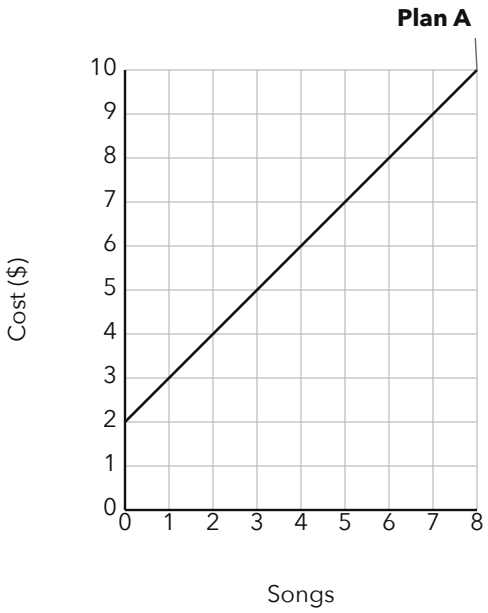
ANSWER _____

4 At an arcade, A costs $2 to enter plus $3 per game. B costs y = 4x + 1 dollars for x games. At how many games do they cost the same?

ANSWER _____

APPLY IT Show your work

1 Plan A's music costs are graphed. Plan B costs $4 plus $0.50 per song. At how many songs do the plans cost the same?



ANSWER _____

2 The table shows pay for Gig A. Gig B pays $10 per hour plus a $4 bonus. After 4 hours, which gig pays more, and by how much?

GIG A

Hours	Pay ($)
0	0
2	24
4	48

ANSWER _____

CHALLENGE One step up

A passes through (0, 10) and (2, 16). B is y = 2x + 14. For whole-number x from 0 to 8, when is A less than B? Explain.

WORK SPACE AND ANSWER

Function Face-Off

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A passes through (0, 4) and (2, 10). B is y = 2x + 5. Which grows faster, and by how much per x?	**A grows faster by 1 per x.**
2	A is y = 4x + 1. B starts at $2 and adds $3 per hour. Which has the greater value after 2 hours?	**A, with a value of 9.**
3	A passes through (0, 12) and (2, 16). B is y = x + 14. Which starts higher? Which grows faster?	**B starts higher. A grows faster.**
4	At an arcade, A costs $2 to enter plus $3 per game. B costs y = 4x + 1 dollars for x games. At how many games do they cost the same?	**1 game**

PART 2 · APPLY IT

1. **4 songs** The graph shows that Plan A costs x + 2 dollars. Set x + 2 = 4 + 0.50x to get x = 4.
2. **Gig A pays $4 more.** Gig A pays $48 after 4 hours. Gig B pays 10(4) + 4 = $44.

CHALLENGE

At x = 0, 1, 2, and 3. A is y = 3x + 10, which is less than 2x + 14 when x < 4.

Accept equivalent comparisons in words or equations. In Practice 2, A is 9 and B is 8 after 2 hours.