LESSON MAKER PRO

Starting Point

Find what changes and what stays at the start.

GRADE 8 · 8.F.4d

8.F.4d "Apply the concepts of linear functions to real-world and mathematical situations. Interpret the meaning of the slope and the y-intercept of a linear function in the context of the situation."

NAME _____ DATE _____

RATE AND START

In y = mx + b, m is the change in y for each increase of 1 in x. The y-intercept, b, is the value of y when x is 0. In a real situation, include units when you explain both values.

WORKED EXAMPLE

A print shop charges a starting fee plus a cost per sticker. Find the cost per sticker and the starting fee.

STICKER ORDER

Stickers (x)	Cost in dollars (y)
3	25
6	43

1. Cost change: 43 - 25 = 18. Sticker change: 6 - 3 = 3.
2. Slope: 18/3 = 6 dollars per sticker.
3. Starting fee: 25 - 6(3) = 7 dollars.

Answer: $6 per sticker and a $7 starting fee

PRACTICE 4 problems

1 An app costs y = 9x + 12 dollars for x months. What do 9 and 12 mean?

ANSWER _____

2 A bike rental costs $20 for 1 hour and $44 for 4 hours. Find the hourly rate and starting fee.

ANSWER _____

3 A player has y = 15x + 40 tokens after x games. What do 15 and 40 mean?

ANSWER _____

4 A line passes through (1, 29) and (4, 56). Find its slope and y-intercept.

ANSWER _____

APPLY IT Show your work

1 A gaming café bill is $21 for 2 hours and $36 for 5 hours. The cost is linear. Find the hourly charge and entry fee. Tell what each means.

WORK SPACE

ANSWER _____

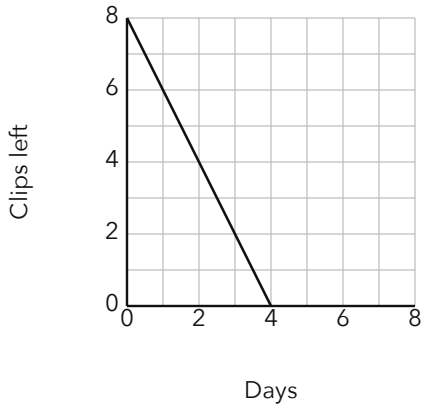
2 A student pays a $28 booth fee to sell keychains. After selling 8, the student's profit is $36. If profit grows at a steady rate, find the profit per keychain and the profit at 0 sales. Explain the negative value.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A video project uses saved clips at a steady rate. Read the graph. How many clips were saved at first, how many are used each day, and when will none remain?



WORK SPACE AND ANSWER

ANSWER KEY

Starting Point

GRADE 8 · 8.F.4d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	An app costs y = 9x + 12 dollars for x months. What do 9 and 12 mean?	**$9 per month; a $12 starting fee**
2	A bike rental costs $20 for 1 hour and $44 for 4 hours. Find the hourly rate and starting fee.	**$8 per hour; a $12 starting fee**
3	A player has y = 15x + 40 tokens after x games. What do 15 and 40 mean?	**The player earns 15 tokens per game and starts with 40 tokens.**
4	A line passes through (1, 29) and (4, 56). Find its slope and y-intercept.	**Slope: 9; y-intercept: 20**

PART 2 · APPLY IT

1. **$5 per hour; an $11 entry fee** The cost rises $15 in 3 hours, so the hourly charge is $5. Subtract 2($5) from $21 to get the $11 entry fee.
2. **$8 profit per keychain; -$28 profit at 0 sales. The student is $28 behind before making any sales.** At 0 sales, profit is -$28. Profit increases by $64 from 0 to 8 sales, so the increase is $8 per keychain.

CHALLENGE

8 clips at first; 2 clips used per day; none remain after 4 days

Accept equivalent wording that identifies each rate with its units and each y-intercept as the value when x is 0.