LESSON MAKER PRO

Find the Start

Use two points to uncover a rate and an initial value.

GRADE 7 · 7A.AF.D.23.a

7A.AF.D.23.a "Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship from two points in a table or graph."

NAME _____ DATE _____

THE BIG IDEA

For a linear relationship, divide the change in output by the change in input to find the rate. Then use either point and the rate to work back to the value when the input is zero.

WORKED EXAMPLE

Use the table to find the rate of change and the number of tickets at hour 0.

TICKETS COLLECTED

Hours	Tickets
2	13
5	22

1. (22 - 13)/(5 - 2) = 9/3 = 3 tickets per hour.
2. In 2 hours, 2 × 3 = 6 tickets were added.
3. 13 - 6 = 7 tickets at hour 0.

Answer: The rate is 3 tickets per hour, and the initial value is 7 tickets.

PRACTICE 4 problems

1 A game score is 10 at minute 0 and 18 at minute 4. Find the rate per minute and the starting score.

ANSWER _____

2 A rental costs $12 for 4 hours and $20 for 8 hours. Find the starting fee.

ANSWER _____

3 A plant is 14 cm tall at week 0 and 38 cm tall at week 6. Find its growth per week and starting height.

ANSWER _____

4 A post has 27 likes at hour 4 and 39 likes at hour 10. Find the rate of likes per hour.

ANSWER _____

APPLY IT Show your work

1 A video creator tracks followers. Use the table to find the rate per day and the number of followers at day 0.

VIDEO FOLLOWERS

Day	Followers
4	46
10	76

ANSWER _____

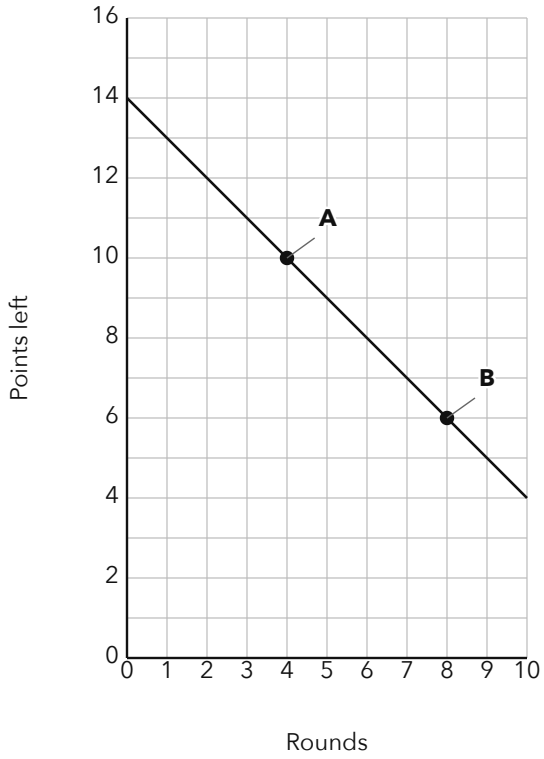
2 A game pass costs $34 after 6 weeks and $50 after 10 weeks. Find the weekly fee and the sign-up cost.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The graph shows points left after each round. Find the rate and starting points. Explain what the rate means.



WORK SPACE AND ANSWER

ANSWER KEY

Find the Start

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A game score is 10 at minute 0 and 18 at minute 4. Find the rate per minute and the starting score.	**2 points per minute; 10 points**
2	A rental costs $12 for 4 hours and $20 for 8 hours. Find the starting fee.	**$4**
3	A plant is 14 cm tall at week 0 and 38 cm tall at week 6. Find its growth per week and starting height.	**4 cm per week; 14 cm**
4	A post has 27 likes at hour 4 and 39 likes at hour 10. Find the rate of likes per hour.	**2 likes per hour**

PART 2 · APPLY IT

1. **5 followers per day; 26 followers at day 0** The rate is (76 - 46)/(10 - 4) = 5 followers per day. Work back 4 days: 46 - 4 × 5 = 26.
2. **$4 per week; $10 sign-up cost** The weekly fee is (50 - 34)/(10 - 6) = $4. The sign-up cost is $34 - 6 × $4 = $10.

CHALLENGE

The rate is -1 point per round, and the player started with 14 points. The player loses 1 point each round.

Accept equivalent wording with correct units. For the challenge, accept any explanation that the number of points left decreases by 1 each round.