LESSON MAKER PRO

Line Rule Lab

Write equations from linear relationships.

GRADE 8 · MA.8.AR.3.3

MA.8.AR.3.3 "Given a table, graph or written description of a linear relationship, write an equation in slope-intercept form."

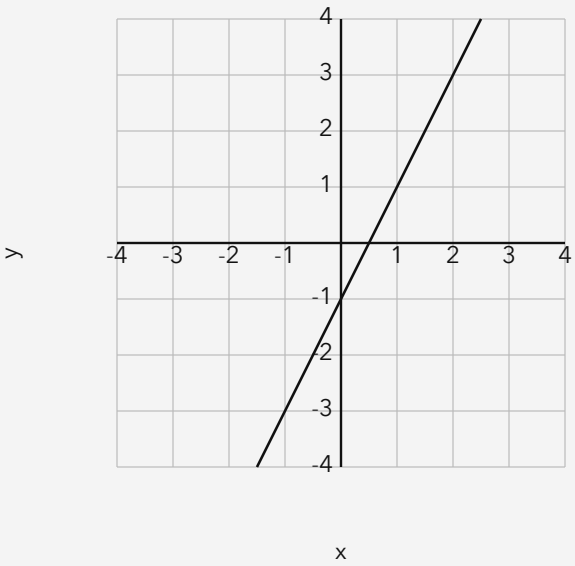
NAME _____ DATE _____

FIND THE RULE

Use y=mx+b for a linear relationship. Find m, the rate of change, and b, the y-value when x=0, then substitute them into the equation.

WORKED EXAMPLE

The graph shows a line. Write its equation in slope-intercept form.



1. The line crosses the y-axis at -1, so b=-1.
2. From (0,-1) to (1,1), the slope is 2/1=2.
3. Substitute m=2 and b=-1 into y=mx+b.

Answer: y=2x-1

PRACTICE 4 problems

1 A line has slope 3 and y-intercept 4. Write its equation.

ANSWER _____

2 A line passes through (0,5) and (4,17). Write its equation.

ANSWER _____

3 When x increases by 1, y decreases by 4. When x=0, y=7. Write the equation.

ANSWER _____

4 A line passes through (3,0) and (6,9). Write its equation.

ANSWER _____

APPLY IT Show your work

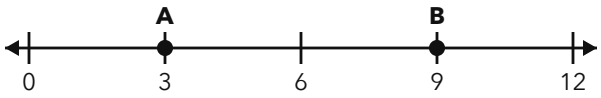
1 A gaming lounge charges y dollars for x hours. The table shows the cost. Write the equation.

GAMING LOUNGE COST

x, hours	y, dollars
0	6
4	18
8	30

ANSWER _____

2 The number line shows week numbers for a club fundraiser. At A, the total is $15. At B, the total is $39. The total changes at a constant rate. Let y be total dollars after x weeks. Write the equation.



ANSWER _____

CHALLENGE One step up

A line passes through (3,9) and (6,14). Write its equation in slope-intercept form. Explain how you found the y-intercept.

WORK SPACE AND ANSWER

ANSWER KEY

Line Rule Lab

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A line has slope 3 and y-intercept 4. Write its equation.	**y=3x+4**
2	A line passes through (0,5) and (4,17). Write its equation.	**y=3x+5**
3	When x increases by 1, y decreases by 4. When x=0, y=7. Write the equation.	**y=-4x+7**
4	A line passes through (3,0) and (6,9). Write its equation.	**y=3x-9**

PART 2 · APPLY IT

1. **y=3x+6** The cost rises 12 dollars in 4 hours, so the slope is 3. The cost at 0 hours is 6.
2. **y=4x+3** The rate is (39-15)/(9-3)=4. Using the point (3,15) gives a y-intercept of 3.

CHALLENGE

y=5/3x+4. The slope is (14-9)/(6-3)=5/3. Using (3,9), 9=5+b, so b=4.

Accept equivalent slope-intercept forms with terms in a different order, such as y=4+3x. For the challenge, accept a correct explanation that uses either point to find b.