LESSON MAKER PRO

Where They Meet

Estimate solutions from graphs and tables

GRADE 7 · 7A.AF.D.25

7A.AF.D.25 "Find approximate solutions by graphing the functions, making tables of values, or finding successive approximations, using technology where appropriate."

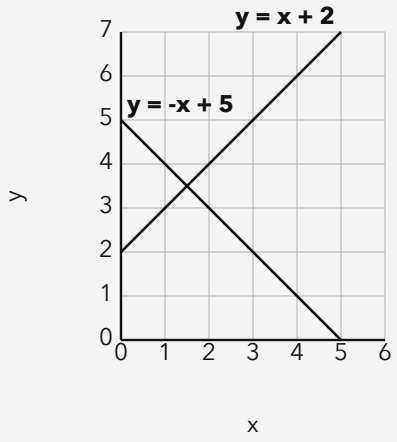
NAME _____ DATE _____

FIND THE MATCH

A solution to two equations is an x-value where their outputs match. On a graph, look where the lines meet. In a table, look where the outputs match or switch order, then use the halfway value to round your estimate.

WORKED EXAMPLE

Where do the two lines meet? Give the point to the nearest tenth.

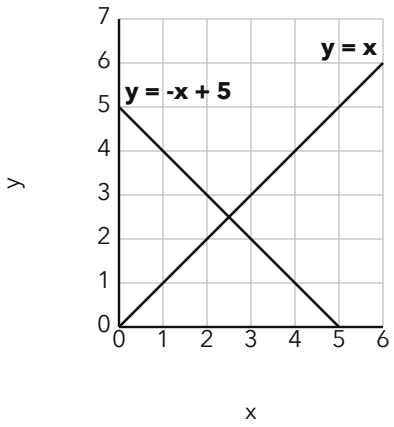


1. Find where the lines cross.
2. Read the x-value: halfway between 1 and 2 is 1.5.
3. Read the y-value: halfway between 3 and 4 is 3.5.

Answer: (1.5, 3.5)

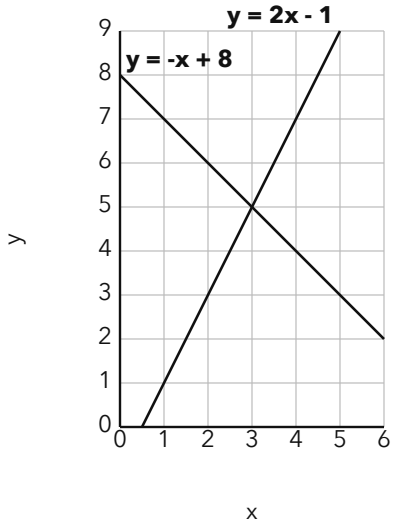
PRACTICE 6 problems

1 About what x-value do the lines meet? Give your answer to the nearest tenth.



ANSWER _____

2 About where do the lines meet? Give the point to the nearest whole number.



ANSWER _____

3 Use the table to estimate the positive solution to $x^2 = 2$ to the nearest tenth.

VALUES NEAR THE SOLUTION

x	x^2
1.4	1.96
1.45	2.1025
1.5	2.25

ANSWER _____

4 Use the table to estimate the negative solution to $x^2 = 3$ to the nearest tenth.

VALUES NEAR THE SOLUTION

x	x^2
-1.8	3.24
-1.75	3.0625
-1.7	2.89

ANSWER _____

5 Use the table to estimate the positive solution to $x^2 = x + 1$ to the nearest tenth.

COMPARE THE OUTPUTS

x	x^2	x + 1
1.6	2.56	2.6
1.65	2.7225	2.65
1.7	2.89	2.7

ANSWER _____

6 Use the table to estimate the positive solution to $x^2 = 5$ to the nearest tenth.

VALUES NEAR THE SOLUTION

x	x^2
2.2	4.84
2.25	5.0625
2.3	5.29

ANSWER _____

APPLY IT Show your work

1 A skate park offers two ways to pay. Park A charges $5 to enter plus $2 per hour. Park B charges a flat $10. Use the table to find about how many hours make the costs the same.

SKATE PARK COSTS

Hours	Park A	Park B
2	$9	$10
2.5	$10	$10
3	$11	$10

ANSWER _____

2 The height of a toy rocket on its way up is $h = 4x - x^2$, where h is in meters and x is in seconds. Use the table to estimate when the rocket reaches 2 meters. Give the time to the nearest tenth of a second.

ROCKET HEIGHT ON THE WAY UP

x (seconds)	h (meters)
0.5	1.75
0.55	1.8975
0.6	2.04

ANSWER _____

CHALLENGE One step up

Use the table to estimate the positive solution to $x^2 = x + 3$ to the nearest tenth. Explain how the middle row helps you choose between 2.3 and 2.4.

COMPARE THE OUTPUTS

x	x^2	x + 3
2.3	5.29	5.3
2.35	5.5225	5.35
2.4	5.76	5.4

WORK SPACE AND ANSWER

ANSWER KEY

Where They Meet

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	About what x-value do the lines meet? Give your answer to the nearest tenth.	**x = 2.5**
2	About where do the lines meet? Give the point to the nearest whole number.	**(3, 5)**
3	Use the table to estimate the positive solution to $x^2 = 2$ to the nearest tenth.	**x ≈ 1.4**
4	Use the table to estimate the negative solution to $x^2 = 3$ to the nearest tenth.	**x ≈ -1.7**
5	Use the table to estimate the positive solution to $x^2 = x + 1$ to the nearest tenth.	**x ≈ 1.6**
6	Use the table to estimate the positive solution to $x^2 = 5$ to the nearest tenth.	**x ≈ 2.2**

PART 2 · APPLY IT

1. **2.5 hours** At 2.5 hours, both parks cost $10.
2. **0.6 second** The height reaches 2 meters between 0.55 and 0.6 second. Since it is still below 2 meters at 0.55 second, the time rounds to 0.6 second.

CHALLENGE

x ≈ 2.3. At 2.3, x^2 is less than x + 3, but at 2.35 it is greater. The solution is below 2.35, so it rounds to 2.3.

Accept answers without x = or x ≈ when the requested value is clear. For the challenge, accept any explanation that uses the change in output order between 2.3 and 2.35.