LESSON MAKER PRO

Close Enough?

Use tables and midpoint tests to find solutions to the nearest tenth.

HIGH SCHOOL · A1P.AF.F.19.a

A1P.AF.F.19.a "Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate."

NAME _____ DATE _____

BRACKET, THEN ROUND

To approximate a positive solution, find two consecutive tenths whose values fall on opposite sides of the target. Test the midpoint between those tenths to decide which tenth is closer to the solution.

WORKED EXAMPLE

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

VALUES OF X SQUARED

x	x^2
1.7	2.89
1.75	3.0625
1.8	3.24

1. The target, 3, falls between 2.89 and 3.24, so the solution is between 1.7 and 1.8.
2. The midpoint is 1.75, and $1.75^2 = 3.0625$.
3. Since 3 is less than 3.0625, the solution is below 1.75. Round to 1.7.

Answer: $x \approx 1.7$

PRACTICE 6 problems

1 Use the table to find the positive solution of $x^2 = 2$ to the nearest tenth.

VALUES OF X SQUARED

x	x^2
1.4	1.96
1.45	2.1025
1.5	2.25

ANSWER _____

2 Find the positive solution of $x^2 = 7$ to the nearest tenth. Test 2.6 and 2.7, then use their midpoint to decide.

ANSWER _____

3 Use the table to find the positive solution of $x^2 + 1 = 9$ to the nearest tenth.

VALUES OF X SQUARED PLUS 1

x	$x^2 + 1$
2.8	8.84
2.85	9.1225
2.9	9.41

ANSWER _____

4 Find the positive solution of $2x^2 = 26$. Give the two consecutive tenths that enclose it, then round to the nearest tenth.

ANSWER _____

_____

5 Use the table to find the positive solution of $x^2 = 18$ to the nearest tenth.

VALUES OF X SQUARED

x	x^2
4.2	17.64
4.25	18.0625
4.3	18.49

ANSWER _____

6 Find the positive solution of $x^2 - 4 = 7$ to the nearest tenth. Test two consecutive tenths and their midpoint.

ANSWER _____

APPLY IT Show your work

1 You design a square sticker for a school club. Its area must be 5 square centimeters. About how long should each side be? Round to the nearest tenth of a centimeter.

WORK SPACE

ANSWER _____

2 In a game, a falling character starts 12 units above the ground. After t seconds, the character's height is $h = 12 - t^2$ units. About how many seconds does it take to reach the ground? Round to the nearest tenth.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find both solutions of $x^2 = 14$ to the nearest tenth. Explain how a midpoint helps you round.

WORK SPACE AND ANSWER

Close Enough?

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the table to find the positive solution of $x^2 = 2$ to the nearest tenth.	**$x \approx 1.4$**
2	Find the positive solution of $x^2 = 7$ to the nearest tenth. Test 2.6 and 2.7, then use their midpoint to decide.	**$x \approx 2.6$**
3	Use the table to find the positive solution of $x^2 + 1 = 9$ to the nearest tenth.	**$x \approx 2.8$**
4	Find the positive solution of $2x^2 = 26$. Give the two consecutive tenths that enclose it, then round to the nearest tenth.	**$3.6 < x < 3.7$; $x \approx 3.6$**
5	Use the table to find the positive solution of $x^2 = 18$ to the nearest tenth.	**$x \approx 4.2$**
6	Find the positive solution of $x^2 - 4 = 7$ to the nearest tenth. Test two consecutive tenths and their midpoint.	**$x \approx 3.3$**

PART 2 · APPLY IT

1. **About 2.2 cm** The side length is the positive solution of $x^2 = 5$. Since $2.2^2 = 4.84$ and $2.25^2 = 5.0625$, the length rounds to 2.2 cm.
2. **About 3.5 seconds** At the ground, $h = 0$, so $t^2 = 12$. Since $3.45^2 = 11.9025$ and $3.5^2 = 12.25$, the positive time rounds to 3.5 seconds.

CHALLENGE

$x \approx -3.7$ and $x \approx 3.7$. Since $3.7^2 = 13.69$ and $3.75^2 = 14.0625$, the positive solution is between 3.7 and the midpoint 3.75, so it rounds to 3.7. The negative solution rounds to -3.7.

Accept equivalent inequality notation for the bracket in problem 4. For the challenge, accept a midpoint test using -3.75 for the negative solution.