LESSON MAKER PRO

Find Its Place

Estimate roots and compare their sizes.

GRADE 8 · 8.NOS.A.2

8.NOS.A.2 "Use rational approximations of irrational numbers to estimate their locations on a number line, compare their size, and apply this understanding to estimate the value of expressions (e.g., π²) in context."

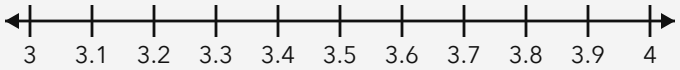
NAME _____ DATE _____

BETWEEN TWO TENTHS

To locate a square root, square nearby tenths. If the number is between those squares, its positive square root is between the tenths.

WORKED EXAMPLE

Where does √11 fall between tenths on this line?



1. $3.3^2 = 10.89$ and $3.4^2 = 11.56$.
2. Since $10.89 < 11 < 11.56$, √11 falls between 3.3 and 3.4.

Answer: 3.3 < √11 < 3.4

PRACTICE 4 problems

1 Between which two tenths does √13 fall?

ANSWER _____

2 Between which two tenths does √30 fall?

ANSWER _____

3 Write < or >: √27 ___ 5.2

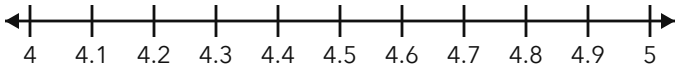
ANSWER _____

4 Use √3 ≈ 1.7 to estimate 4√3.

ANSWER _____

APPLY IT Show your work

1 In a game, two jumps measure √18 m and √20 m. Find a tenth-interval for each on the line. Which jump is longer?



ANSWER _____

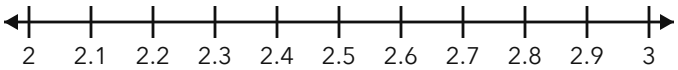
2 A square photo print has sides π inches long. Use π ≈ 3.1 to estimate its area. Is it over 10 square inches?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Place √6 and √7 in tenth-intervals on the line. Which is closer to 2.5? Explain.



WORK SPACE AND ANSWER

ANSWER KEY # Find Its Place

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Between which two tenths does √13 fall?	**3.6 < √13 < 3.7**
2	Between which two tenths does √30 fall?	**5.4 < √30 < 5.5**
3	Write < or >: √27 ___ 5.2	**√27 < 5.2**
4	Use √3 ≈ 1.7 to estimate 4√3.	**4√3 ≈ 6.8**

PART 2 · APPLY IT

1. **4.2 < √18 < 4.3; 4.4 < √20 < 4.5. The √20 m jump is longer.** Square the tenths on either side of each length. The intervals do not overlap, so √20 is greater.
2. **About 9.61 square inches; no.** Estimate the area with 3.1 × 3.1 = 9.61, which is less than 10.

CHALLENGE

2.4 < √6 < 2.5 and 2.6 < √7 < 2.7. √6 is closer to 2.5 because it is less than 0.1 away, while √7 is more than 0.1 away.

Accept equivalent inequalities for tenth-intervals. For the challenge, accept any correct comparison supported by valid bounds.