8.NS.2 Use rational number approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.

What is the best approximation for $\sqrt{118}$?

A. 11 ✗

B. 10.7

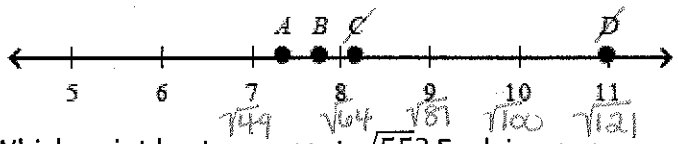
C. 10.9 ✓

D. 10.8

$10^2 = 100$, $11^2 = 121$, $\sqrt{118}$

So $\sqrt{118}$ is between 10 & 11 & closer to 11.

$10.7 \times 10.7 = 114.49$ $\quad 10.8 \times 10.8 = 116.64$ $\quad 10.9 \times 10.9 = 118.81$ ✓



Which point best represents $\sqrt{55}$? Explain your answer.

A. *A* because it is about halfway between 7 and 8. ✓

B. *B* because it is a little less than 8.

C. *C* because it is greater than 8. ✗

D. *D* because it is exactly 11. ✗

Which of the following shows these numbers listed from LEAST to GREATEST?

A. $\sqrt{64}, \pi, \sqrt{8}, 1.4, \frac{1}{2}$ ✗

B. $\sqrt{64}, \sqrt{8}, \frac{1}{2}, \pi, 1.4$ ✗

C. $\frac{1}{2}, \sqrt{8}, \sqrt{64}, 1.4, \pi$

D. $\frac{1}{2}, 1.4, \sqrt{8}, \pi, \sqrt{64}$ ✓

$\sqrt{64} = 8$, $\sqrt{8} \approx 2.8$, $\frac{1}{2} = .5$, $\pi \approx 3.14$, $1.4 = 1.4$

Which range contains the value of $\sqrt{(16 + 9 + 20)}$? $= \sqrt{45}$

A. between 6 and 7 ✓ ($\sqrt{36}$, $\sqrt{49}$)

B. between 7 and 8 ($\sqrt{49}$, $\sqrt{64}$)

C. between 16 and 17 ($\sqrt{256}$, $\sqrt{289}$)

D. between 22 and 23 ($\sqrt{484}$, $\sqrt{529}$)

One of Sierra's homework problems is to evaluate the expression shown below.

$$\sqrt{19} - 3$$

Part A: Anna knows $\sqrt{19}$ is irrational. Should she expect the expression $\sqrt{19} - 3$ to be rational or irrational? Explain your answer.

Irrational. $\sqrt{19} \approx 4.358\ldots$

$-\ 3$

$1.358\ldots$

The answer would still be a nonterminating, non-repeating decimal.

Part B: Show a sequence of steps Anna could use to determine the two consecutive numbers, counting by tenths, that the value of $\sqrt{19} - 3$ falls between. Show your work or explain your answer.

$\sqrt{19}$ is approximately 4.3 if I subtract 3, I get ≈ 1.3 which is between 1 & 2.