Name: KEY

Estimating Roots Half-Sheet

For 1-4, estimate the square root to the nearest tenth. You do not need to check your estimates – I will accept all answers in a reasonable range.

1) $\sqrt{54}$ ≈ 7.3 — accept btw. 7.1-7.4

2) $\sqrt{7}$ ≈ 2.6 — accept btw. 2.6-2.8

3) $\sqrt{80}$ ≈ 8.9 — accept 8.8-8.9

4) $\sqrt{147}$ ≈ 12.1 — accept btw. 12.1-12.4

5) Choose one of the problems from 1-4 and explain, in words, how you made your estimate.

Sample answer for #1: Since $\sqrt{49}=7$ and $\sqrt{64}=8$, $\sqrt{54}$ must be between 7 and 8. 54 is closer to 49 (5 away) than 64 (10 away), so the estimate should be closer to 7 than 8.

For 6 and 7, estimate the square root to the nearest tenth. You do need to check your estimates by multiplying them back out. I will accept only the single closest estimate. Show all work – don't erase any guesses!

6) $\sqrt{13}$

3.6 × 3.6 = 12.96

3.7 × 3.7 = 13.69

13.00 − 12.96 = 0.04 ↑ closer

13.69 − 13.00 = 0.69

≈3.6

7) $\sqrt{70}$

8.3 × 8.3 = 68.89

8.4 × 8.4 = 70.56

70.00 − 68.89 = 1.11

70.56 − 70.00 = 0.56 ↑ closer

≈8.4

8) Put the values in order from least to greatest, then explain your thought process: $\sqrt{20}$, $\sqrt[3]{25}$, 3, 5

≈4.4 ≈2.9

Least to greatest: $\sqrt[3]{25}$, 3, $\sqrt{20}$, 5

Explain: Since $\sqrt{16}=4$ and $\sqrt{25}=5$, $\sqrt{20}$ is between 4-5. Since $\sqrt[3]{27}=3$, $\sqrt[3]{25}$ is less than 3. So $\sqrt[3]{25}$ must come before 3, then $\sqrt{20}$ must come before 5.