

Name: KEY
 Date: _____

Estimating Square Roots Assignment

1) Use benchmarks to estimate the following. Show your work.

a) $\sqrt{7}$
 $\sqrt{4}$ $\sqrt{9}$
 2 3
 ↓
 2.6 or 2.7

b) $\sqrt{14}$
 $\sqrt{9}$ $\sqrt{16}$
 3 4
 ↓
 3.7 or 3.8

c) $\sqrt{39}$
 $\sqrt{36}$ $\sqrt{49}$
 6 7
 ↓
 6.2 or 6.3

d) $\sqrt{57}$
 $\sqrt{49}$ $\sqrt{64}$
 7 8
 ↓
 7.5 or 7.6

e) $\sqrt{79.5}$
 $\sqrt{64}$ $\sqrt{81}$
 8 9
 ↓
 8.9

f) $\sqrt{96}$
 $\sqrt{81}$ $\sqrt{100}$
 9 10
 ↓
 9.8

2) Use benchmarks to estimate the following. Show your work.

a) $\sqrt{0.08}$
 $\sqrt{0.04}$ $\sqrt{0.09}$
 0.2 0.3
 ↓
 0.28

b) $\sqrt{0.45}$
 $\sqrt{0.36}$ $\sqrt{0.49}$
 0.6 0.7
 ↓
 0.67

c) $\sqrt{0.6} = \sqrt{0.60}$
 $\sqrt{0.49}$ $\sqrt{0.64}$
 0.7 0.8
 ↓
 0.77 or 0.78

3) Estimate. Show your work.

a) $\sqrt{\frac{3}{23}} \approx \frac{\sqrt{4}}{\sqrt{25}} = \frac{2}{5} = 0.4$

b) $\sqrt{\frac{1}{50}} \approx \frac{\sqrt{1}}{\sqrt{49}} = \frac{1}{7} = 0.14$

or
 $\sqrt{0.13}$
 $\sqrt{0.09}$ $\sqrt{0.16}$
 0.3 0.4
 ↓
 0.36

OR
 $\sqrt{0.02}$
 $\sqrt{0.01}$ $\sqrt{0.04}$
 0.1 0.2
 ↓
 0.13 or 0.14

4) $2^3 = 8$ (two cubed equals eight), so $\sqrt[3]{8} = 2$ (the **cube root** of eight is two).

a) Create a parallel statement for 3^3 . Confirm on your calculator.

$$3^3 = 27, \text{ so } \sqrt[3]{27} = 3$$

b) Create a parallel statement for 4^3 . Confirm on your calculator.

$$4^3 = 64, \text{ so } \sqrt[3]{64} = 4$$

5) $2^4 = 16$, so $\sqrt[4]{16} = 2$ (the **4th root** of 16 is two).

a) Create a parallel statement for 3^4 . Confirm on your calculator.

$$3^4 = 81, \text{ so } \sqrt[4]{81} = 3$$

b) Create a parallel statement for 4^4 . Confirm on your calculator.

$$4^4 = 256, \text{ so } \sqrt[4]{256} = 4$$