

Name \_\_\_\_\_

Date \_\_\_\_\_

1. a. What is the decimal expansion of the number  $\frac{35}{7}$ ? Is the number  $\frac{35}{7}$  rational or irrational? Explain.

b. What is the decimal expansion of the number  $\frac{4}{33}$ ? Is the number  $\frac{4}{33}$  rational or irrational? Explain.

2. a. Write  $0.\overline{345}$  as a fraction.

b. Write  $2.\overline{840}$  as a fraction.

c. Brandon stated that  $0.66$  and  $\frac{2}{3}$  are equivalent. Do you agree? Explain why or why not.

d. Between which two positive integers does  $\sqrt{33}$  lie?

e. For what integer  $x$  is  $\sqrt{x}$  closest to 5.25? Explain.

3. Identify each of the following numbers as rational or irrational. If the number is irrational, explain how you know.

a.  $\sqrt{29}$

b.  $5.\overline{39}$

c.  $\frac{12}{4}$

d.  $\sqrt{36}$

e.  $\sqrt{5}$

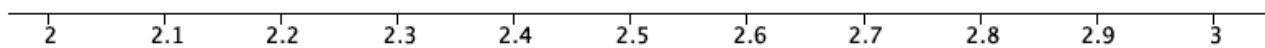
f.  $\sqrt[3]{27}$

g.  $\pi = 3.141592 \dots$

h. Order the numbers in parts (a)–(g) from least to greatest, and place on a number line.

4. Circle the greater number in each of the pairs (a)–(e) below.
- Which is greater? 8 or  $\sqrt{60}$
  - Which is greater? 4 or  $\sqrt{26}$
  - Which is greater?  $\sqrt[3]{64}$  or  $\sqrt{16}$
  - Which is greater?  $\sqrt[3]{125}$  or  $\sqrt{30}$
  - Which is greater?  $-7$  or  $-\sqrt{42}$
- f. Put the numbers 9,  $\sqrt{52}$ , and  $\sqrt[3]{216}$  in order from least to greatest. Explain how you know which order to put them in.

5.



a. Between which two labeled points on the number line would  $\sqrt{5}$  be located?

b. Explain how you know where to place  $\sqrt{5}$  on the number line.

c. How could you improve the accuracy of your estimate?

6. Determine the position solution for each of the following equations.

a.  $121 = x^2$

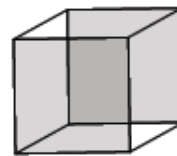
b.  $x^3 = 1000$

c.  $17 + x^2 = 42$

d.  $x^3 + 3x - 9 = x - 1 + 2x$

e. The cube shown has a volume of  $216 \text{ cm}^3$ .

i. Write an equation that could be used to determine the length,  $l$ , of one side.



$$V = 216 \text{ cm}^3$$

ii. Solve the equation, and explain how you solved it.