Unit 1 Study Guide

Write the following fractions as decimals

1) $\frac{5}{18}$

2) $3\frac{7}{50}$

Write the following decimals as fractions in **simplest form**

3) 2.32

4) 0.035

5) Explain the difference between a rational number and an irrational number. Give an example of each.

Rational numbers..._____ EX: _____

Irrational numbers..._____ EX: _____

Label the following numbers as rational or irrational **and justify your answer.**

6) 0.30303030....

7) $\sqrt{64}$

8) $\sqrt{8}$

9) Jean is studying rational and irrational numbers. What conclusion can she draw about the number $0.\overline{1234}$
 a. It is rational because it repeats
 b. It is rational because it terminates
 c. It is irrational because it neither repeats nor terminates
 d. It is irrational because it repeats.

Evaluate the expressions below if $a = 2$ and $b = -3$

10) $5a^0b^2$

11) $a^2 + b^2$

12) $a^{-4}b^0$

Rewrite the expression using positive exponent:

13) Evaluate: $\dfrac{1}{5^{-2}}$

14) Simplify: 9^{-7}

Simplify the expressions below using **ONLY positive exponents**. Circle your final answer.

15) $5^8 \cdot 5$

16) $(3^2)^7$

17) $\dfrac{(-8)^7}{(-8)^3}$

18) $k^{-15} \cdot k^3$

19) $(7^{-2})^5$

20) $\dfrac{y^3}{y^8}$

For #21-23 Write 4^{30} as a product of powers, quotient of powers, and power of powers.

Product of Powers	Quotient of Powers	Power of Powers

24) The land area of the United States is approximately 3.8×10^6 square miles. Write this in standard form.

25) As of 2012, earth had a population of 7,100,000,000 people. Write this number in scientific notation.

26) Is 50.4×10^8 in scientific notation? If it isn't, explain what's wrong and how to fix it.

Evaluate each expression. Express the result in scientific notation

27) $(3.05 \times 10^5)(5.2 \times 10^7)$ =

28) $\dfrac{3.936 \times 10^5}{2.4 \times 10^2}$ =

29) $(9.9 \times 10^5) - (2.11 \times 10^3)$ =

30) $(3.12 \times 10^8) + (5.51 \times 10^7)$ =

31) Texas has an area of approximately 2.8×10^5 square miles while Washington D.C. is close to 70 square miles. How much larger is Texas than our Nation's Capital? Write your answer in scientific notation.

32) Approximately 6.45×10^{21} gallons of water flow over a waterfall each day. There are 8.6×10^4 seconds in a day. Approximately how many gallons of water flow over the waterfall every second? Write in scientific notation.

33) Find the square root(s) of 25

34) Find the cube root(s) of 64

Solve each equation

35) $p^2 = 225$

36) $m^3 = -27$

37) Given the area of square below, find the **side length**.

Area = 81
Square cm.