

Name: Key

Date: \_\_\_\_\_ Class: \_\_\_\_\_

Write each fraction or mixed number as a decimal. SHOW WORK. Don't just use the calculator.

1.  $\frac{2}{5} = 0.4$

$$\frac{2 \div 2}{5 \div 2} = \frac{4}{10}$$

2.  $2\frac{3}{11} = 2.\overline{27}$

$$\begin{array}{r} 2.2727 \\ 11 \overline{) 23.0000} \\ \underline{-22} \phantom{00} \\ 80 \phantom{00} \\ \underline{-77} \phantom{00} \\ 30 \phantom{00} \\ \underline{-22} \phantom{00} \\ 80 \phantom{00} \\ \underline{-80} \\ 0 \end{array}$$

3.  $\frac{5}{12} = 0.4\overline{16}$

$$\begin{array}{r} 0.4166 \\ 12 \overline{) 5.0000} \\ \underline{-48} \phantom{00} \\ 20 \phantom{00} \\ \underline{-12} \phantom{00} \\ 80 \phantom{00} \\ \underline{-72} \phantom{00} \\ 80 \phantom{00} \\ \underline{-72} \phantom{00} \\ 8 \phantom{00} \\ \underline{-8} \\ 0 \end{array}$$

4.  $6\frac{7}{20} = 6.35$

$$\frac{7 \div 5}{20 \div 5} = \frac{35}{100}$$

Write each decimal as a fraction or mixed number in simplest form. SHOW WORK. Don't just use the calculator.

5. 0.6

$$\frac{6}{10} = \frac{3}{5}$$

6.  $0.\overline{8}$

$$\begin{aligned} N &= 0.\overline{8} \\ 10N &= 8.\overline{88} \\ -N &= -0.\overline{888} \\ \hline 9N &= 8 \end{aligned}$$

$$N = \frac{8}{9}$$

7. 0.32

$$\frac{32 \div 4}{100 \div 4} = \frac{8}{25}$$

7. -0.05

$$-\frac{5 \div 5}{100 \div 5} = -\frac{1}{20}$$

8.  $2.\overline{2}$

$$\begin{aligned} N &= 2.\overline{2} \\ 10N &= 22.\overline{22} \\ -N &= -2.\overline{22} \\ \hline 9N &= 20 \end{aligned}$$

$$N = \frac{20}{9} = 2\frac{2}{9}$$

9.  $4.\overline{72}$

$$\begin{aligned} N &= 4.\overline{72} \\ 100N &= 472.\overline{7272} \\ -N &= -4.\overline{7272} \\ \hline 99N &= 468 \end{aligned}$$

$$N = \frac{468}{99} = \frac{52}{11} = 4\frac{8}{11}$$

Evaluate each expression. Express the result in scientific notation.

10)  $(2.3 \times 10^6)(6 \times 10^7)$

$(2.3)(6) = 13.8$   
 $10^6 \cdot 10^7 = 10^{13}$   
 $13.8 \times 10^{13} = 1.38 \times 10^{14}$

11)  $\frac{(2.1 \times 10^8)}{(8.4 \times 10^5)}$

$2.1 \div 8.4 = 0.25$   
 $\frac{10^8}{10^5} = 10^3$   
 $0.25 \times 10^3 = 2.5 \times 10^2$

12)  $(5.6 \times 10^5) + (7.1 \times 10^5)$

$(5.6 \times 10^5) + (7.1 \times 10^5)$   
 $5.6 + 7.1 = 12.7$   
 $12.7 \times 10^5 = 1.27 \times 10^6$

13)  $(6.4 \times 10^8) - (3.5 \times 10^7)$

$(6.4 \times 10^8) - (3.5 \times 10^7)$   
 $(64 \times 10^7) - (3.5 \times 10^7)$   
 $64 - 3.5 = 60.5$   
 $60.5 \times 10^7 = 6.05 \times 10^8$

Write each expression using exponents.

14)  $\frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} = \left(\frac{3}{4}\right)^5$

15)  $b \cdot b \cdot b \cdot b \cdot c \cdot c \cdot c \cdot c \cdot c = b^4 c^5$

Evaluate each expression.

16.  $4^3 = 64$

17.  $6^2 = 36$

18.  $\left(\frac{2}{5}\right)^3 = \frac{8}{125}$

19.  $5^2 \cdot 6^2 = 900$

20.  $3 \cdot 2^4 = 48$

21.  $10^4 \cdot 3^2 = 90,000$

Simplify the following exponents using the exponent properties.

22)  $(n^2)(n^4)$

$n^6$

23)  $\frac{x^6}{x^{10}}$

$x^{-4} = \frac{1}{x^4}$

24)  $(a^3 b^5)^2$

$a^6 b^{10}$

25)  $g^{-6} \cdot g^2$

$g^{-4} = \frac{1}{g^4}$

26)  $(7m^4)^0$

1

27)  $r \cdot r^{-8}$

$r^{-7} = \frac{1}{r^7}$

28)  $(6r^4 s^5)^2$

$36r^8 s^{10}$

29)  $\frac{12a^5 y^4}{10y^7}$

$\frac{6a^5 y^{-3}}{5} = \frac{6a^5}{5y^3}$

30)  $(6c^2 d^6) \cdot (3c^2 d)^4$

$18c^4 d^7$

31)  $-4n^3 \cdot 2n^{-5}$

$-8n^{-2} = \frac{-8}{n^2}$

32)  $\frac{24a^5b^3}{8a^2b}$

$3a^3b^2$

33)  $(-3j^2k^5)^3$

$-27j^6k^{15}$

Write each number in standard form.

34.  $4.5 \times 10^3$

4,500

35.  $2 \times 10^4$

20,000

36.  $1.72 \times 10^{-6}$

0.00000172

37.  $9.61 \times 10^{-2}$

0.0961

38.  $1.99 \times 10^7$

19,900,000

39.  $8.256 \times 10^8$

825,600,000

Write each number in scientific notation.

40. 7,560

$7.56 \times 10^3$

41. 0.0000056

$5.6 \times 10^{-6}$

42. 1,400,000

$1.4 \times 10^6$

43. 0.000925

$9.25 \times 10^{-4}$

44. 51,000

$5.1 \times 10^4$

45. 0.012

$1.2 \times 10^{-2}$

Approximate the following square roots. Leave your answer in mixed number form. SHOW WORK

46.  $\sqrt{26}$      $\sqrt{25} + \sqrt{36}$

5 + 6

$5\frac{1}{11}$      $26 - 25 = 1$   
 $36 - 25 = 11$

47.  $\sqrt{88}$      $\sqrt{81}$  and  $\sqrt{100}$

9 + 10

$9\frac{7}{19}$      $88 - 81 = 7$   
 $100 - 81 = 19$

48.  $\sqrt{60}$      $\sqrt{49}$  and  $\sqrt{64}$

7 and 8

$7\frac{11}{15}$      $60 - 49 = 11$   
 $64 - 49 = 15$

Name all sets of numbers to which the real number belongs. (Natural, Whole, Integers, Rational, and Irrational)

49. 3.18

Rational

50. -15

Integer  
Rational

51.  $1\frac{1}{2}$

Rational

52.  $\frac{8}{4} = 2$

Natural, Whole  
Integer, Rational

53.  $\sqrt{13}$

Irrational

54.  $-\sqrt{25} = -5$

Integer  
Rational

Replace each with  $<$ ,  $>$ , or  $=$  to make a true statement.

55.  $1.7 < \sqrt{3}$

56.  $\sqrt{6} < 2\frac{1}{2}$

57.  $4\frac{2}{5} > \sqrt{19}$

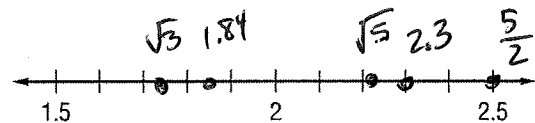
58.  $4.\bar{8} < \sqrt{24}$

Order each set of numbers from least to greatest. Verify your answer by graphing on a number line.

59.  $1.84, \sqrt{5}, \frac{5}{2}, 2.3, \sqrt{3}$

$\sqrt{5} \approx 2.236$

$\sqrt{3} \approx 1.732$



$\sqrt{3}, 1.84, \sqrt{5}, 2.3, \frac{5}{2}$

60.  $-3.01, -2.95, -2.9, -3.1, -3.5$

$-3.5, -3.1, -3.01, -2.95, -2.9$

