Rational/Irrational, Fractions to Decimals, Scientific Notation Review

Name: _____

Date: _____

Write the definitions of the following words. Then, write how to tell which a number should be.

1. Rational Number: can be written as a fraction
whole numbers, fractions, and decimals that stop or repeat are rational

2. Irrational Number:
can not be written as a fraction
square roots of imperfect squares and π are irrational

Identify as rational or irrational (think carefully if you can simplify):

3. $\sqrt{3}$ — Rational \ Irrational
4. 24.5% — Rational \ Irrational
5. 3/11 — Rational \ Irrational
6. 0.491739109334… — Rational \ Irrational
7. $\sqrt{49}$ — Rational \ Irrational
8. $\sqrt{47}$ — Rational \ Irrational
9. 2 ½ — Rational \ Irrational
10. 0.666666666… — Rational \ Irrational
11. 3.14 — Rational \ Irrational
12. π — Rational \ Irrational
13. $(\sqrt{4})2$ — Rational \ Irrational
14. 0 — Rational \ Irrational

Convert the following fractions into decimals using long division (show you work on this side):

15. $\frac{3}{9} = 0.\overline{3}$
16. $\frac{3}{4} = 0.75$
17. $\frac{6}{12} = 0.75$
18. $\frac{1}{7} = 0.\overline{14257}$

Convert each repeating decimal into a fraction.

19. $7.\overline{54}$ $7\frac{54}{99} = 7\frac{18}{33} = 7\frac{6}{11}$

20. $0.1\overline{66}$ $10x = 1.\overline{6}$ $100x = 16.\overline{6}$ $90x = 15$ $x = \frac{15}{90} = \frac{1}{6}$

$0.1\overline{6}$

21. $0.\overline{09}$ $\frac{9}{99} = \frac{1}{11}$

22. $0.\bar{2}$ $\frac{2}{9}$

23. $0.1\overline{4}$ $10x = 1.\overline{4}$ $100x = 14.\overline{4}$ $90x = 13$ $x = \frac{13}{90}$

Convert each standard form into scientific notation:

24. 0.0000067 6.7×10^{-6}

25. 120,000,000 1.2×10^{11}

26. 1,230 1.23×10^{3}

27. 0.04321 4.321×10^{-2}

Perform each operation(s) with scientific notation:

28. $\frac{(8\times10^{5})(4\times10^{-10})}{(8\times10^{9})} = \frac{32\times10^{-5}}{8\times10^{9}} = 4\times10^{-14}$

29. $(3.4\times10^{4})(2.1\times10^{3}) = 7.14\times10^{4}$

30. $(3\times10^{-4})^{2} = 9\times10^{-8}$

31. $5(2\times10^{3}) = 10\times10^{3}$ or 1.0×10^{4}