Name: Key Period:

P1 Practice A

Determine whether the numbers are (R) real, (Q) rational, (I) irrational, (W) whole numbers, (N) natural numbers, (Z) integers. Write the corresponding letter(s) next to each number. There may be more than one correct answer.

1) π R, I

2) -3 R, Q, Z

3) 0 R, Q, Z, W

4) $3.45\overline{45}$ R, Q

5) 1.23456.... R, I

6) $\frac{\sqrt{2}}{3}$ R, I

7) e R, I

8) |-2| R, Q, Z, W, N

9) $\frac{7}{2}$ R, Q

10) $\sqrt{256}$ R, Q, Z, W, N

11) 4.10100100.... R, I

12) 2.9452450 R, Q

Rewrite the inequalities using interval notation.

13) $x > -3$ $x \in (-3, \infty)$

14) $10 < y \leq 11.5$ $y \in (10, 11.5]$

15) $z < 0$ $z \in (-\infty, 0)$

Describe the following sets of numbers using interval notation and number sets.

16) Positive odd multiples of 5.

$5x$, $x \in [1, \infty)$ x is an odd integer

$x \in \{5, 15, 25, 35...\}$

17) Periods of an RHS school day.

$p \in [1, 8]$ x is an integer

$p \in \{1, 2, 3, 4, 5, 6, 7, 8\}$

18) Range of acceptable weights for a bag to be taken as "carry-on" on an airplane. (Maximum is 25 lbs)

$w \in (0, 25]$

19)

$x \in (-3, 4]$

20)

$x \in [5, \infty)$

21) Consider the two expressions $|x+y|$ and $|x|+|y|$.

a. Describe when the two expressions will be equal. They are equal when x and y have the same sign (both positive, both negative)

b. Describe which expression is greater when (if) they are not equal.

When x and y have opposite signs,

$|x+y| < |x|+|y|$

22) Describe, using interval notation, the difference between non-negative numbers and positive numbers.

$x \in [0, \infty)$ $x \in (0, \infty)$

don't include zero

23) Since every even number has a factor of 2, is it possible to have a number that is even and prime?

yes, 2 is even and prime.

Simplify each expression.

24) $\frac{|3x+6|}{x+2}$ $= 3$ for $x > -2$

$= -3$ for $x < -2$

25) $|x^2+1| = x^2+1$

Use absolute value notation to describe the following.

27) x is at most 7 units from 3.

$|x-3| \leq 7$

28) The distance between x and -10 is at least 8.

$|x+10| \geq 8$

29) If y = 8/x, what happens to y as x approaches 0 from the right? What about from the left?

as $x \to 0$ from right, $y \to \infty$

as $x \to 0$ from left, $y \to -\infty$.