

Math-8 Practice Exam #1

- 1). Identify each subset of the real numbers and give an example of an element from each set.

subset	name	example
\mathbb{N}	_____	_____
\mathbb{Z}	_____	_____
\mathbb{Q}	_____	_____
\mathbb{R}	_____	_____

- 2). Mark each of the following statement as either (T) rue or (F)alse. If false, provide a counterexample to show why the statement is false.

a). $\mathbb{Z} \subseteq \mathbb{Q}$

b). Every natural number is also a rational number.

c). Every rational number is a real number.

d). Every rational number is a fraction.

e). Every fraction is a rational number.

- 3). Give an example of an integer that is not a natural number.

- 4). Give an example of a real number that is not a rational number.

- 5). List the three possible forms of a rational number:

a). _____

b). _____

c). _____

6). Convert to fractional form. You do not need to reduce:

a). 98.765

b). $98.\overline{765}$

7). Graph the following two sets on a number line. Don't bother with scale; relative positioning of the endpoints is OK:

a). $\{x \in \mathbb{Z} \mid -3 \leq x \leq 2\}$

b). $\{x \in \mathbb{R} \mid -3 \leq x \leq 2\}$

8). Perform the following calculations:

a). Determine the prime factorization for 180.

b). Determine the prime factorization for 126.

c). Calculate using the LCM of 180 and 126:

$$\frac{3}{180} - \frac{2}{126}$$

d). Reduce using the GCD of 60 and 126:

$$\frac{126}{180}$$

9). Solve for x :

$$x - 4(3x - 2) = 1 + 2x$$

10). Solve for x :

$$\frac{1}{x-2} + \frac{3}{x+3} = \frac{4}{x^2+x-6}$$