Practice for Quiz 1

Name: **Date:** Answers

Our first quiz will be about 30-40 points and will cover the material we've studied so far.

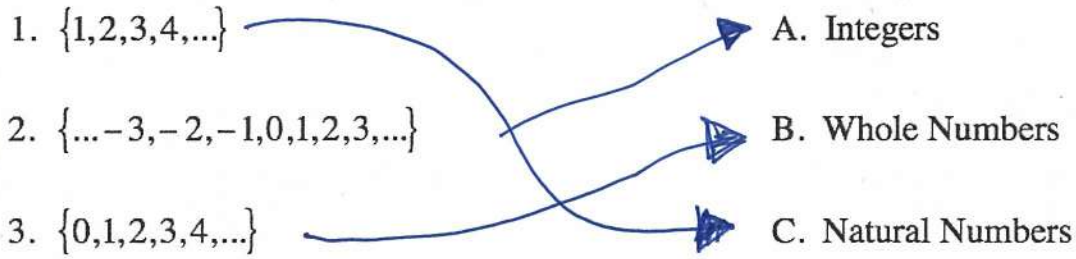
What are some great ways to study for a math quiz or test?

- do practice problems + check answers on-line
- look at regentsprep.org for extra practice + notes
- review notes
- Come see Ms. Stewart afterschool or during lunch

Here are some problems to practice.

Real Number System:

1) Match the following sets with the appropriate classification of real numbers.



2) Which of the following is a rational number but not an integer?

(a) $\sqrt{12}$ (b) $-\frac{3}{7}$ (c) $\frac{15}{3}=5$ (d) -6

rational

rational but also an integer

this is equal to 5 which is an integer and rational

this is rational + not an integer

this is the best answer

3) Which of the above numbers is **irrational**? Explain why you chose the number you chose.

$\sqrt{12}$ is irrational.

$\sqrt{12} \approx 3.464101615...$ which is a decimal that goes on and on with no repeating pattern.

Scientific Notation:

4) Express each number below using scientific notation.

a) 92960000 (miles between Earth and the Sun)

9.296×10^{7}

b) 0.000000000753 (mass of a dust particle in kg)

7.53×10^{-10}

5) Express each number below in standard form:

a) 4.512×10^{-4} = .0004512

b) 7.2×10^{6} = 7,200,000

Absolute Value:

6) Simplify the expressions below.

a) $|3-8|$

$= |-5|$

$= 5$

b) $|-1-9|+|2+4|-|1-3^2|$

$|-10| + |6| - |-9|$

$10 + 6 - |-8|$

$10 + 6 - 8$

8

b) $|-1|+|-2+4|-|-6|$

$1 + |2| - |-6|$

$1 + 2 - 6$

-3

Square Roots:

7) Simplify each expression below.

a) $\sqrt{18} =$

$\sqrt{9 \cdot 2}$

$\sqrt{9} \cdot \sqrt{2}$

$3\sqrt{2}$

17) $-3\sqrt{50}$

$-3\sqrt{25 \cdot 2}$

$-3\sqrt{25}\sqrt{2}$

$-3 \cdot 5\sqrt{2}$

$-15\sqrt{2}$

18) $\frac{1}{2}\sqrt{72}$

$\frac{1}{2}\sqrt{36 \cdot 2}$

$\frac{1}{2}\sqrt{36} \cdot \sqrt{2}$

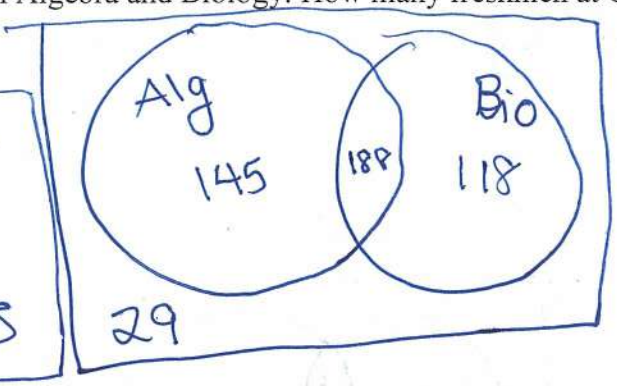
$\frac{1}{2} \cdot 6\sqrt{2}$

$3\sqrt{2}$

Set Theory and Venn Diagrams:

8) Central High School has 480 freshmen. Of those freshmen, 333 take Algebra, 306 take Biology, and 188 take both Algebra and Biology. How many freshmen at Central High School take neither Algebra nor Biology ?

Answer
29 students



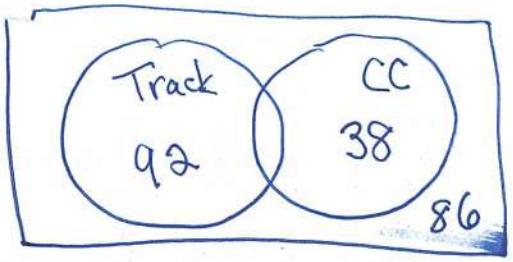
Alg: 333 − 188 = 145

Bio: 306 − 188 = 118

480 in all
145
188
118
451 students in Bio and/or Alg

480 − 451 = 29

9) A high school surveyed 260 of its students regarding participation in either track or cross country. The result of the survey showed that 92 students participated in track only, 38 students participated in cross country only, and 86 students participated in neither sport. Of those surveyed, how many students participated in *both* track and cross country?



students accounted for: 92 + 38 + 86 = 216

260 − 216 = 44

44 Students did both

10) *Universal set* = {*All fruit*}

A = {apples, bananas, oranges, grapefruit, peaches}

B = {lemons, peaches, apples}

$A \cup B =$ {apples, bananas, oranges, grapefruit, peaches, lemons}

$A \cap B =$ {peaches, apples}

$\overline{(A \cap B)} =$ {All fruit except for peaches & apples}

11) If A={(1,2),(2,3),(3,4),(4,5),(5,6)} and B ={(4,7),(3,5),(2,3),(1,2),(0,1),(1,3)}, then find A ∩ B

$A \cap B = \{(1,2), (2,3)\}$

12) Given:

U = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
A = {2, 4, 6, 8, 10}
B = {1,2,3,4,5,6}

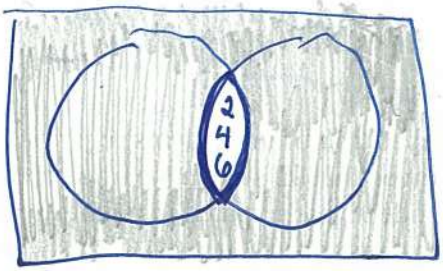
a) Find $A \cup B =$ {1, 2, 3, 4, 5, 6, 8, 10}

b) Find $A \cap B =$ {2, 4, 6}

c) Find $A^c =$ {1, 3, 5, 7, 9}

d) $\sim (A \cup B) =$ {7, 9}

e) Draw a Venn Diagram and shade $\sim (A \cap B) =$



13) List all the possible subsets of {a, b, c}

{a} {b} {c} {a,b} {a,c} {b,c}
{a, b, c} { } ← or ∅

Evaluating Expressions:

14) Evaluate the following expressions when,

x = -2, r = 2, a = 6, b= -8

a) $\sqrt{a^2 + b^2}$

$\sqrt{(6)^2+(-8)^2}$
$\sqrt{36+64}$
$\sqrt{100}$ → = 10

b) $x^2 + 4$

$(-2)^2+4$
$4+4$
8

c) $-x^2 + 4$

$-(-2)^2+4$
$-4+4$
0

d) $\frac{4}{3}\Pi r^3$

$\frac{4}{3}\pi(2)^3$
$\frac{4}{3}\cdot\pi\cdot 8$ → = $\frac{32}{3}\pi$

e) $|x - b|$

$|(-2)-(-8)|$
$= |-2+8|$
$= |6| = 6$

f) $-|x - b|$

$-|-2--8|$
$-|-2+8|$
$-|6| = -6$