

# Minitest 1A - MTH 2010

Dr. Graham-Squire, Spring 2017

Name: \_\_\_\_\_

*Key*

I pledge that I have neither given nor received any unauthorized assistance on this exam.

\_\_\_\_\_  
(signature)

## DIRECTIONS

1. Show all of your work and use correct notation, even on multiple choice questions! A correct answer with insufficient work or incorrect notation will lose points.
2. Clearly indicate your answer by putting a box around it.
3. Calculators, cell phones and computers are not allowed on this test.
4. Make sure you sign the pledge.
5. Number of questions = 6. Total Points = 30.

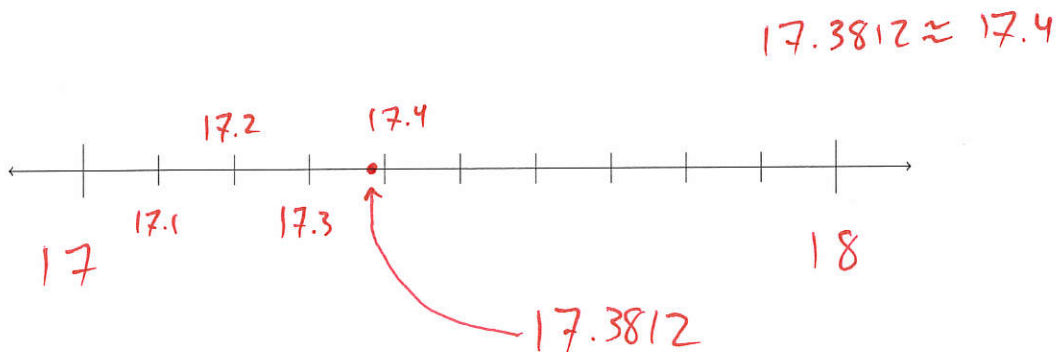
1. (5 points)

- (a) (2 points) Which is bigger,  $-5.4$  or  $-3.87$ ? Without using a number line, explain why.

If you think in terms of owing money,  
 $-5.4 =$  "owes \$5.40" and  $-3.87 =$  "owes \$3.87."

Since you would rather owe less money,  $-3.87$   
is the bigger #.

- (b) (1 point) Plot  $17.3812$  on the number line below, where the long ticks are whole numbers. Make sure to label some of the ticks on your number line!



- (c) (2 points) Arrange the fractions in order from smallest to largest:  $\frac{9}{17}$ ,  $\frac{29}{35}$ ,  $\frac{3}{17}$ ,  $\frac{9}{13}$ .

$$\frac{3}{17} < \frac{9}{17} < \frac{9}{13} < \frac{29}{35}$$

↑ ↑  
more  
pieces, same  
size

↑  
same #  
pieces,  
each piece  
bigger

$$\frac{9}{13} \text{ vs } \frac{29}{35}$$

$$\frac{9 \times 3}{13 \times 3} = \frac{27}{39}$$

$$\frac{27}{39} < \frac{29}{35}$$

↑  
more pieces  
pieces are  
bigger

-0.5 if off, but  
close and w/work

2. (5 points) Adam's family has heights of 6 ft, 6 ft, 4 ft, 3 ft and 2 ft, where each height is rounded to the nearest foot. If the five people make a human ladder by standing on each other's heads, which of the following COULD be the total height of the human ladder? Explain your reasoning and/or show your work!

(A) 18.1 ft

(B) 19 ft

(C) 23.4 ft

(D) 23.5 ft

(I) All are possible heights

(II) B only

(III) C only

(IV) B and C

(V) B, C and D

(VI) None are possible heights

$$5.5 \leq 6 < 6.5$$

$$5.5 \leq 6 < 6.5$$

$$3.5 \leq 4 < 4.5$$

$$2.5 \leq 3 < 3.5$$

$$+ \quad 1.5 \leq 2 < 2.5$$

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$$18.5 \leq 21 < 23.5$$

So 19, 23.4 are okay,

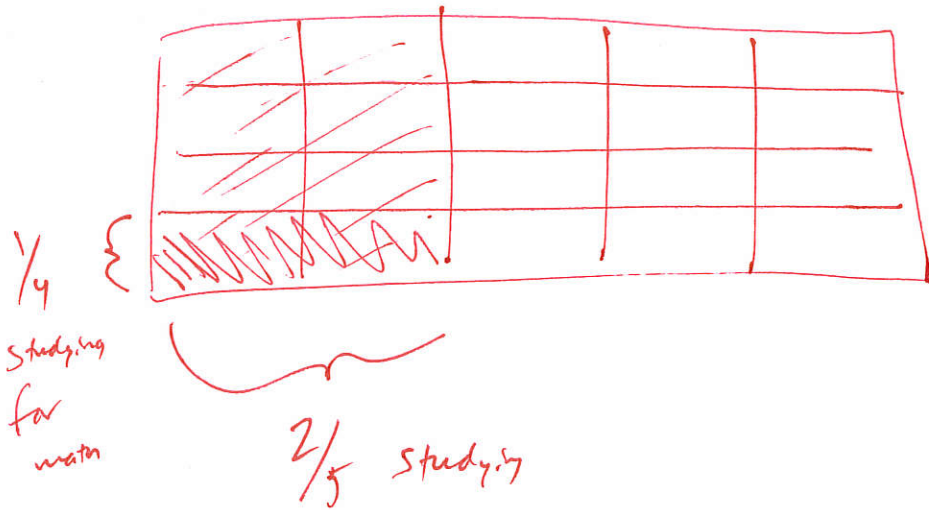
but 18.1 is too small

and 23.5 is too big

-1 if B, C, and D with good work.

-2 if 6.4, etc. but thought is correct

3. (5 points) Billie spends  $\frac{2}{5}$  of her day studying for her classes. Of the time Billie spends studying,  $\frac{1}{4}$  of it will be for her math class. What fraction of the Billie's day will be spent studying math? Use a math drawing to help you explain your answer.



Total of 2 shaded out of 20 total

$$\Rightarrow \frac{2}{20} = \frac{1}{10} \text{ of Billie's day for math}$$

-1.5 if no explanation connecting drawings, but  
has some diagram & right answer

4. (5 points) If a  $\frac{1}{4}$  cup of yogurt provides 90% of your full daily value of potassium, then what percentage of your daily value of potassium is provided by  $\frac{2}{3}$  cup of yogurt? Explain your reasoning and/or show your work!

$$\frac{1}{4} \times 3 = \frac{3}{12}$$

$$\frac{2}{3} \times 4 = \frac{8}{12}$$

% table

$$\frac{3}{12} \rightarrow 90\%$$

$\div 3$  ↙

$$\frac{1}{12}$$

$$\rightarrow 30\%$$

↘  $\div 3$

$\times 8$  ↙

$$\frac{8}{12}$$

$$\rightarrow \boxed{240\%}$$

↘  $\times 8$

5. (5 points) If  $P$  is a positive whole number, which of the following must also be a positive whole number? Explain your reasoning and/or show your work!

(A)  $10 - P$

$\times P = 15 \Rightarrow 10 - 15$  is  $-5$  is negative

(B)  $\frac{20}{P}$

$\times P = 7 \Rightarrow \frac{20}{7}$  is not a whole #

(C)  $\sqrt{P}$

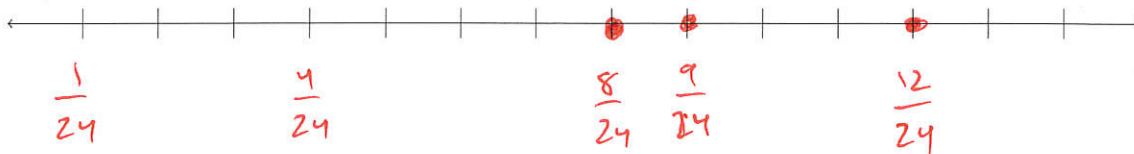
~~$P = 7 \Rightarrow \sqrt{7}$~~  " " " " "

(D)  $P^2$  ✓

↳ will always give a whole # because

$$P^2 = P \times P = (\text{whole \#}) (\text{whole \#}) = \text{whole \#}$$

6. (5 points) Plot the fractions  $\frac{3}{8}$ ,  $\frac{1}{2}$ , and  $\frac{1}{3}$  on the number line below in such a way that each number falls on a tick mark. Explain/show your work!



$$\frac{3 \times 3}{8 \times 3} = \frac{9}{24}$$

$$\frac{1 \times 12}{2 \times 12} = \frac{12}{24}$$

$$\frac{1 \times 8}{3 \times 8} = \frac{8}{24}$$

**Extra Credit**(1 point) Of the 3rd grade students in the US, 70% can pass a basic math test. Of the 3rd grade students in Canada, only 30% can pass the basic math test. For all 3rd grade students (in the US and Canada combined), what percentage can pass the basic math test? Explain.

Cannot say! Because we don't know the actual number of how many students are in Canada and the U.S. Because we are not idiots, we know the U.S. is ~~great~~ bigger, so the overall % will likely be close to 70% than 30%, but cannot say an exact #.