

**MTH-2010, SPRING 2017**  
**DR. GRAHAM-SQUIRE**

MINITEST 4 REVIEW ANSWERS

While many of the answers are listed below, there are some that I will make videos for if I feel they are better explained in that format.

- Section 8.6: (#4)(a) see video  
    (#11) (a) Could be either, no way to tell just from the display. I would probably guess that it is rational, though.  
    (b) Could be  $0.\overline{23}$  or  $0.\overline{232323232}$   
    (c)  $0.23232323201001000100001\dots$
- Section 8.7: (#1) The calculation  $3-7$  uses only whole numbers, but has an answer that is a negative integer. Similarly, the calculation  $3\div 7$  uses only whole numbers but has an answer that is not a whole number (it is a fraction).
- Section 9.1: #8:  $6 \times 10$  or  $(4 + 2)(5 + 3 + 2)$  or  $4 \times 5 + 4 \times 3 + 4 \times 2 + 2 \times 5 + 2 \times 3 + 2 \times 2$   
    #10: Addition:  $20 + 21 + 22 + 23 + \dots + 67 + 68 + 69$  or Multiplication:  $25 \times 89$ . For explanation, see video.  
    (b) 2225 seats  
    #15: see video for AWESOME picture. And explanation.  
    #19: You can only cancel the 11 out of the 22 on top and bottom if you can factor an 11 out of BOTH terms in the numerator. Since 11 is not a factor of 2, this cannot be done. Another way of thinking about it is this: Suppose you broke up the original fraction into two fractions and then reduced:

$$\frac{22 + 3}{77} = \frac{22}{77} + \frac{3}{77} = \frac{2}{7} + \frac{3}{77}$$

the  $\frac{3}{77}$  cannot be reduced at all, which is why the original method did not work..

To correctly evaluate the fraction, you should add the two numbers in the numerator to get  $\frac{25}{77}$ . This fraction cannot be reduced any further.

- Section 9.2: #8: (a) There are a number of possible answers. Some are  $cd - a(d - b)$ ,  $bc + (d - b)(c - a)$ , and  $d(c - a) + ab$ . These correspond to (respectively): Finding the area of the large rectangle and then subtracting the smaller rectangle, cutting the shape into two rectangles horizontally, and cutting the shape into two rectangles vertically.  
    (b)  $d + c + b + a + (d - b) + (c - a)$  and  $2d + 2c$   
    (c) If you multiply out each expression, they all simplify to the same thing. For example, distributing the  $a$  in the first expression gives  $cd - ad + ba$ . Foiling out the second expression gives  $bc + dc - ad - bc + ab$ , and when the  $bc$  cancels, you are left with  $dc - ad + ab$ , same as before.

$$\#16: M - \frac{1}{3}M - \frac{3}{4}(M - \frac{1}{3}M) - 20$$

\#19: see video

- Section 9.3: \#6:  $W = 1.5R$ , where  $W$  is the amount of water you need and  $R$  is the amount of rice. The equation makes sense because you take the amount of rice and multiply by 1.5 to get the amount of water you need.

$$\#12: B - \frac{1}{6}B + 12 = 47$$

- Section 9.4: \#1: (a) Take 3 from 490 to give you 487. This means that  $x + 3$  must equal 176, so  $x = 173$ .

(b) 333 is  $3 \times 111$ , so  $A$  must be equal to 213 times 3, which is 639.

see video for selected others.

\#7: You can't divide by  $x - 1$ , because  $x - 1$  could be equal to zero, and it is against the laws of mathematics to divide by zero (that is, the result is undefined). So when you divide by  $x - 1$  you end up with a result that makes no sense.

- Section 9.5: \#4, 16, 22, 28: see video for all of these.