MTH-2010, FALL 2014
DR. GRAHAM-SQUIRE

TEST 2 REVIEW ANSWERS

Below are brief answers to each problem, most of which would need a much longer explanation in order to receive full credit, the short answer here is just to help you know that you are on the right track.

- Section 3.2: #9, 11
- Section 3.3: #5, 11
- Section 3.4: #11: Arnold is wrong because he is confusing the wholes of 1 and one-third.

  #14: Problem 1: No, need to know if any beads are both pink and oblong. Problem 2: No, because the 1/5 is of the remaining beads, so it would be (3/4)*(1/5)

  #21: Square 1: 1/16, Square 2: 37/48

  #23: a) No, the wholes may be different.

  (b) 14% and 16%

  (c) Need to know how many miles are in each county. If the number of miles is the same, then Ming is right, otherwise Ming is wrong.
- Section 3.5: #3: Should get -3, 3, -3, and 1, using a number line to do it.

- Section 4.1: #8, #9 (The answers to these are on the Section 4.1 video)
- Section 4.2: #3: 10,000 is equal to 10*10*10*10, so you move one place for each ten.
- Section 4.3: #10: break the 16 into 4*4 and 25 into 5*5, then move the numbers with the associative property so that you can do 4*5 twice.

  #13: $n \times 4 = n \times (2 \times 2) = (n \times 2) \times 2$

  #16: 36*240=8,640 total square inches, then divide by the 6 square inches of the design: 8640/6=1440 total designs. Final answer is 1440*12=17280 ladybugs.
- Section 4.4: #5: $6 \times (2 + 3) = 6 \times 2 + 6 \times 3$

  #9: (a) draw a 12 by 15 array and block out a 10 by 10 square and a 2 by 5 rectangle, show Ted that this does NOT fill up the entire array.

  (b) $12 \times 15 = (10 + 2) \times (10 + 5) = 10 \times 10 + 10 \times 5 + 2 \times 10 + 2 \times 5$, which is more than 110.

  #14: $(10,000,000,000-1)(10,000,000,000-1) = 10^{20}-10^{10}-10^{10}-1 = 99,999,999,979,999,999,999$

  #16: b is larger because you multiply 1, 2, etc. by a larger number each term.
- Section 4.5: #7: You will get the same discount either way, due to the distributive property.

  #12: $30\%(240) = 30\%(100 + 100 + 40) = 30 + 30 + (30\%(10 + 10 + 10 + 10)) = 30 + 30 + 3 + 3 + 3 + 3 = 72$

  #15: $\frac{2}{5} \times 1260 = \frac{4}{10} \times 1260 = (\frac{1}{2} - \frac{1}{10})1260 = \frac{1}{2} \times 1260 - \frac{1}{10} \times 1260 = 630 - 126 = 504$

- Section 4.6: #8: Break the array into 4 parts, a 20 by 20 square, a 3 by 20 rectangle, a 20 by 7 rectangle, and a 3 by 7 rectangle. Each of those areas correspond to a part of the partial-products algorithm. In the standard algorithm the 7 by 23 rectangle corresponds to one part and the 20 by 23 rectangle to the other part.

- Section 5.1: #6: The problem cannot be solved because we don't know how many initial brownies, and did any of the frosted brownies get hearts?

  #15: (5/6)(1/2)+(1/2)(1/2)=2/3
- Section 5.2: #3: 2.43 is between 2 and 3, and 0.148 is between 0 and 1, so the answer must be between 0 and 3. The only way to do that is to put the decimal in front of the three to get 0.35964.

  #9: (a) It is 25.4-(0.25 $\times$ 25.4), so neither is right.

  (b) To do 0.25*25.4, you could have the original scenario but ask how much shampoo did Katie use? To do the subtraction, you could have Katie use 0.25 fluid ounces, instead of 0.25 of the bottle, then ask how much is left.
- Section 5.3: #2: (a) can occur: 0.2*0.1=0.02, (b) can occur: 0.1*20=2, (c) can occur: -4*2=-8, (d) can occur: 0.1*(-20)=-2, (e) cannot occur: a negative times a positive is always negative, which would be less than the positive number.
- Section 5.4: #5: No, 2 to any power would be even, so it could not end with a 5.

  #12: a six-digit number is always $N \times 10^5$ and an eight-digit number would be $M \times 10^7$. So you would get $N \times M \times 10^{12}$. If M times N is less than ten, then you would have 10^{12}, which would lead to a 13-digit number. But it M times N is greater than or equal to 10, you would add another place and have a 14 digit number.

- Section 6.1: #5: (a) Yes, (b) No.

  #8: Subtract the exponents to get 10^3, 10^2, and 10^1.
- Section 6.2: #5: (a) 19 1/3 miles makes sense.

  (b) need 4 road crews, fraction does not make sense.

  (c) 3 remainder 6, give each kid 3 and have 6 left over.

  (d) 1 3/4 or 1.75, would split up the packs to eat as much as possible.

  #13: $347 = ((((100/2) \times 3) + 2)/2 \times 3)/2 \times 3 + 2$
- Section 6.3: #5: (a) She did $(800 + 34) \div 25 = 800 \div 25 + 34 \div 25 = 32 + 1$, with remainder of 9.

  (b)$700 \div 25 = 28$, $81 \div 25 = 3$ remainder 6, so get 31 remainder 6.

  #20: Jessica, is wrong, because it is 2 1/7, she would need to do $1 \div 7$ to get the decimal.

  #22: (a) 480/40 is a better approximation, better to round both of them up

  (b) 440/40 is better, better to round both down.

  (c) 660/60 is good.

  (d) 600/60 is good.

  #24: It is not normal practice to use negatives in the scaffold method, but it is mathematically legitimate.