Algebra CC
Assignment #17
Linear Equations with Consecutive Integers *EMI 2.6*
*** Optional**

1. Set up let statements for appropriate expressions and using these expressions set up an equation that allows you to find each number described. Be sure to find EACH integer you are looking for.

   (a) Find two consecutive integers such that ten more than twice the smaller is seven less than three times the larger.

   (b) Find two consecutive even integers such that their sum is equal to the difference of three times the larger and two times the smaller.

   (c) Find three consecutive integers such that three times the largest increased by two is equal to five times the smallest increased by three times the middle integer.

   *(d) Find three consecutive odd integers such that the sum of the smaller two is three times the largest increased by seven.

2. In an opera theater, sections of seating consisting of three rows are being laid out. It is planned so each row will be two more seats than the one before it and 90 people must be seated in each section. How many people will be in the third row?

*3. In the same opera theater personal balcony sections with three rows of seating are being mapped as well. In these sections there must be an odd number of seats in each row and each row must have two more seats than the one before it. The last stipulation is that the front row must have one quarter the total seats in the back 2 rows combined. How many seats will be in each row?

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*R1. Look through the following work, identify the mistake. Then, solve the equation correctly.

Line 1 $\dfrac{-2(x-3)}{5}=4$

Line 2 $5\cdot\dfrac{-2(x-3)}{5}=4\cdot 5$

Line 3 $-2(x-3)=20$

Line 4 $-2x-6=20$

Line 5 $-2x-6+6=20+6$

Line 6 $-2x=26$

Line 7 $\dfrac{-2x}{-2}=\dfrac{26}{-2}$

Line 8 $x=-13$

R2. The steps to simplifying the product $\left(2x^3\right)^3$ to simplest terms are shown below. Write in what justifies each step.

Step 1: $(2x^3)^3 = 2x^3 \bullet 2x^3 \bullet 2x^3$ Justification: _____

Step 2: $2x^3 \bullet 2x^3 \bullet 2x^3 = 2 \bullet 2 \bullet 2 \bullet x^3 \bullet x^3 \bullet x^3$ Justification: _____

Step 3: $2 \bullet 2 \bullet 2 \bullet x^3 \bullet x^3 \bullet x^3 = (2 \bullet 2 \bullet 2) \bullet (x^3 \bullet x^3 \bullet x^3)$ Justification: _____

Step 4: $(2 \bullet 2 \bullet 2) \bullet (x^3 \bullet x^3 \bullet x^3) = 8x^9$ Justification: _____

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1. (a) Let x = smaller #
   Let x+1 = larger #
   14, 15

   (b) Let x = smaller #
   Let x+2 = larger #
   4, 6

   (c) Let x = first #
   Let x+1 = second #
   Let x+2 = third #
   1, 2, 3

   (d) Let x = first #
   Let x+2 = second #
   Let x+4 = third #
   -17, -15, -13

2. 32

3. 3, 5 and 7

R1. The mistake is in between lines 3 & 4. (-2)(-3) = +6
$x = -7$

R2. Step 1: Extended Product
Step 2: Commutative Property
Step 3: Associative Property
Step 4: Multiplication Law of Exponents