Key

Quiz 6

This is a two-stage quiz. During the first stage, use your knowledge & calculator to take this quiz. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have 15 min. to write one solution (with everyone's name on it!) to be turned in for the group. Show your work as you would for a colleague. Partial credit requires reasonable support.

1. [3] Determine if the sentence makes sense. If it makes sense, provide some justification, if not, create a sentence with the numbers given that does make sense.

   1. 13|403 (+1.5) [Yes? note $13 \cdot 31 = 403$

   $13\overline{)403}$ 31, -39, 13

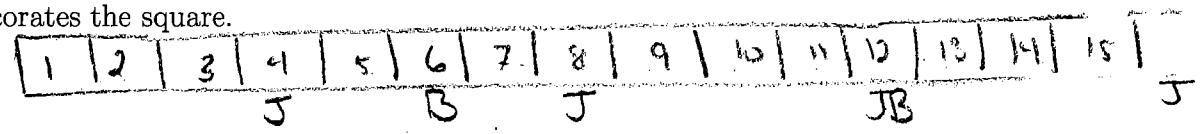
   notation/def of divisor (+1) so 13 divides 403 or $13 \mid 403$

   2. The number 2 is a multiple of 10.

   notation/def multiple (+1.5) (+1.5) [No? A multiple of 10 would be products of 10 like 20, 30, 40, ... 2 is a factor of 10. (+1.5)

2. Janice and Bob are decorating sidewalk squares along their street. Janice chooses to decorate every fourth square while Bob decorates every sixth.

   1. [1] Sketch the first 15 squares of the sidewalk and indicate if (J)anice and/or (B)ob decorates the square.

   if decorated

   2. [2] How often do Janice and Bob collaborate to decorate the same square?

   Every 12th sidewalk square is the lcm of 4 and 6

   3. [2] Find the GCD(4,6) and LCM(4,6)

   (+1) $\gcd(4,6) = \gcd(2\times2, 2\times3) = 2$ (factors in common)

   (+1) $\text{lcm}(4,6) = \text{lcm}(2\times2, 2\times3) = 2\times2\times3 = 12$

3. [2] Is the following statement always true, sometimes true, or never true? Briefly justify.

   If $a|b$ and $a \nmid c$, then $a \nmid (b-c)$.

   (+1.5) always true:

   (+1) eg $a = 3$, $b = 12$, $c = 10$ (True eg)

   note $3 \mid 12$ and $3 \nmid 10$

   and $3 \nmid (12-10)$

   or $3 \nmid 2$

   (+1.5) (reasoning/sense)

   Since $a|b$ we can form b units into a rectangle with side length a.

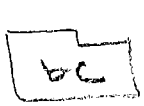
   

   since $a \nmid c$ we cannot form a rectangle of c blocks with side length a,

   looks like

   so b-c would look like

   which is not a rectangle with side length a