**CI Task Information**

**Row Houses**

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| Task Title: | Houses |
| Task Authors: | Mathew D. Felton-Koestler |
| **Learning Goals** |  |
| Objectives (mathematical and/or pedagogical): | Mathematical: Problem solve with multiple strategies, make connections between mathematical ideas, represent mathematical ideas in multiple ways, generalize a rule, communicate mathematical ideas clearly, make sense of mathematical arguments, make sense of algebraic symbols.Pedagogical: Think from a K-12 student’s perspective; has been used to introduce group roles and CI norms (thus some of the directions on the task card are quite specific). |
| Common Core Content Standards Addressed: | Depends some on the age level and emphasis.K-5: Most strongly hits the **Operations & Algebraic Thinking** domain, especially 3.OA.D.9 (identify arithmetic patterns…), 4.OA.C.5 (Generate a number or shape pattern that follows a given rule…), 5.OA.A.2 (interpreting expressions). Depending on students’ background knowledge there can also be heavy emphasis on computational strategies: the **Number & Operations in Base Ten** domain.6-8: Strong emphasis on the **Expressions & Equations** domain.  |
| Common Core Standards for Mathematical Practice Addressed: | (1) Make sense of problems and persevere in solving them (with multiple strategies), (2) Reason abstractly and quantitatively, (3) Construct viable arguments and critique the reasoning of others, (6) Attend to precision, (7) Look for and make use of structure, (8) Look for and express regularity in repeated reasoning. |
| **Set up Information** |  |
| Specific Norms | N/A – Task is currently set up to introduce general CI norms to be used throughout a course |
| Specific Roles | N/A – Task is currently set up to introduce general CI roles to be used throughout a course |
| Multiple ability orientation | In order to succeed at this task, your group will need to do the following:* Problem solve
	+ Invent multiple strategies
	+ Limit yourself to pre-algebra mathematics
* Think from a K-12 student’s perspective
* Make connections between mathematical ideas
* Represent mathematical ideas in multiple ways
* Make generalizations
* Communicate mathematical ideas clearly
* Listen to, understand, question, and extend others’ reasoning
* Make mathematical arguments/justifications

No one has all of these abilities, but together, the members of your group have the abilities necessary to succeed at this task. |
| M*aterials* to prepare | Copies of task card |
| *Handouts* that should accompany the task | Role cards |
| **Task Enactment** |  |
| Launch | If using to introduce CI: Provide background on CI: research based, a set of pedagogical techniques for making groups work well together, and that it involves norms and roles designed to support group work. Introduce norms (or could be discussed as a class) and roles. Explain that on this initial task some of the directions remind you about the group roles, but in the future this will be less common as the PSTs get used to the roles.If desired: Explain that a major theme in exploring algebra in this course will be the idea that algebraic symbols and rules can actually mean something and can make sense. Algebra in this class is not about “solving for *x*” by following memorized rules. This task is designed to highlight these ideas. |
| Closure | Class discussion of strategies developed with a major emphasis on the connections between (a) the figures, (b) the written rules (#8), and (c) the algebraic variables. Then discuss connections across strategies. For instance where the “3” (roof and floor) from each house is across different strategies. |
| Any specific directions? | N/A |
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| Possible variations – how might this task be adjusted for different content or grade level? | For higher grade levels there could be more focus on Part 3 and the Extension (considering multiple rules and how they interrelate). There could be prompts added like, “if a row of houses has 23 outside edges then how many houses long is it? How do you know?” and/or “is it possible to have a row of houses with 24 outside edges? Why or why not?” |