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| **Grade 4** |
| **Grade: 4 Subject: Math**  **Unit: Patterns/Relations** |
| **Learning Target:** Exploring different ways to represent terms of patterns. |
| **Curriculum Outcomes**: SCO PR01 – Students will be expected to identify and describe patterns found in tables and charts, including a multiplication chart.PR02 - Students will be expected to translate among different representations of a pattern (a table, a chart, or concrete materials).PR02.01 Create a table or chart from a given concrete representation of a pattern.PR02.02Create a concrete representation of a given pattern displayed in a table or chart.PR02.03Translate between pictorial, contextual, and concrete representations of a pattern.PR02.04 Explain why the same relationship exists between the pattern in a table and its concrete representation. |
| **Resources/AT Tips:** Math Makes Sense 4 [Explain Everything](https://itunes.apple.com/ca/app/explain-everything-interactive/id431493086?mt=8) ShowbieGrid paper (below)[Pattern Blocks](https://itunes.apple.com/ca/app/pattern-shapes-by-math-learning/id908511013?mt=8) by math learning center |
| **Lesson Procedure** |
| **I do:** * Activate Prior Knowledge - Have students show different ways these decreasing patterns could be extended.

 80, 40, … 925, 825, …. 1000, 500, …* The elements that make up increasing and decreasing patterns are called **terms**. Each term builds on the previous term.
* Using concrete examples show how patterns can be represented in different way. E.g.

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|  |  |
| --- | --- |
| Input | Output |
| 1 | 2 |
| 2 | 6 |
| 3 | 12 |
| 4 | 20 |
| 5 | 30 |
| 6 | ? |
| 7 | ? |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step | 1 | 2 | 3 | 4 | 5 | 6 | ? | … | 10 |
| No. ofdots | 2 | 6 | 12 | 20 | 30 | ? | ? | … | ? |

 |

 Using this pattern create 2 representations of the pattern and extend it. This should be done as a class.* Review the connect section on page 11 of Math Makes Sense 4
 |
| **You do:** * Math Makes Sense 4 page 12 – 1 (students will need guidance setting this question up), 2 allow students to use pattern blocks or the pattern block app on their iPads, 3
* Complete practice sheet (below) and pass in using showbie
 |  |
| **We do:** * Students will collaborate to make an explain everything screencast. Students will create a screencast with an extending pattern in multiple representations. Must have two charts and a concrete example. Students use the Showbie app to pass these in.
 |  |
| **We share:*** Share and celebrate screencast made by students. Have a few students share their screencast on the smartboard with the class.
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| **Differentiation** |
| **Adaptations:** Students use pattern blocks and build growing patterns, plot the pattern in a chart. | **Enrichment:** Math Makes Sense page 13 question 4 |
| **Assessment:*** Students are continuously assessed for comprehension and application. Support is given when students are struggling with the concept
* Students demonstrate their understanding through using concrete materials and charts.
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| **Notes:** |

### Extending Number Patterns

1. Here is a pattern made with squares.

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1. Complete the table.

|  |  |  |
| --- | --- | --- |
| **Figure** | **Number of Grey Squares** | **Number of White Squares** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

1. How many white squares will be in the figure with 10 grey squares?

 c) How many grey squares will be in the figure with
 29 white squares?

 **1-cm Grid Paper**

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