|  |  |  |
| --- | --- | --- |
| **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)    Showbie  Grid 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.  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | Input | Output | | 1 | 2 | | 2 | 6 | | 3 | 12 | | 4 | 20 | | 5 | 30 | | 6 | ? | | 7 | ? | | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Step | 1 | 2 | 3 | 4 | 5 | 6 | ? | … | 10 | | No. of  dots | 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. | |  |
| **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. | | |
| **Notes:** | | |

### Extending Number Patterns

1. Here is a pattern made with squares.

****

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**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |