



THE STUDENT WORKSHEET (LKPD)

Number Pattern



Name :

- 1.
- 2.
- 3.
- 4.

TOPICS



• SQUARE NUMBER
PATTERN



• TRIANGULAR NUMBER
PATTERN

STUDENT WORKSHEET (LKPD) NUMBER PATTERN



LEARNING OUTCOMES

Element Algebra	At the end of phase D students can recognize, predict and generalize patterns in the form of arrangements of objects and numbers. (C2)
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LEARNING OBJECTIVES

- 1.1.Students are able to generalize formulas (nth term) of a number pattern. (C2)
- 2.Students can solve problems related to odd number patterns, even number patterns, square number patterns and triangular number patterns by generalizing previous patterns. (C4)

INSTRUCTION OF USING WORKSHEET

- 1.Read the prayer before starting to work on the LKPD
- 2.Fill in the group identity on the LKPD
- 3.Read and understand the objectives contained in this LKPD.
- 4.Read and understand the description of the material contained in the LKPD.
- 5.Work on each problem to measure your understanding of the material in the LKPD.
- 6.If you have difficulty in studying LKPD, discuss it with friends or ask the teacher.

Sintaks Pembelajaran *Discovery Learning*

	Fase 1 : <i>Stimulation</i>
	Fase 2 : <i>Problem Statement</i>
	Fase 3 : <i>Data Collection</i>
	Fase 4 : <i>Data Processing</i>
	Fase 5 : <i>Verification</i>
	Fase 6 : <i>Generalization</i>

WORKSHEET (LKPD) SQUARE NUMBER PATTERN



Activity 1



Stimulation

Given a problem:

Mrs. Rani wants to organize a birthday party for her son. One of the dishes provided is donuts. Mrs. Rani wants to arrange the donuts on the dining table to be served to the guests. To make it look interesting, Mrs. Rani arranged the donuts to form a pattern. She starts arranging with the first box containing 1 donut, the second box containing 4 donuts, the third box containing 9 donuts, and so on. If Mrs. Rani wants to prepare as many donuts as needed, how many donuts must be prepared to arrange the 6th box of donuts?

If illustrated as follows



1st box



2nd box



3rd box

..... etc



Problem Statement

Look at the pattern !



Pattern - 1



2



3

Based on the above problems, what shape do you see in the pattern ?

WORKSHEET (LKPD) SQUARE NUMBER PATTERN



Data Collection

Represent the number pattern you have obtained with a symbol in the shape of a red donut.

() to represent each digit

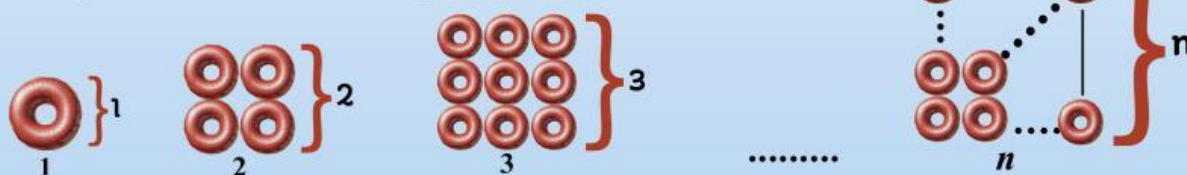
Square Number Pattern

Pattern Representation					
Arrangement To	1	2	3	4	etc (n)
The Quantity	1				



Data Processing

In determining the square number pattern formula, we can apply the concept of multiplication, look at the pattern that has been drawn before. Let's multiply the sum of the rows with the sum of the columns in each number sequence, then look and complete the table below!



U_1	U_2	U_3		U_n
1 x 1	 x 2	 x		 x

So, we can write the formula for the square number pattern of the n th order is

$$U_n = \text{.....} \times \text{.....}$$

WORKSHEET (LKPD) SQUARE NUMBER PATTERN



Verification

From the representation stage that has been made.

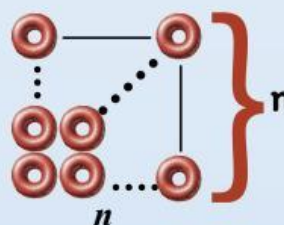
1. In the arrangement of the numbers, do they have the same or different increasing patterns ?

2. Then how to determine the number pattern above ?

From the above calculations, it is obtained:

Formula of square number pattern

$$(\dots\dots\dots) \times (\dots\dots\dots)$$



So Mrs. Rani problem to find out the quantity of donuts in the 6th donut box can use the formula:

$$U_n = \dots\dots\dots \times \dots\dots\dots$$

1. Write Down The Formula

$$= (\dots\dots\dots) \times (\dots\dots\dots)$$

2. Fill With The Number

$$= \dots\dots\dots$$

3. Calculate The Result

So, the number of donuts to prepare to arrange the 6th donut box is donuts.

WORKSHEET (LKPD) TRIANGULAR NUMBER PATTERN



Activity 2



Stimulation

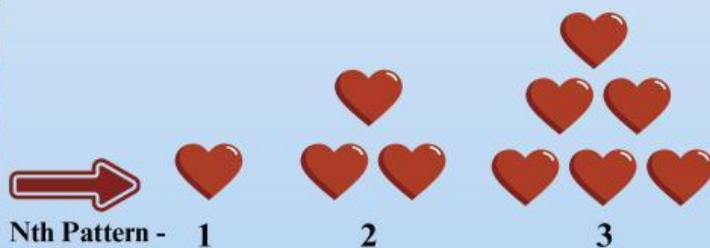
During the school vacation, Susan and Santi traveled to Jogjakarta. One of the tourist attractions they both visited was Ngayogyakarta Hadiningrat Palace. Ngayogyakarta Palace keeps many antique objects belonging to the previous kings. The items are neatly stored in the wards around the palace. At the front of the ward there are many miniature houses called jodhangan. The roof of the jodhangan is arranged in such a way that it looks neat. Take a look at the picture beside



Problem Statement

Look at the pattern !

Based on the above problems, the shape of the jodhangan roof forms a pattern



Based on the above problems, what shape do you see in the pattern ?

WORKSHEET (LKPD) TRIANGULAR NUMBER PATTERN

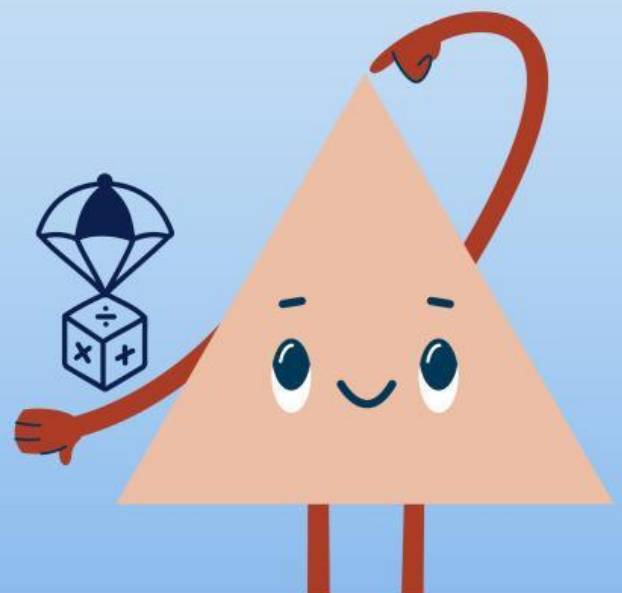


Data Collection

Represent the number pattern you have obtained with a heart-symbol (♥) to represent each number

Triangular Number Pattern

Pattern Representation					
Nth-Arrangement	1	2	3	4	dst (n)
Amount	1	3			



WORKSHEET (LKPD) TRIANGULAR NUMBER PATTERN



Data Processing

In determining the odd number pattern formula, we can apply the concept of operations on integers, namely multiplication and division operations, pay attention to the pattern that has been drawn before. Then fill and complete the table below!

Nth-term	Shape Pattern	Object Generalization	Amount of Pattern	Calculation
U_1			1	$\frac{(1) \times (2)}{2}$
U_2			3	$\frac{(2) \times (3)}{2}$
U_3			6	$\frac{(\dots) \times (\dots)}{2}$
.....				
U_n				$\frac{(\dots) \times (\dots)}{2}$

WORKSHEET (LKPD) TRIANGULAR NUMBER PATTERN



Generalization

From the representation stage that has been made.

1. In the arrangement of the numbers, do they have the same or different increasing patterns ?

.....

2. Then how to determine the number pattern above ?

.....

From the above calculations, it is obtained:

Formula of triangular number pattern

$$\frac{(\dots\dots\dots) \times (\dots\dots\dots)}{2}$$

