

## PUZZLE TREASURE HUNT (LEVEL 3)

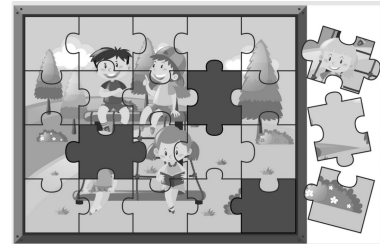
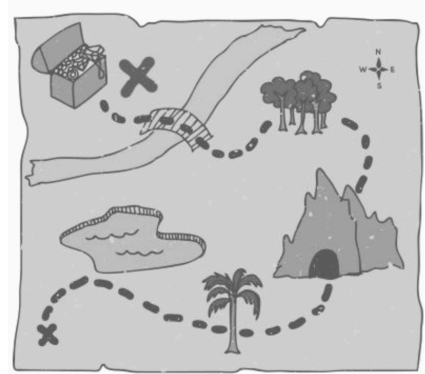
<b>Description</b>	Learners will join in a puzzle treasure hunt! They will create puzzles depicting something they treasure and will hide the pieces around them. They will create a map and make clues using numbers and math to help their friends find these pieces and solve the puzzle.
<b>Leading question</b>	How can we design a special treasure hunt to learn about each other's most treasured moments?
<b>Subjects covered</b>	Math, Art and Design
<b>Total time required</b>	40-60 min a day for 4 days
<b>Resources required</b>	Paper, Pen/pencil, scissors, ruler, coloured pencils/pens, small envelopes/bags, cardboard ( <i>optional</i> )
<b>Learning outcomes:</b>	<p>By the end of this project, learners will be able to:</p> <p>Knowledge-Based Outcomes:</p> <ol style="list-style-type: none"> <li>1. Count to 1000, starting at any number less than 1000.</li> <li>2. Draw a number line (whole numbers).</li> <li>3. Identify the predecessor and successor of a given number.</li> <li>4. Skip count to 1000 in multiples of 2, 5, 10, 50.</li> <li>5. Skip count to 1000 in multiples of 6, 7, 8, 9, 11 and 12.</li> </ol> <p>21<sup>st</sup> Century Skill Outcomes:</p> <ol style="list-style-type: none"> <li>1. Think critically while planning the hunt and creating clues.</li> <li>2. Think creatively while applying concepts learnt in creating challenging clues.</li> <li>3. Collaborate throughout the project in agreeing on specific spots to hide clues and the puzzle theme.</li> <li>4. Communicate effectively through correct phrasing of clues and coordinating with friends for tasks.</li> </ol>
<b>Previous Learning</b>	Counting to 50 Skip counting by 2 and 5
<b>Supervision required</b>	Medium

### Day 1 -

Today, you will plan the route for your treasure hunt, recap counting, and start thinking about how you want to make your puzzles.

Time	Activity and Description
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<p>10 minutes</p>	<p><b>Understanding What a Treasure Hunt is</b>  <b>Note:</b> Show learners the image of a treasure map in <b>Appendix 1.</b></p> <p>Have you seen an image like this before?</p> <ul style="list-style-type: none"> <li>- What do you think this image shows?</li> <li>- What do you think the dotted line and the different objects in the image represent?</li> </ul> <p>This is a map, specifically, a treasure map!</p> <ul style="list-style-type: none"> <li>- People can use maps like these to find hidden treasures!</li> <li>- The dotted line shows the path to the treasure. The small cross shows the starting point of the path. The big cross shows where the treasure is.</li> <li>- The objects, such as trees and the cave are landmarks or important locations that will help you find your way.</li> </ul> <p>The <b>leading question</b> of this project is: How can we design a special treasure hunt to learn about each other’s most treasured moments?</p> <p>A treasured moment is a moment that has a special meaning or significance to you. In this project, we will be creating puzzles that depict something we treasure.</p> <ul style="list-style-type: none"> <li>- We will then hide the puzzle pieces around them.</li> <li>- We will create a map and make clues using numbers and math to help our friends find these pieces and make the puzzle!</li> </ul>
<p>15 minutes</p>	<p><b>Puzzle Idea</b>  <b>Note:</b> If needed, explain to the learner what a puzzle is using the shown image.</p> <p>Decide what you would like to draw to make your puzzle!</p> <ul style="list-style-type: none"> <li>- Remember you must draw something that means a lot to you.</li> <li>- It could be a favourite memory, a place you love visiting, or something that you love to eat etc.</li> </ul>
<p>15 minutes</p>	<p><b>Game to Recap Counting 1-1000</b>  <b>Note:</b> If only one learner is participating in the project, get them to bring a few friends to the class for this activity.</p> <p>We will be finishing, cutting and numbering our puzzle pieces in the next class. To be able to number our pieces correctly, we need to recap counting!</p>



Let us do this by playing a game! To play the game:

- We will stand in a circle and use a ball (*which can be made of crushed paper*).
- The learner with the ball must say any number between 1 and 1000 (*E.g. 789*) and then throw the ball to a classmate.
- The person who catches the ball should then list the next 5 numbers that come after it. (*E.g. 790, 791, 792, 793, and 794*)
- They then say another number between 1 and 1000 and throw the ball to someone else.

**Note:** *If learners are struggling to count, pause and explain the pattern followed in counting and how place values change after reaching 9.*

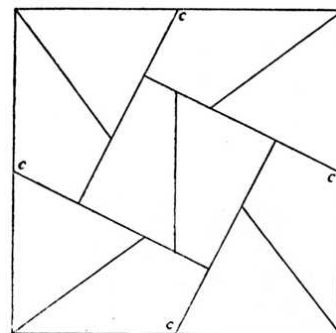
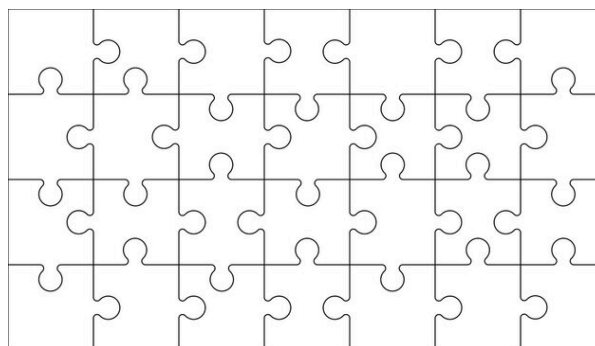
- *Teachers can draw the place value chart on the board to explain this concept. See **Appendix 2**.*
- *E.g. after 129, the ones place changes to 0, and the tens place increases by 1, to create 130 or after 599, since there are two 9s, they both become 0 and the hundreds place increases by 1 to give us 600.*

Periods	LAKHS		THOUSANDS		ONES		
Places	Ten lakhs 1000000	One lakh 100000	Ten thousands 10000	One thousand 1000	Hundreds 100	Tens 10	Ones 1
6314829	6	3	1	4	8	2	9
753610		7	5	3	6	1	0
1154897	1	1	5	4	8	9	7

**Tip:** *To challenge learners, ask them to count from numbers larger than 1000.*

**At-home activities**

- If you could not finish your drawing in class, finish it at home.
- Cut your drawing into at least 150 puzzle pieces (look at **Appendix 3** for suggestions).



**Day 2**

*Today, you will number the pieces of your puzzle, explore the concept of multiples, and group the pieces into bags to hide them!*

Time	Activity and Description
10 minutes	<p><b>Numbering Pieces</b></p> <p>Now you will number the pieces of the puzzle! Make sure that you number the pieces in continuation from left to right, row by row, or top to bottom.</p>
10 minutes	<p><b>Multiples of Numbers</b></p> <p>We will be splitting our puzzle pieces into 4 bags. For this, let us learn a math concept called multiples!</p> <ul style="list-style-type: none"> <li>- When we count normally, we go like this: 1, 2, 3, 4, 5, and so on. We are counting by adding one to the last number.</li> <li>- However, when we skip count by 6s or 7s, we count by adding 6 or 7 to the number.</li> <li>- The numbers we get by counting this way are called <b>multiples</b>. For example, when we skip count by 5, we count in <b>multiples</b> of 5. 5, 10, 15, 20 and so on are multiples of 5.</li> <li>- Multiples are numbers that fall in the table of a particular number.</li> </ul> <p><b>Note:</b> Ask learners to answer the following questions:</p> <ol style="list-style-type: none"> <li>1. What are the first 4 multiples of 9? (Answer: 9, 18, 27, 36)</li> <li>2. Which of the following <b>is not</b> a multiple of 8: 28, 56, 80, 16? (Answer: 28)</li> <li>3. Which of the following is a multiple of 11: 111, 101, 99, 65? (Answer: 99)</li> </ol> <p><b>Tip:</b></p> <ul style="list-style-type: none"> <li>- To simplify, cover multiples of smaller numbers such as 2, 3, 4, and 5.</li> <li>- To challenge learners, <ul style="list-style-type: none"> <li>- get them to identify patterns in multiples of 2, 5, and 10. Eg: all multiples of 2 end with an even number. All those of 5 end with 5 or a zero.</li> <li>- explain the concept of factors to them. A factor is a number that divides the given number evenly or exactly, leaving no remainder. If 'number A' appears in 'number B's' multiplication table, Number B is a factor of Number A. E.g. 6 is a factor of 42.</li> </ul> </li> </ul>
10 minutes	<p><b>Game on Multiples and Skip Counting</b></p> <p>Now, let us play a game on counting in multiples!</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>- If only one learner is participating in the project, get them to bring a few friends to the class for this activity.</li> <li>- Get all learners to sit in a circle.</li> </ul> <p>Start counting from 6 and then each person will follow by saying the next number in a multiple of 6 until they reach the number closest to 100!</p> <p>You can repeat the game with multiples of 7, 9 and so on.</p>

10 minutes	<p><b>Bagging Puzzle Pieces</b></p> <ul style="list-style-type: none"> <li>- Set aside 4 bags/envelopes for your puzzle pieces.</li> <li>- Choose 3 numbers between 2 and 12.</li> <li>- Sort the puzzle pieces into each bag using multiples of these numbers. For example, if you chose 5, 9 and 12, the first bag will have multiples of 5, the second multiples of 9 and the third multiples of 12.</li> <li>- Write the total number of pieces in each bag.</li> <li>- Once the three bags are filled, you can put the remaining pieces into the last bag.</li> </ul>
<b>At-home activities</b>	Play the number game and the multiples game with your friends and family!

### Day 3 –

Today, you will create a map and clues that will help your friends find the hidden puzzle pieces!

Time	Activity and Description
10 minutes	<p><b>Predecessors &amp; Successors of Numbers</b></p> <p>To create clues, we will use the concept of predecessors and successors.</p> <p><b>Note:</b> Draw a number line from 40 to 60 on the board. Ask learners to identify which number comes after 50. How about before 50?</p> <ul style="list-style-type: none"> <li>- A number that is placed before a given number on the number line is called its <b>predecessor</b>. 49 is the predecessor of 50.</li> <li>- A number that comes after a given number is called its <b>successor</b>. 51 is the successor of 50.</li> <li>- A predecessor is the number minus 1 and the successor is the number + 1.</li> </ul> <p>Write the predecessor and successor of these numbers: 85, 670, 101, 422, 999.</p> <p><b>Tip:</b> To challenge learners give them larger numbers such as 45909 and ask them also to write the number in words.</p>
10 minutes	<p><b>Game on Predecessors and Successors</b></p> <p><b>Note:</b> If only one learner is participating in this project, get them to bring a few friends to the class for this activity.</p> <p>Let us play a game on predecessors and successors!</p> <p><b>Note:</b> To play this game:</p> <ul style="list-style-type: none"> <li>- Learners must stand in a circle with the teacher at the centre.</li> <li>- The teacher points at a learner and says a number, e.g. 39.</li> </ul>

	<ul style="list-style-type: none"> <li>- The learner standing to his/her <b>left</b> must say the predecessor of the number, in this case, 38.</li> <li>- The learner standing to his/her <b>right</b> must say the successor of the number, in this case, 40.</li> <li>- If any learner says the wrong number, he/she is out.</li> <li>- The last 2 or 3 people left, can be declared the winners!</li> </ul>
10 minutes	<p><b>Hiding Spots!</b> Now, we will identify hiding spots for our puzzle pieces!</p> <p>To do this:</p> <ul style="list-style-type: none"> <li>- Think about 3 or 4 spots around a room/ park/ garden where you wish to hide the bags of pieces. Make sure that these spots are not too far away from each other!</li> <li>- You must choose places for which you can provide clues using predecessor and successor. <ul style="list-style-type: none"> <li>- For example, two bags can be found in the classroom that is the predecessor of grade 6 or three bags are on the floor that is the successor of 2.</li> </ul> </li> <li>- You can even provide the direction and approximate number of footsteps between two hiding places! <ul style="list-style-type: none"> <li>- For example, turn right and walk 50 steps to find the next hiding spot.</li> </ul> </li> </ul>
10 minutes	<p><b>Creating the Map</b> Now, you will draw a map of your neighbourhood/ school and mark the areas where the bags of puzzle pieces are hidden. You must:</p> <ul style="list-style-type: none"> <li>- Mark the starting and endpoints of the clue hunt!</li> <li>- You can write the clues next to each location to help your friends find them.</li> <li>- Mention how many bags are hidden in each location.</li> </ul>
<b>At-home activities</b>	Tell a friend or a family member - who isn't going to participate in the hunt the next day - about the hiding spots you chose. Ask for their suggestions on whether it is too easy/ difficult/ unsafe to hide the bags there.

### Day 4 –

Today, your friends will hunt for your puzzle pieces and put the puzzles together! Once done, you will reflect on your experience doing this project.

Time	Activity and Description
30 minutes	<p><b>Hunt!</b> <b>Note:</b> If only one learner is participating in the project, get them to bring a few friends to the class for this activity. If not, the two groups can exchange maps and clues.</p> <ul style="list-style-type: none"> <li>- Hide the bags!</li> <li>- Share/ exchange your maps!</li> </ul>

	<ul style="list-style-type: none"> <li>- Inform your friends that to win the hunt they must then come back, sort the pieces, and put the puzzle pieces together.</li> </ul>
10 minutes	<p><b>Reflection</b></p> <p>Now that we have completed the project, let us think about our experience and what we learned.</p> <p>Think and share:</p> <ul style="list-style-type: none"> <li>- What did you enjoy in this project?</li> <li>- What did you not enjoy?</li> <li>- What did you learn during this project that you did not already know?</li> <li>- What did your friends think about the completed puzzle? What did they learn about you from it?</li> </ul>

<b>Additional enrichment activities:</b>	<ul style="list-style-type: none"> <li>- Learners can make clues other than ones based on numbers. They can make clues involving riddles or jumbled words!</li> <li>- Add more complex concepts for learners to create clues on such as prime numbers, divisibility rules, etc.</li> </ul>
<b>Modifications for simplification</b>	Learners can make easier puzzles and also cut them out into fewer pieces.

## ASSESSMENT CRITERIA

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A majority of my learners were able to:

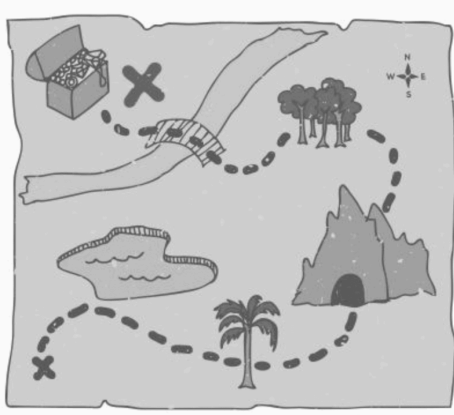
- Count from 1 to 1000
- Identify the predecessor and successor of a number
- Identify multiples of given numbers
- Create a map and write clues involving the different math concepts

## APPENDIX

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### Appendix 1:

Treasure Map:



## Appendix 2:

### Place Value Chart

(Source: <https://www.math-only-math.com/images/periods-in-the-place-value-chart.png>)

Periods	LAKHS		THOUSANDS		ONES		
	Ten lakhs 1000000	One lakh 100000	Ten thousands 10000	One thousand 1000	Hundreds 100	Tens 10	Ones 1
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## Appendix 3:

### Puzzle Pieces Options

