

OUR LOCAL CRICKET HUB (LEVEL 3)

Description	Learners will design a stadium to help their school/ community become a local cricket hub. They will explore concepts of perimeter, solve word problems using different operations, and carry out multi-step calculations as they design different aspects of the stadium. Finally, they will propose to their community members to build the cricket stadium they design.
Leading question	How can I make my community/ school a local cricket hub?
Subjects covered	Math, Art and Design
Total time required	40-60 min a day for 4 days
Resources required	Paper, pen/pencil, scissors, ruler, coloured pens/ pencils
Learning outcomes:	<p>By the end of this project, learners will be able to:</p> <p>Knowledge-Based Outcomes:</p> <ol style="list-style-type: none"> 1. Add and subtract with up to 5 digits. 2. Solve addition and subtraction word problems with up to 5 digits. 3. Multiply within 100. 4. Solve multiplication word problems within 100. 5. Divide (without remainder) within 100. 6. Solve division (without remainder) word problems within 100. <p>21st Century Skill Outcomes:</p> <ol style="list-style-type: none"> 1. Think critically while planning the stadium based on specified criteria. 2. Be collaborative while receiving feedback on their designs and incorporating it. 3. Be creative in designing the stadium's structure and look. 4. Communicate effectively while presenting their stadium.
Previous Learning	Tables from 2 to 12 Basic operations on whole numbers
Supervision required	Medium

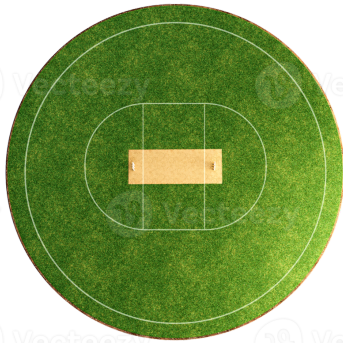

Day 1 -

Today, you will explore the history of cricket, begin thinking about what it takes to host a cricket match in a stadium and calculate the perimeter of the cricket pitch and field.

Time	Activity and Description
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<p>5 minutes</p>	<p>Introduction to the Project What do you know about the game of cricket? Tell me three interesting things you know!</p> <p>Let me share a few facts with you about cricket!</p> <ul style="list-style-type: none"> - It is believed that people have played cricket for over 700 years in some form or the other. - The first Men's Cricket World Cup was played in 1975 in England and the World Cup has been held every 4 years since then. - The first Women's World Cup was held 2 years before that in 1973. - Australia has won the most World Cups (5) and is the only country to have won the World Cup 3 times in a row. <p>The Leading Question for this project is: How can I make my school/community a local cricket hub?</p> <ul style="list-style-type: none"> - In this project, we will design a space for our community/ school to host cricket matches and become a hub for cricket, and make a proposal to our community members! - We will design a stadium and calculate its cost.
<p>10 minutes</p>	<p>Structures Needed for a Cricket Hub Let us think about the structures we will need to become a cricket hub!</p> <ul style="list-style-type: none"> - What different structures and facilities would we need to prepare to become a cricket hub? - What do we already have that can be used or transformed to help us host cricket matches? <p>Tip: <i>If learners struggle, guide them with questions such as:</i></p> <ul style="list-style-type: none"> - <i>Where would the match be played?</i> - <i>How many people would come to watch?</i> - <i>What facilities would the players and spectators need? (seats for spectators, toilets, staff to maintain the pitch etc)</i> - <i>What kind of roles would the community members/ teachers and students play?</i> <p>One of the most important structures needed for cricket would be a small stadium!</p> <ul style="list-style-type: none"> - Here, people can practice and play matches.



	<ul style="list-style-type: none"> - The stadium would need to have a suitable play area and space for the audience to sit. <p>Can you draw what a cricket stadium looks like from memory?</p> <p>Note:</p> <ul style="list-style-type: none"> - <i>If learners are unable to draw a stadium or field, draw the image of the field (Appendix 1) and ask learners to think and answer the following:</i> <ul style="list-style-type: none"> - <i>What different shapes do you see on the cricket field?</i> - <i>Do you know what the centre area is called? (the pitch)</i> - <i>What different areas would you need in the stadium?</i> - <i>Explain the structure of the cricket field to learners if needed. Mention the pitch, boundary, stump positions etc.</i>
10 minutes	<p>Designing the Stadium</p> <p>Let us begin designing our cricket stadiums! To do this:</p> <ul style="list-style-type: none"> - First, sketch the playing field (<i>as shown in the image - Appendix 2</i>). - Now, add the following measurements: <ol style="list-style-type: none"> 1. The circular field should have a radius between 70 and 75 m. 2. The rectangular pitch's length = 20 m and breadth = 3 m 3. The two stumps are around 1 m from the ends of the pitch 4. The batting crease is 1 m away from the stumps. 5. Label all the measurements. <p>Note: <i>Learners can use a scaled-down measurement where 1 cm = 2 m. If this is a challenge, they can draw an approximate version of the pitch with correct labelling.</i></p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>
15 minutes	<p>Calculating the Perimeter of the Field and the Pitch</p> <p>Now, to create the pitch and determine its cost, we need to calculate the perimeter of the field and pitch.</p> <ul style="list-style-type: none"> - Perimeter is the total distance around the edge of the shape. It is the length of its boundary. - What are the 2 main shapes in the field? (<i>circle and rectangle</i>) <p>Note:</p>

	<ul style="list-style-type: none"> - Ask learners to think and share how to calculate the perimeter of the rectangular pitch. - Once done, share the formula $2l + 2b$. - Finally, ask learners to calculate the perimeter of the rectangular pitch. <p>Tip: To challenge learners:</p> <ul style="list-style-type: none"> - Have them calculate perimeters of different shapes such as triangles, squares and even the circumference of the circular field using the formula $2\pi r$. - You can also get them to calculate the surface area of the rectangular pitch and the circular field. - Ask them to solve additional perimeter-related questions from Appendix 3.
At-home activities	<p>Talk to an elder in the community and inform them of the project that you are working on.</p> <ul style="list-style-type: none"> - Gather information about the rules of cricket from them. Make sure you find out about these: <ul style="list-style-type: none"> - Number of players - Number of overs in one-day cricket matches - Format of play (innings, total wickets) - Basic rules of play - How is a winner decided? - Discuss your ideas with them about the facilities needed for a cricket hub and take their suggestions.

Day 2

Today, you will play a game of cricket, record scores, and use this information to solve word problems.

Time	Activity and Description
20 minutes	<p>Playing a Cricket Match</p> <p>Note:</p> <ul style="list-style-type: none"> - If only one learner is participating in the project, ask them to invite 11 other friends and community members to play cricket with them on this day. - If it is not possible for learners to play a match, they can use paper figures, draw a pitch on paper and play a 2-D simulation <p>To host a match, we must understand cricket perfectly!</p> <ul style="list-style-type: none"> - You may notice there are many numbers involved in cricket! 6 balls per over, 11 players, 10 wickets, number of runs etc. - So we must be able to make sense of these numbers. - To do this, let us play a match and keep track of the scores. <p>Note: Allow learners to play a match of cricket.</p> <ul style="list-style-type: none"> - 12 people can play a 6-on-6 match in a smaller area for just 5 overs a side.

	<ul style="list-style-type: none"> - As the 12 learners play, keep track of the score, runs being scored by each player, wickets, the number of balls being bowled by each player etc.
20 minutes	<p>Solving Cricket-related Problems</p> <p>When a match is hosted, the umpires and score-keepers must have a very clear idea of all the scores, runs, wickets, and other numbers related to the match.</p> <p>Let us now become scorekeepers and solve some cricket-related word problems to ensure we can track all the technical details of a cricket match!</p> <p>Note: Share the following word problem with learners and ask them how they would solve this problem.</p> <ul style="list-style-type: none"> - Problem A: We played a match with only 5 overs. Since there are 6 balls per over, how many total balls were bowled in one innings of our match? - Solution A: No. of balls per over x No. of overs = 6×5 = 30 balls OR add 6 + 6 + 6.. 5 times <p>When faced with a word problem of this kind, we can follow a few simple steps. We can remember these steps with the acronym TIPS (Appendix 4):</p> <ol style="list-style-type: none"> 1. T - Think: Read and think about what the question is asking 2. I - Info: What information is given in the question? What information do you need to find? Circle it. 3. P - Plan: What can you do to solve it? What operations do you need to use? 4. S - Solve: Use your plan to answer. Check - does this answer make sense? <p>Note: Do the following word problems with the learners. Replace the runs and values based on the scores from the match the learners just played.</p> <p>Tip: To challenge learners you can share the problems from Appendix 5 or give them more complex problems using larger numbers or have them calculate individual run rates.</p>
At-home activities	<p>Think and answer these questions about your project:</p> <ul style="list-style-type: none"> - In which area would you wish to build the cricket facility and why? - What will you name your cricket facility? - Which events would you host there to ensure it becomes a local cricket hub?

T
I
P
S

THINK

Think about the question. Underline it. What is it asking?

INFO

What is the IMPORTANT INFORMATION you need to solve this problem? Circle it.

PLAN

What do you need to do to solve? Which operations make sense? Is it multi-step?

SOLVE

Use your plan to solve the problem. DOES THE ANSWER MAKE SENSE??

Day 3 –

Today, you will design the interior and the exterior of the cricket stadium, and calculate the total cost of building the stadium.

Time	Activity and Description																																				
20 minutes	<p>Designing the Stadium</p> <p>Today, we will design our stadiums and calculate the cost of building them! To do this:</p> <ul style="list-style-type: none"> - Create a design for the exterior and interior of the stadium. - You should have 2 sketches - one of the outer structure and one or two of the interior. - Keep the following pointers in mind: <ul style="list-style-type: none"> - Design a seating structure to accommodate at least 1000 spectators. (Explain how many rows and columns of seats you will have around the stadium) - Create 3 areas in the seating: one for VIPs, one for disabled people and one for the general public. - It should have at least 5 entries and exits for the safe movement of people. - The stadium should have enough toilets for everyone, lights, seating areas and dressing rooms for the two teams, a canteen, a medical room, and at least 1 large scoreboard/screen visible from any part of the stadium. - The structure can be inspired by Indian culture or designs - You can add any other details you wish as well. - Think of a name for your stadium too. 																																				
20 minutes	<p>Calculating Costs</p> <p>Finally, let's calculate the cost of constructing the stadium! To help you with this, I will share a price list.</p> <p>Note: Share the table format with the learners to help them calculate or simply share the first two columns to challenge learners.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Element</i></th> <th style="text-align: center;"><i>Cost per unit (C)</i></th> <th style="text-align: center;"><i>No. of units in Our Stadium (N)</i></th> <th style="text-align: center;"><i>Total Cost (C x N)</i></th> </tr> </thead> <tbody> <tr> <td><i>1 stadium light</i></td> <td style="text-align: center;"><i>\$175</i></td> <td></td> <td></td> </tr> <tr> <td><i>1 canteen</i></td> <td style="text-align: center;"><i>\$440</i></td> <td></td> <td></td> </tr> <tr> <td><i>1 dressing room</i></td> <td style="text-align: center;"><i>\$800</i></td> <td></td> <td></td> </tr> <tr> <td><i>1 spectator seat</i></td> <td style="text-align: center;"><i>\$10</i></td> <td></td> <td></td> </tr> <tr> <td><i>1 medical room</i></td> <td style="text-align: center;"><i>\$600</i></td> <td></td> <td></td> </tr> <tr> <td><i>Field and pitch setup</i></td> <td style="text-align: center;"><i>\$15000</i></td> <td></td> <td></td> </tr> <tr> <td><i>1 large screen</i></td> <td style="text-align: center;"><i>\$900</i></td> <td></td> <td></td> </tr> <tr> <td><i>Sports equipment</i></td> <td style="text-align: center;"><i>\$400</i></td> <td></td> <td></td> </tr> </tbody> </table>	<i>Element</i>	<i>Cost per unit (C)</i>	<i>No. of units in Our Stadium (N)</i>	<i>Total Cost (C x N)</i>	<i>1 stadium light</i>	<i>\$175</i>			<i>1 canteen</i>	<i>\$440</i>			<i>1 dressing room</i>	<i>\$800</i>			<i>1 spectator seat</i>	<i>\$10</i>			<i>1 medical room</i>	<i>\$600</i>			<i>Field and pitch setup</i>	<i>\$15000</i>			<i>1 large screen</i>	<i>\$900</i>			<i>Sports equipment</i>	<i>\$400</i>		
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	General construction cost	\$21000		
	Total Cost			
	<p>Tip: You can change the prices to make the calculations easier or more difficult (using decimals) based on learners' levels.</p>			
At-home activities	Show your design and cost calculations to an elder and get feedback on it. Once done, improve the design and calculations based on the feedback.			

Day 4 –

Today, you will prepare for your presentations and present your proposal to your community members.

Time	Activity and Description
15 minutes	<p>Preparing the Proposal</p> <p>Now, you will put together all the information that you have worked on to prepare your proposal! To do this, write down the following details:</p> <ul style="list-style-type: none"> - The area where the stadium is located - Name of the stadium and a sentence on why you chose this name - Capacity (number of seats for the audience) - Facilities (number of toilets, canteens, lights, medical room etc.) - Any unique features of their stadium - The total cost of constructing the stadium - The events you will host at the stadium to make sure it becomes a local cricket hub!
15 minutes	<p>Presenting the Proposal</p> <p>Note:</p> <ul style="list-style-type: none"> - Ask learners to invite some community members to the class to be the audience to whom the proposal will be presented. - Brief the community members to: <ul style="list-style-type: none"> - Ask practical questions and share their feedback after the presentation is done. - Inform learners whether they are convinced about the cricket hub or not. <p>Now, we will present our proposals to our community members!</p>
10 minutes	<p>Reflection</p> <p>Now, that you have completed the project, think about your experience. To do this, share your thoughts about these questions:</p> <ul style="list-style-type: none"> - What did you enjoy the most during this project? - What was difficult? Why? - Could you convince your community members about your design and proposal? Why or why not? - What went well? - What would you do differently in the next project?

Additional enrichment activities:	Teach learners how to calculate the surface area of the circular field and rectangular pitch. Then, have them calculate the total cost of setting up the field based on a price per square meter.
Modifications for simplification	<ul style="list-style-type: none"> - Help learners who struggle with word problems by taking them step by step through the TIPS points. - Simplify the word problems to involve only basic addition or subtraction.

ASSESSMENT CRITERIA

A majority of my learners were able to:

- Calculate the perimeter of rectangles.
- Solve word problems based on addition, subtraction, multiplication and division.
- Design sketches for their stadium that follow the mentioned criteria.
- Calculate the cost of building their stadium.
- Present their proposals in front of an audience.

APPENDIX

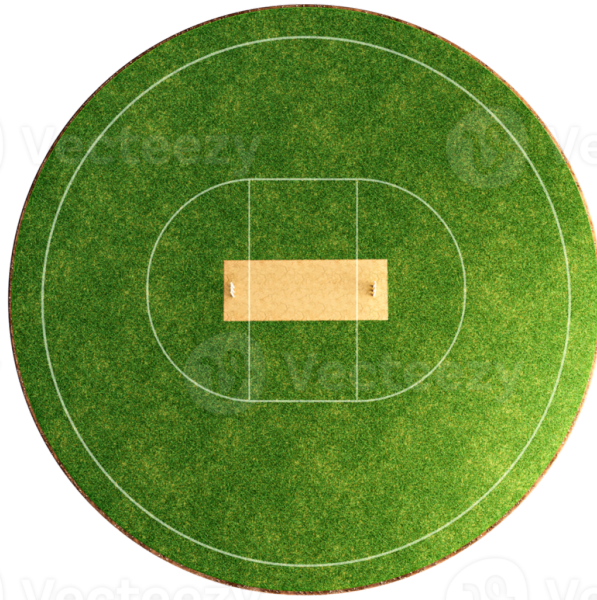
Appendix 1:

Stadium Design and Field Shape



Source:

<https://www.cricschedule.com/cricket/wp-content/uploads/2022/10/List-of-Cricket-Stadiums-in-India-scaled.jpg>



Appendix 2:

Cricket Pitch Drawing



Appendix 3:

Perimeter Questions



Perimeter
Video 241 on www.corbettmaths.com

Examples



Click here



Scan here

Workout

Question 1: Work out the perimeter of each shape below

(a)

(b)

(c)

(d)

(e)

(f)

Question 2: Find the perimeter of each of these rectangles.

(a)

(b)

(c)

(d)

(e)

(f)

Question 3: Work out the perimeter of each of these squares

(a)

(b)

(c)

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Appendix 4:

T

THINK
Think about the question.
Underline it.
What is it asking?

I

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What is the
IMPORTANT INFORMATION
you need to solve this
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P

PLAN
What do you need to
do to solve? Which
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Is it multi-step?

S

SOLVE
Use your plan to solve
the problem.
DOES THE ANSWER
MAKE SENSE??

Appendix 5:

Word Problem TIPS (Source:

<https://www.teacherspayteachers.com/Product/TIPS-Math-Word-Problem-Solving-Display-4819787>)

General Cricket Word Problems and Solutions

Word Problem	Solution
Problem 1: <i>If the first four Indian batsmen scored 10, 45, 70 and 89 runs respectively. How many total runs have India scored so far?</i>	Batsman 1 score = 10 Batsman 2 score = 45 Batsman 3 score = 70 Batsman 4 score = 89 Total runs scored = $10 + 45 + 70 + 89$ $= 214$ runs
Problem 2: <i>Sri Lanka has a total score of 338 runs in their innings. Australia is currently at a score of 279. How many more runs does it need to score to beat Sri Lanka?</i>	Sri Lanka's total score = 338 Total runs needed for Australia to win = 339 Australia's current score = 279 Runs needed by Australia = Total runs needed to win - current score $= 339 - 279$ $= 60$ runs
Problem 3: <i>England has scored 30 runs in 2 overs. If they scored an equal number of runs in each over, how many runs did they score per over?</i>	England's score = 30 No. of overs = 2 Runs scored per over = Score / no. of overs $= 30/2$ $= 15$ runs per over