



# MINI GOLF COURSE DESIGN WORKBOOK

Name: \_\_\_\_\_

Other group members: 1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

Group Number: \_\_\_\_\_ Class: \_\_\_\_\_

## **INDIVIDUAL TASK: BACKGROUND INFORMATION**



1. Individually, share your knowledge about mini-golf

i. Have you played a game of mini-golf? If yes, where did you play?

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ii. Do you enjoy playing mini-golf? If yes, please explain what you like and dislike about playing mini-golf.

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# INDIVIDUAL TASK: YOUR OBSERVATIONS



1.  After watching the videos, **describe** some important observations you have made about mini-golf courses.

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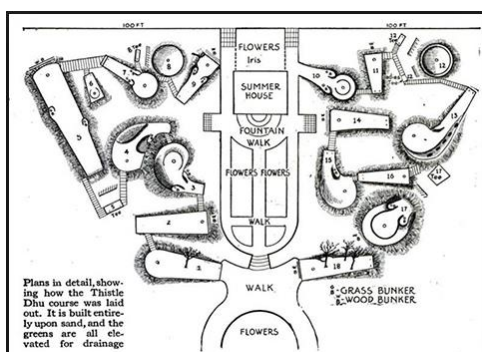
## The Mini-Golf Competition

The *Putt Putt Mini-Golf Association of Australia* is planning a new mini-golf course for the Gold Coast. To help them here, the Association has decided to conduct a competition for schools to submit designs for a new, fun-filled mini-golf course.



Imagine that your school is entering the competition, and that Ms Whittaker is to select the best group designs from across the grades to enter the competition. **Each group is to design a mini-golf course comprising 8 shapes.**

Each shape should show a tee (■), a golf hole (O), and different levels of difficulty (obstacles).



Once your group has decided on your eight (8) shapes, your group will be given an **A3 sheet of cardboard** with a border. The area inside the border of the A3 cardboard sheet is your mini-golf course. Your group will position each of your 8 shapes within this area and number them.

After completing your mini-golf course design, you will be provided with questions regarding your group's mini-golf course design. Your group will then respond back to the *Putt Putt Mini-Golf Association of Australia* detailing how your group designed their mini-golf course and met the competition requirements.

# Your Task

These are the sequence of activities you will be carrying out:

- **Individual task: Fun with shapes ..... Page 6**
  - *Individually*, you will have some fun designing two **shapes**.
- **Group task: Theme and criteria ..... Page 10**
  - In your **Groups**, you will decide on your group's **theme** and 3 **criteria** for your mini-golf course.
- **Group task: Shape sketching ..... Page 12**
  - In your **Groups**, you will **sketch** proposed shapes for your mini-golf course.
- **Group task: Mini-golf design proposals ..... Page 16**
  - In your **Groups**, you will **sketch** proposed ways to position your 8 shapes to create your mini-golf course design.
- **Group task: Build your mini-golf course ..... Page 18**
  - In your **Groups**, you will start to construct your mini-golf course.
- **Individual task: Evaluating your group's mini-golf course design ..... Page 22**
  - *Individually*, you will respond to questions on how you might redesign the mini-golf course to improve it.
- **Group task: Our fact sheet ..... Page 24**
  - As a **Group**, you will send a response letter to the **Put Put Mini-Golf Association of Australia**, providing details of your design.

## INDIVIDUAL TASK: FUN WITH SHAPES

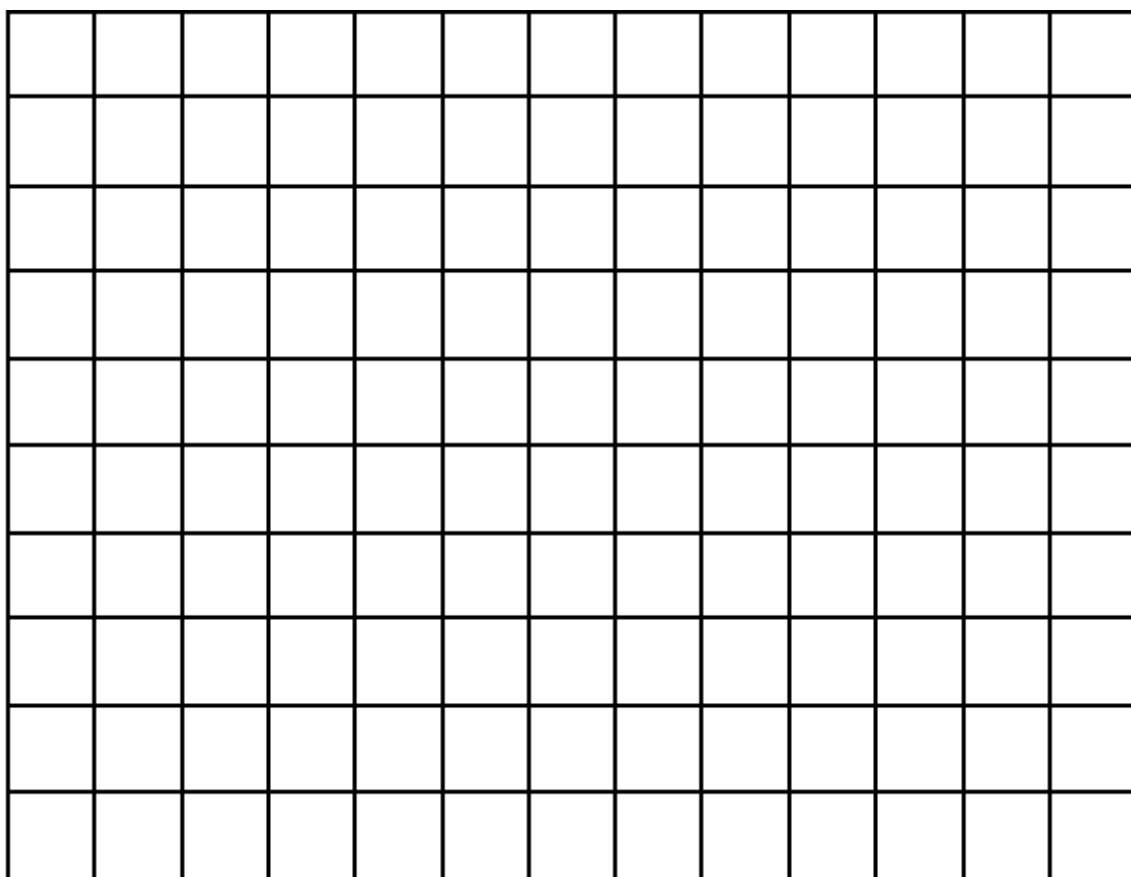
*Individually*, you will begin your mini-golf course design activity by creating two **shapes**, a rectangle shape and a square shape.

For each shape, you need to decide where you would like to place the **tee** and the **golf hole**. In order to make your shape **challenging**, you will also add **obstacle/s** for each shape. You will calculate the **perimeter** and **area** of each shape, and **record** your calculations in your workbook



1. Use the  $1\text{cm}^2$  graph paper below to create your **first individual shape**. *This shape must be made up of one rectangle.*

Show the **location of the tee**, the **golf hole**, and the **type and location of obstacles**.



**Note: Do NOT tear or cut out your shape**

a. What is the **perimeter** of your rectangle shape? \_\_\_\_\_ (cm)

b. What is the **area** of your rectangle shape? \_\_\_\_\_ (cm<sup>2</sup>)

c. Explain how you found the perimeter of your rectangle shape.

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d. Explain how you found the area of your rectangle shape.

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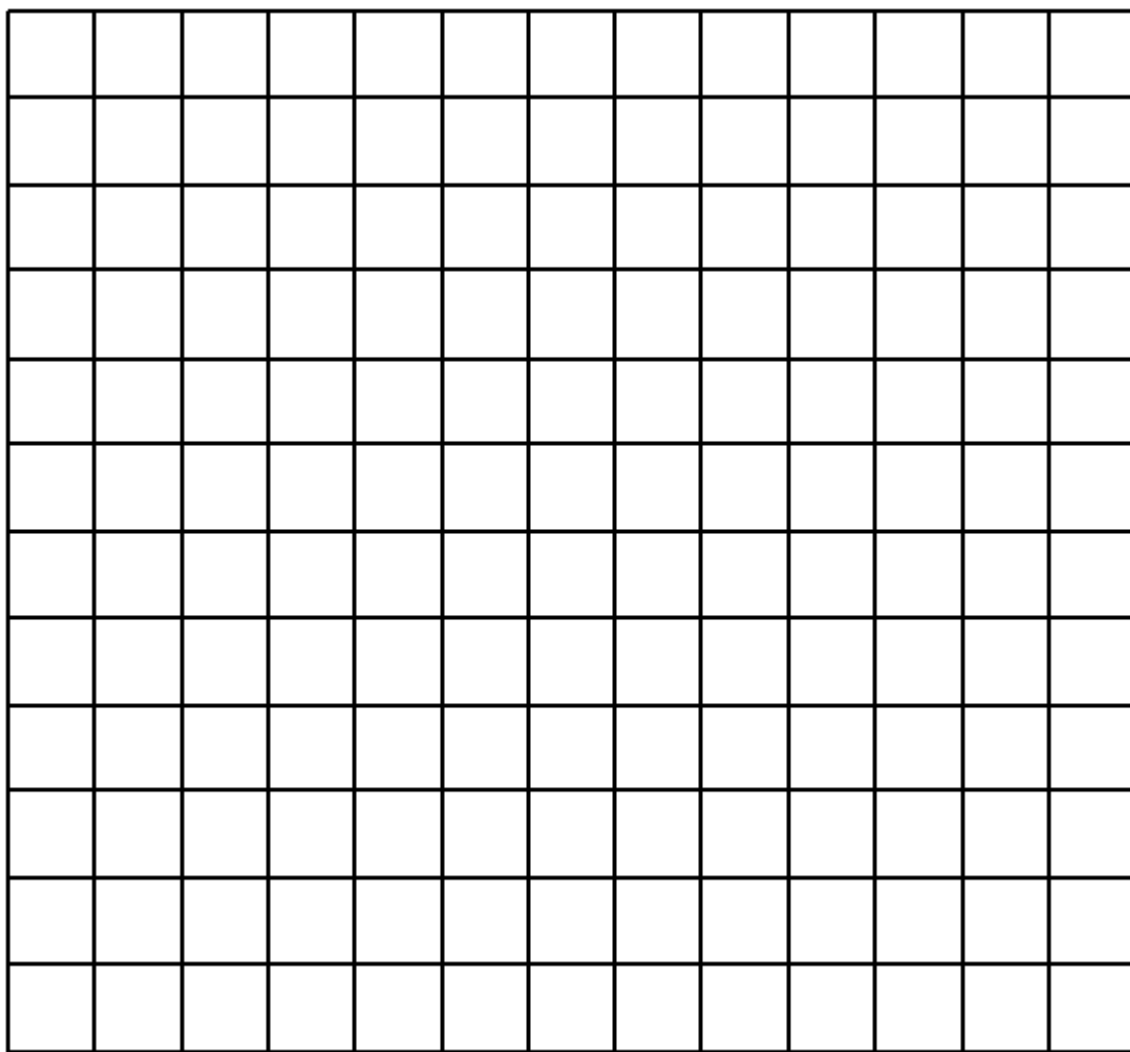
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2. Use the  $1\text{cm}^2$  graph paper below to create your **first individual shape**. *This shape must be made up of one square.*

Show the **location of the tee, the golf hole, and the type and location of obstacles**.



**Note: Do NOT tear or cut out your shape**

- What is the **perimeter** of your square shape? \_\_\_\_\_ (cm)
- What is the **area** of your square shape? \_\_\_\_\_ ( $\text{cm}^2$ )



c. Explain how you found the perimeter of your square shape.

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d. Explain how you found the area of your square shape.

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## GROUP TASK: THEME AND CRITERIA



1. **Decide** on a theme for your mini-golf course.

The theme for our group's mini-golf course is \_\_\_\_\_

2. **Decide** on 3 criteria for the design of your mini-golf course

The 3 criteria for our group's mini-golf course are:

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_



## **THINKING SPACE**

... drawings, diagrams, observations, notes, reflections ...

## GROUP TASK: SHAPE SKETCHING

In your *Groups*, you will start **sketching proposed shapes** for your mini-golf course.

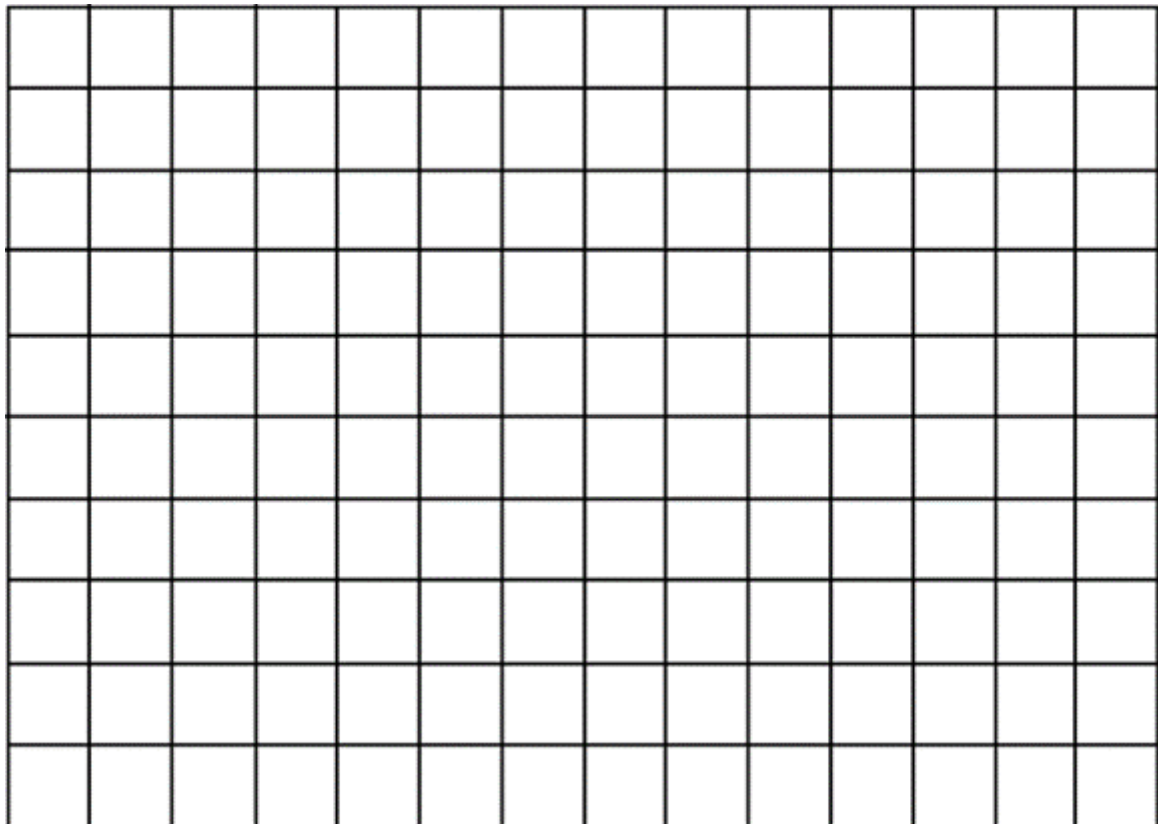
The *Put Put Mini-golf Association of Australia* requires two of your final eight shapes to consist of a **square** and a **rectangle**. The remaining 6 shapes will consist of **combinations** of squares and rectangles.



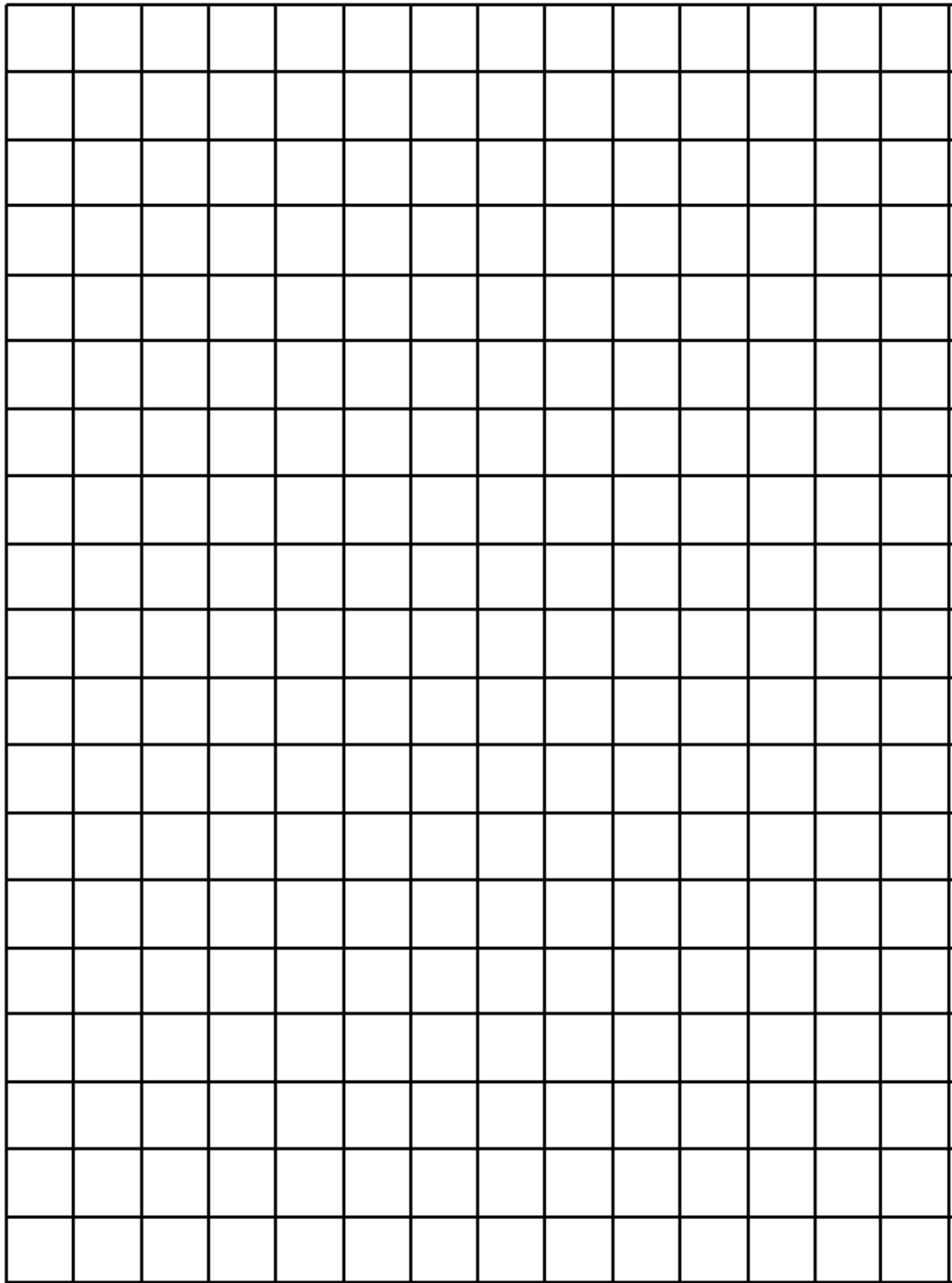
For each shape, you need to decide where you would like to place the **tee** and the **golf hole**.

In order to make your shape **challenging**, you will also add **obstacle/s** for each shape. The obstacles that you create should **fit in with your chosen theme** for your mini-golf course.

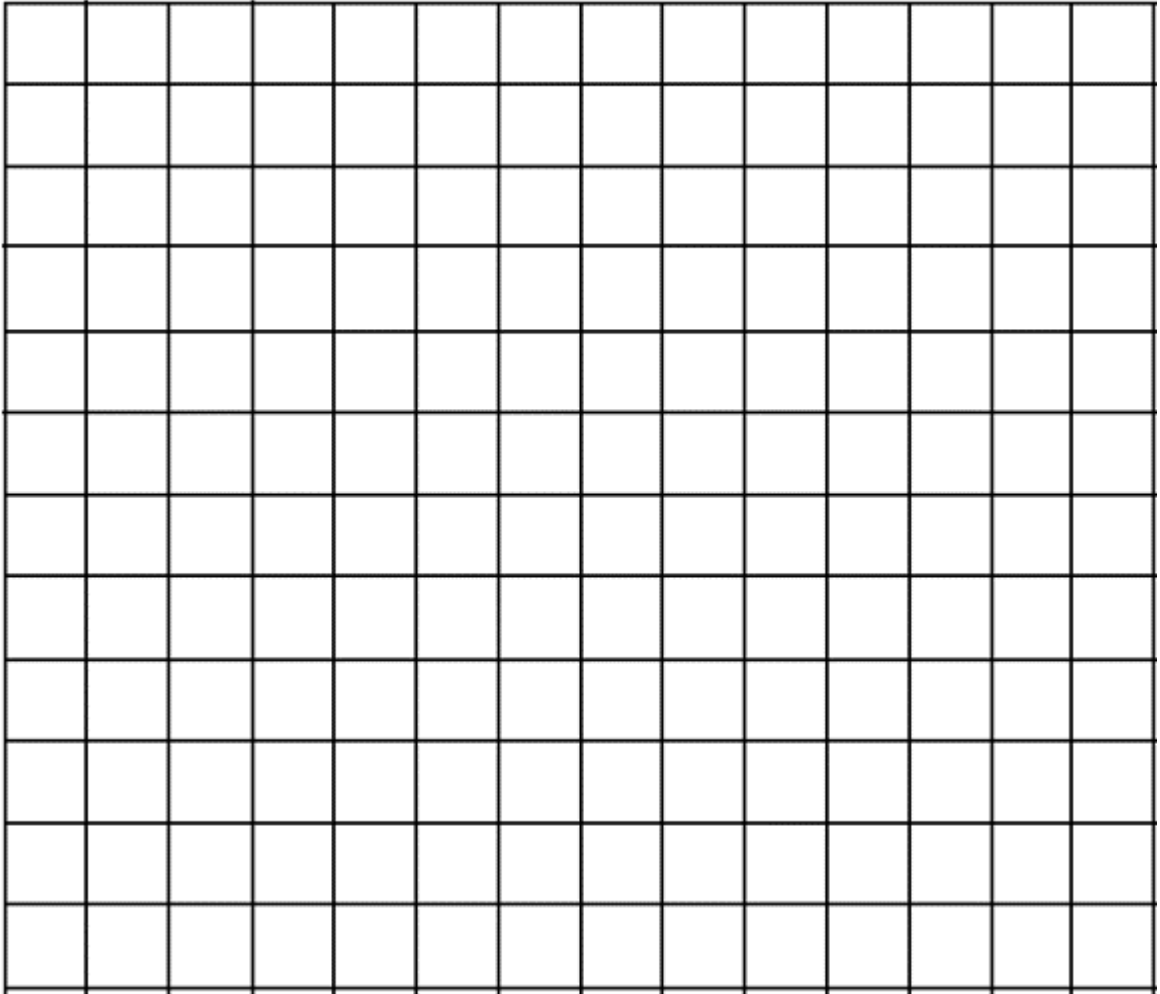
- Use the  $1\text{cm}^2$  graph paper below and on the next two pages sketch your group's proposed shapes. You will calculate the **perimeter** and **area** of each shape, and **record** your calculations. Include the **dimensions** of your shapes in the below graph papers.



**Note: Do NOT tear or cut out your shapes**



**Note: Do NOT tear or cut out your shapes**



**Note: Do NOT tear or cut out your shapes**

- a. List some of your group's main ideas in creating shapes for your mini-golf course:

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## **THINKING SPACE**

... drawings, diagrams, observations, notes, reflections ...

## GROUP TASK: MINI-GOLF DESIGN PROPOSALS



Discuss how you would like to position your 8 shapes to form your mini-golf course. Use this allocated space in your workbooks to try out various shape placement ideas your group has. **Number each shape** so that the mini-golf player can keep track of each shape played.

Use the space below and on the next page. When you have finished, answer the question below.



1. List some of your group's main ideas in arranging your 8 shapes for your mini-golf course:

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## GROUP TASK: BUILD YOUR MINI-GOLF COURSE

Your group will now be provided with the following resources:

- One (1) A3 **Cardboard sheet** that represents the mini-golf course space
- Three (3) sheets of **1cm<sup>2</sup> graph paper** for sketching the 8 shapes your group has decided on



**You are required to do the necessary measurements** to ensure that your 8 shapes will fit in well within your mini-golf course. Now that you are creating your actual mini-golf course, we are going to let **1 centimetre represent 1 metre**.

Proceed to draw your 8 shapes on the provided graph paper. When you are finished, proceed to cut out your shapes and place them onto the A3 cardboard sheet to create your group's mini-golf course.

Once you have completed your mini-golf course design, **individually** answer the following questions:

- a. List your main ideas in building your final mini-golf course:

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b. What were the math ideas you used to design your golf course? Did you use any Science ideas as well?

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c. How did you determine where to place the obstacles in your shapes?

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- d. Which of your shapes has the largest area? What is its area in square metres ( $m^2$ )? How did you position it in your mini-golf course? Why did you place it in that position?

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- e. Which of your shapes has the smallest area? What is its area in square metres ( $m^2$ )? How did you position it in your mini-golf course? Why did you place it in that position?

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f. Does your mini-golf course meet your criteria? If so, how did it meet your criteria? If not, which criteria were not met?

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## INDIVIDUAL TASK: DESIGN EVALUATION



**Record** your observations below by answering each question.

1. How would you rate your group's mini-golf course design? Place a mark anywhere on the line below to show your rating:

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Poor Fair Excellent

2. Why did you rate your group's mini-golf design this way?

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3. What *changes* would you make to improve your group's mini-golf course?  
**Give reasons why.**

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## **GROUP TASK: OUR FACT SHEET**

Dear *Putt Putt Mini-Golf Association of Australia*,

Today we designed a mini-golf course. Here is how we designed the course. We also explain how we met our criteria for our mini-golf course.

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