



Full name: \_\_\_\_\_

Teacher: \_\_\_\_\_

Due date: \_\_\_\_\_

# YEAR 7 MATHEMATICS

## Assignment

### 2023

#### Outcomes Assessed

- **MA4-1WM** communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols
- **MA4-2WM** applies appropriate mathematical techniques to solve problems
- **MA4-3WM** recognises and explains mathematical relationships using reasoning

#### Content Assessed

Refer to the attached assignment booklet and instructions. Each student is to complete tasks of their choosing.

**Weighting**

**15%**

**Due:**

This assignment is due to your classroom teacher 2 weeks from the date received (due in Week 7).

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## Gardner's Multiple Intelligences and Revised Blooms Taxonomy

This assignment has been designed to give all students an opportunity to best demonstrate their ability in Mathematics. Students can choose from tasks aligned to the different categories of Gardner's Multiple intelligences. The tasks are also aligned to the Revised Bloom's Taxonomy - a multi-tiered model of classifying thinking according to six cognitive levels of complexity. Thus, students can choose tasks according to their preferred modes of learning, or try different styles of learning. Students are also able to revise and explore key concepts of this unit by completing lower-order tasks and then challenge themselves to develop their understanding and skills by completing higher-order tasks.

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### Instructions

***You do not have to answer all the questions!***

Each box in the Task Grid (on the next page) is a task.

1. You must complete a total of **30 marks**
2. You must include at least **two** tasks from the *creating* column and at least **two** tasks from the *evaluating* columns as part of your 30 marks.
3. Some tasks will require you to write your answers on separate A4 paper that you will need to provide. Please clearly write your full name and the task number.
4. Please highlight on the Task Grid which tasks you are completing.

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### Marking

Marks are awarded based on the difficulty and amount of work required to complete each task. Marking guidelines are provided under each task description.

# Task Grid

Multiple Intelligences	Bloom's Taxonomy: Thinking Levels				
	Understanding	Applying	Analysing	Creating	Evaluating
<b>Verbal/Linguistic</b> I enjoy reading, writing & speaking	1) Supporters (2 marks)	2) What's on the back? (2 marks)	3) Consecutive Numbers (2 marks)	4) The Number 2 (3 marks)	5) Digit Detector (2 marks)
<b>Logical/Mathematical</b> I enjoy working with numbers & science	6) Fastest Time (2 marks)	7) Dizzy Digits (3 marks)	8) Distance (2 marks)	9) The Largest Number (2 marks)	10) So Many Sums (4 marks)
<b>Visual/Spatial</b> I enjoy painting, drawing & visualising	11) Balloon Bursting (2 marks)	12) Where should the numbers go? (2 marks)	13) Multiplication Table (3 marks)	14) Addition Pyramid (4 marks)	15) It all adds up to nothing (3 marks)
<b>Bodily/Kinaesthetic</b> I enjoy doing hands-on activities, sports & dance	16) Not 3 in a Line (3 marks)	17) Heads over Tails (3 marks)	18) Flexangles (2 marks)	19) Paper Planes (3 marks)	20) Faming (3 marks)
<b>Technology</b> I enjoy using computers	21) Difference (3 marks)	22) Angles in Real Life (3 marks)	23) New York (3 marks)	24) PowerPoint (3 marks)	25) Comparing Number Systems (5 marks)

# Task Details

## Verbal/Linguistic

### 1) Supporters (2 marks)

A crowd of 29 641 attended a NRL match between the Bulldogs and the Dragons. If 17 492 people supported the Bulldogs and the rest supported the Dragons, how many supporters did the Dragons have? Show all working out.

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Marking	
2 marks	Correct solution with all working shown
1 mark	Correct solution with no working

### 2) What's on the back? (2 marks)

Four cards each have a number written on one side and a property written on the other.

The four numbers are 2, 5, 7 and 12.

The four properties are:

- Divisible by 7
- Odd
- Prime
- Greater than 10

On each card, the number written does not have the property that is written on the other side. What are the four number-property pairs?

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Marking	
1/2 mark	For each correct pairing

3) Consecutive Numbers (2 marks)

The difference of the squares of two consecutive odd numbers is 32. What are the two odd numbers?  
Show all working.

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Marking	
2 marks	Correct solution and working
1 mark	Working out demonstrates an understanding of squares, odd numbers and consecutive numbers.

4) The Number 2 (3 marks)

Write a 300 word story about the adventures of the number 2. Your story must include the concepts of addition, subtraction, multiplication and division.

Your story should be imaginative, it can be written in the space below or can be typed and printed.

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Marking	
3 marks	Detailed and original story that meets the word limit and includes the concepts of addition, subtraction, multiplication and division
2 marks	Some concepts are included and meets the word limit.
1 mark	Story does not meet the required word limit and include some concepts.

5) Digit detector (2 marks)

What number am I?

1. I am a 3 digit number
2. I am an odd number
3. I am divisible by 5
4. Each of my digits is different
5. My digits add up to 8
6. The tens digit is smaller than the hundred digit
7. I am less than 300
8. I have only one even digit

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Marking	
2 mark	Correct number that meets all requirements
1 mark	Number contains 1 or 2 minor errors

## Logical/Mathematical

The table below shows the Commonwealth Records for the Men's athletics events. Use the table to answer Question 6

Event	Record	Name	Nation	Year
<a href="#">100 m</a>	9.88	<a href="#">Ato Boldon</a>	 <a href="#">Trinidad and Tobago</a>	1998
<a href="#">200 m</a>	19.80	<a href="#">Jereem Richards</a>	 <a href="#">Trinidad and Tobago</a>	2022
<a href="#">400 m</a>	44.24	<a href="#">Kirani James</a>	 Grenada	2014
<a href="#">800 m</a>	1:43.22	<a href="#">Steve Cram</a>	 <a href="#">England</a>	1986
<a href="#">1500 m</a>	3:30.12	<a href="#">Oliver Hoare</a>	 Australia	2022
<a href="#">5000 m</a>	12:56.41	<a href="#">Joshua Cheptegei</a>	 Uganda	2018
<a href="#">10000 m</a>	27:09.19	<a href="#">Jacob Kiplimo</a>	 Uganda	2022
<a href="#">Marathon</a>	2:09:12	<a href="#">Ian Thompson</a>	 <a href="#">England</a>	1974
<a href="#">110 m hurdles</a>	13.08	<a href="#">Colin Jackson</a>	 <a href="#">Wales</a>	1990
	13.08	<a href="#">Colin Jackson</a>	 <a href="#">Wales</a>	1994
	13.08	<a href="#">Rasheed Broadbell</a>	 Jamaica	2022
<a href="#">400 m hurdles</a>	48.05	<a href="#">Louis van Zyl</a>	 South Africa	2006
<a href="#">3000 m steeplechase</a>	8:10.08	<a href="#">Conseslus Kipruto</a>	 Kenya	2018
<a href="#">High jump</a>	2.36 m	<a href="#">Clarence Saunders</a>	 <a href="#">Bermuda</a>	1990
<a href="#">Pole vault</a>	5.80 m	<a href="#">Steven Hooker</a>	 Australia	2006
<a href="#">Long jump</a>	8.41 m (+0.6 m/s)	<a href="#">Luvo Manyonga</a>	 South Africa	2018
<a href="#">Triple jump</a>	17.86 m	<a href="#">Jonathan Edwards</a>	 <a href="#">England</a>	2002
<a href="#">Shot put</a>	22.45 m	<a href="#">Tomas Walsh</a>	 New Zealand	2018
<a href="#">Discus throw</a>	68.20 m	<a href="#">Fedrick Dacres</a>	 Jamaica	2018
<a href="#">Hammer throw</a>	80.26 m	<a href="#">Nick Miller</a>	 England	2018
<a href="#">Javelin throw</a>	90.18m	<a href="#">Arshad Nadeem</a>	 Pakistan	2022
<a href="#">Decathlon</a>	8663 pts	<a href="#">Daley Thompson</a>	 <a href="#">England</a>	1986
<a href="#">20 km walk</a>	1:19:34	<a href="#">Dane Bird-Smith</a>	 Australia	2018
<a href="#">50 km walk</a>	3:42:53	<a href="#">Nathan Deakes</a>	 Australia	2006
<a href="#">4 × 100 m relay</a>	37.58	<a href="#">Usain Bolt</a> <a href="#">Kemar Bailey-Cole</a> <a href="#">Nickel Ashmeade</a> <a href="#">Jason Livermore</a>	 <a href="#">Jamaica</a>	2014
<a href="#">4 × 400 m relay</a>	2:59.03	<a href="#">Michael McDonald</a> <a href="#">Roxbert Martin</a> <a href="#">Gregory Haughton</a> <a href="#">Davian Clarke</a>	 <a href="#">Jamaica</a>	1998



6) Fastest Time (2 marks)

If the 400m record holder ran the 100m event, how long would you expect it to take him? How does this time compare with the record of 9.88 seconds?

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Marking	
1 mark	Correct calculation of time with working out
1 mark	Correct statement in comparing the timings

7) Dizzy Digits (3 marks)

Using +, -, x or ÷ complete each of the following:

- a) Use only four 4's to make 44
- b) Use only five 5's to make 55
- c) Use only six 6's to make 66

Marking	
1 mark	For each correct answer

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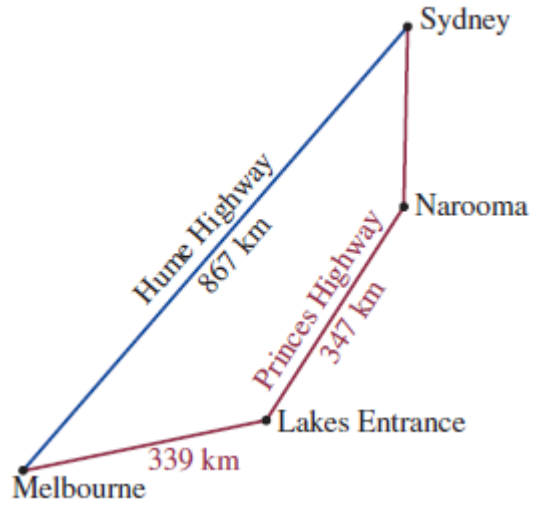
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8) Distance (2 marks)

Lucy and Ty were driving from Melbourne to Sydney for a holiday. The distance via the Hume Highway is 867 kilometres, but they chose the more scenic Princes Highway route even though the distance is 1039 kilometres. They drove to Lakes Entrance the first day (339 kilometres), a further 347 kilometres to Narooma on the second day and arrived in Sydney on the third day.



a) How much further is Melbourne to Sydney via the Princes Highway than via the Hume Highway? Show working out.

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b) How far did Lucy and Ty travel on the third day? Show all working out.

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9) The Largest Number (2 marks)

Marking	
1 mark	Part a) Correct solution with working
1 mark	Part b) Correct solution with working

Using the digits 2, 4, 6 and 8 and +, x and =, what is the largest number that can be made? Each number must be used once and you must use both + and x. Show your working.

*Note: Powers and brackets are not to be used*

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Marking	
2 marks	Correct solution with working

10) So Many Sums (4 marks)

In this addition, each letter stands for a different digit, with  $S$  standing for 3

$$\begin{array}{r} \phantom{+} \phantom{M} \phantom{A} \phantom{N} \phantom{Y} \phantom{S} \phantom{O} \\ + \phantom{M} \phantom{A} \phantom{N} \phantom{Y} \phantom{S} \phantom{O} \\ \hline \phantom{+} \phantom{M} \phantom{A} \phantom{N} \phantom{Y} \phantom{S} \phantom{O} \\ \phantom{+} \phantom{M} \phantom{A} \phantom{N} \phantom{Y} \phantom{S} \phantom{O} \end{array}$$

Find the value of each letter

What is the value of  $Y \times O$ ?

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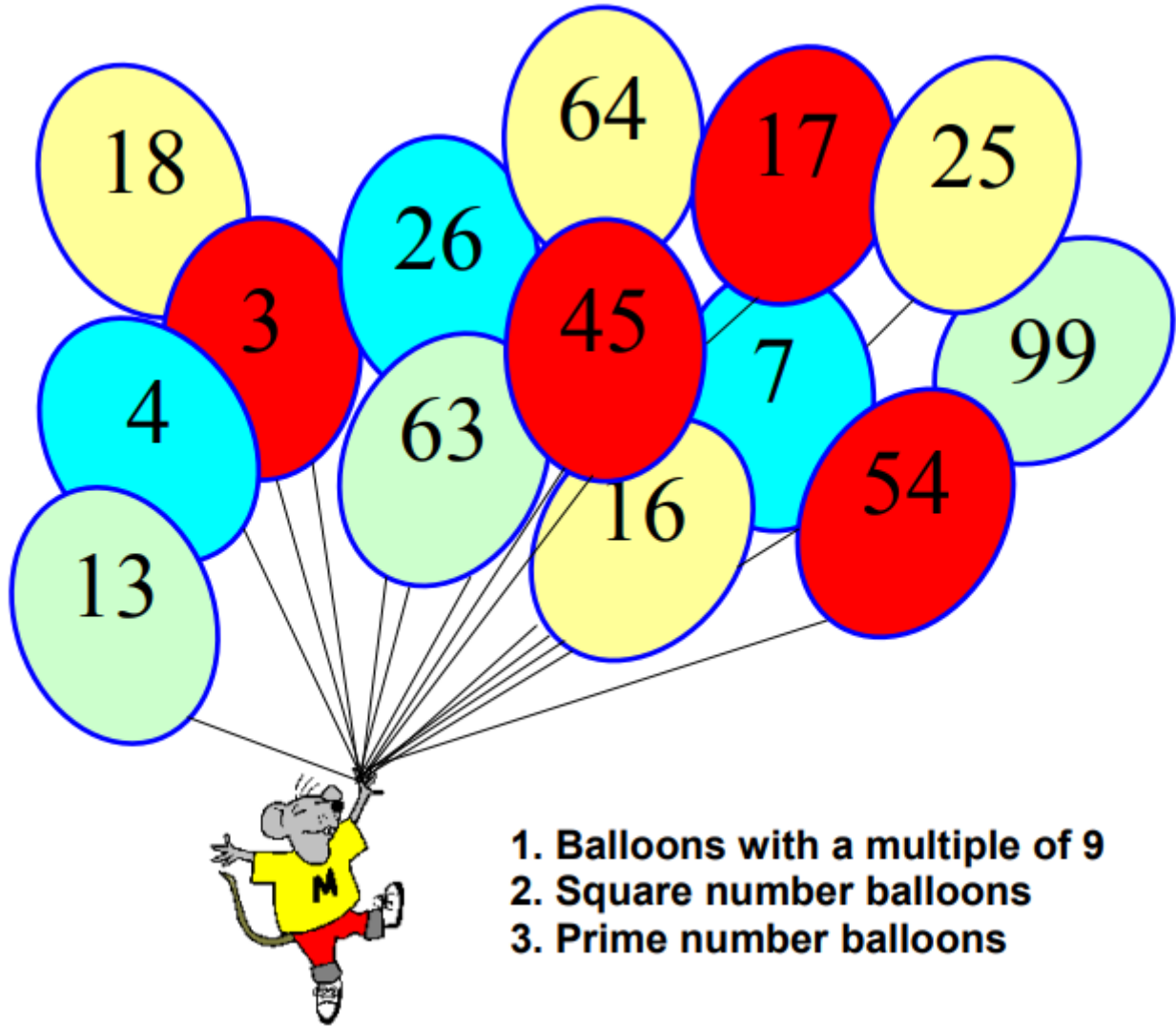
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Marking	
1/2 mark	For each correct value of the letter
1 mark	Correct value of $Y \times O$

11) Balloon Bursting (2 marks)

If a number in one of the balloons is included in the answers to the three problems below then that balloon will fly away. Which balloon is left?



- 1. Balloons with a multiple of 9
- 2. Square number balloons
- 3. Prime number balloons

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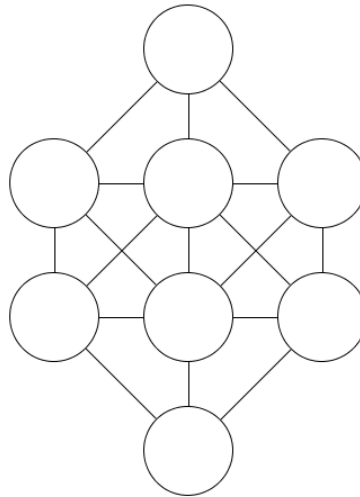
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Marking	
2 marks	Correct solution found

12) Where should the numbers go? (2 marks)

Arrange the numbers 1, 2, 3, 4, 5, 6, 7 and 8 inside these circles so that no two consecutive numbers are in connected circles

*Remember:* Consecutive means one after the other e.g. 2 and 3



Marking	
2 marks	Correct solution
1 mark	1 mistake present in the solution

13) Multiplication Table (3 marks)

In the multiplication table on the right, the row and column headings are all missing, and only some of the products in the table are filled in.

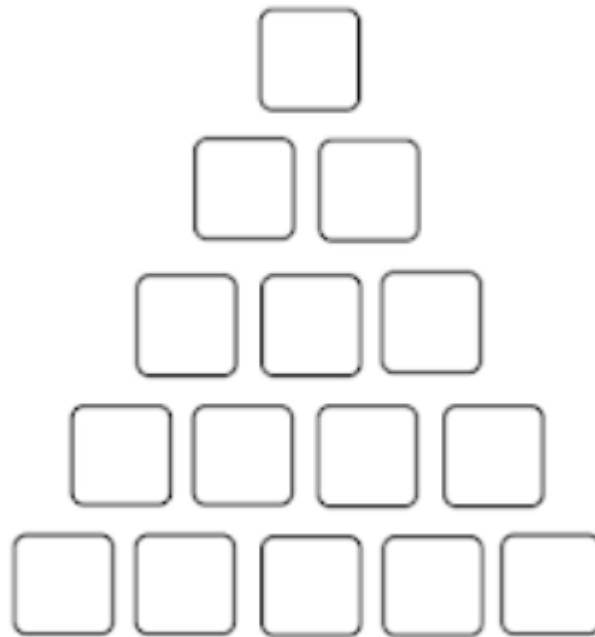
All the numbers in the table are positive integers.

- Complete the table
- What is the value of  $A + B + C + D + E$ ?

x					
	A	10		20	
	15	B	40		
	18		C	60	
		20		D	24
			56		E

Marking	
2 marks	Part a) Table accurately completed
1 mark	Part b) Correct solution

14) Addition Pyramid (4 marks)



1. Write the numbers 1-5 in the bottom row
2. Fill in the rest of the boxes by adding the two numbers below each box
3. Draw another pyramid on a separate piece of paper and try putting 1 – 5 in a different order in the bottom row. Fill in the rest of the boxes. Continue to draw various pyramids until you discover the order that will give you the highest value at the top.

What order will give the highest value at the top? Why?

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Marking	
4 marks	At least two addition pyramids completed with the correct ordering discovered to get the highest value. Answer is justified.
3 marks	At least two addition pyramids completed with the correct ordering discovered for highest value. Answer is not justified.
2 marks	Only two addition pyramids completed, ordering for highest valued not discovered
1 mark	One addition pyramid completed

15) It all adds up to nothing (2 marks)

Using the numbers below create a magic square that all adds up to zero. Note: Each row, column and diagonal must add up to zero


-4	-3	-2	-1	0	1	2	3	4
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Marking	
2 marks	Correct solution developed
1 mark	Solution developed with two or less errors

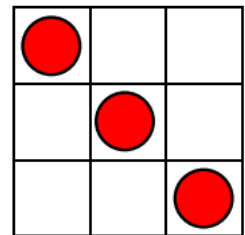
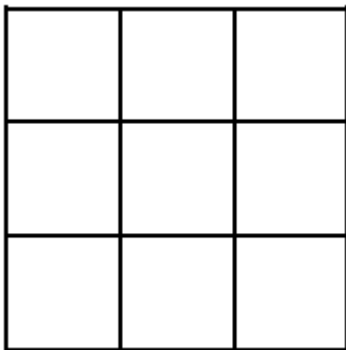
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## Bodily/Kinaesthetic

16) Not three in a line! (3 marks)

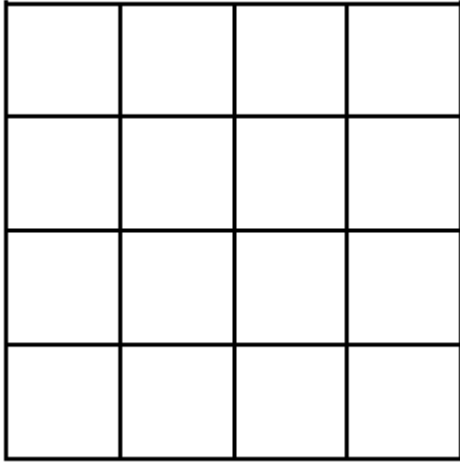
This 3 x 3 square has three counters in it in a row.

- a) How many counters can you place without getting three in a row? Draw their placement in the diagram below. The use of 5 cent coins may assist you.



- b) How many counters can you place in a 4 x 4 square without getting 3 in a row? Draw their placement in the diagram below.





Marking	
1 mark	Part a) Counters have been correctly placed and drawn on the diagram
2 marks	Part b) Counters have been correctly placed and drawn on the diagram

17) Heads over tails (3 marks)

Put four coins on a table, in a row, all tails up, like this:



In order to make a move you must turn over 3 coins

a) How many moves will it take to get all of the coins on heads?

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b) Draw a diagram in the space below or take a picture showing each move and submit this with your assignment

Marking	
1 mark	Part a) Correct number of moves identified
2 marks	Part b) Images showing the required moves submitted
1 mark	Part b) Images showing some moves working towards the correct answer submitted

### 18) Flexangles (2 marks)

Create the “flexangle” paper shape on the last page of this assignment booklet. Submit this with your assignment

Marking	
2 marks	Shape correctly created

### 19) Paper Planes (3 marks)

Use the website <http://paperairplaneshq.com/> to create 2 different paper planes. You must hand in your paper planes with the design name from the website clearly written on it.

Throw each plane 3 times and find the total distance that each plane travelled. Which plane had the best total? Identify the features of the plane that may have aided in its success.

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Marking	
3 marks	2 paper planes submitted with all required calculations and features identified
2 marks	2 paper planes submitted with 1 error in calculations or feature not identified
1 mark	2 paper planes submitted with 2 or more errors in calculations or features identified

20) Farming (3 marks)

A farmer wants to construct two temporary enclosures for some cattle. He has 400 m of portable fencing.  
 He wants to use all the fencing and to make two paddocks of equal size that share a common fence.

Draw diagrams (in the space below) and clearly show the dimensions of *three* different ways the farmer could construct the paddocks.

State which of your three designs provides the greatest total area for the cattle and justify your decision with calculations

Marking	
3 marks	Three different diagrams constructed with areas calculated. Correct identification of the greatest area.
2 marks	Two different diagrams constructed with areas calculated or three different diagrams constructed with missing areas
1 mark	One diagram constructed with area calculated

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## Technology

Use the data below for questions 21

The data shows the maximum and minimum daily temperatures for Thredbo NSW for two weeks in July.

Date	Min Temp (°C)	Max Temp (°C)
Sun 18	-5	4.8
Mon 19	0	4
Tue 20	-8.5	5
Wed 21	-9.5	5.3
Thurs 22	-5	4.9
Fri 23	-1.2	7
Sat 24	-4.5	8
Sun 25	-4	6.8
Mon 26	-6.4	7
Tue 27	-8	8.5
Wed 28	-6	7.5
Thurs 29	-3.5	7.4
Fri 30	1.6	8.5
Sat 31	3	6

21) Difference (3 marks)

Enter the information above into an excel spreadsheet. In cell D1, enter the label 'Difference'. As shown in the picture below.

	A	B	C	D
		<b>Min Temp (deg C)</b>	<b>Max Temp (deg C)</b>	
1	<b>Date</b>			<b>Difference</b>
2	Sun 18	-5	4.8	9.8
3	Mon 19	0	4	
4	Tue 20	-8.5	5	
5	Wed 21	-9.5	5.3	

To find the difference between the maximum and minimum temperatures for Sunday 18, enter the formula =C2-B2 in cell D2. Copy this formula into cells D3 to D15. Submit a screen shot of this.

Use this information to answer the questions below

- a) On which day was the largest difference between the maximum and minimum recorded?

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*Question 21 continues on the next page*

- b) On which day was the smallest difference recorded?

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Marking	
1 mark	Column added with all differences calculated
1 mark	Part a) correctly identified
1 mark	Part b) correctly identified

22) Angles in Real life (3 marks)

- Find three images from the internet that demonstrate angles in real life. Copy and paste these into a word document to print. Submit this with your assignment. Each image must show a different type of angle.
- Draw over the image to show an angle

3. Classify the angle and measure its size.

Marking	
3 marks	1 mark for each image with classification and size.

23) New York (3 marks)

Research the average maximum and minimum temperatures for New York for each month of the year. Create a table displaying this information. Submit this with your assignment.

How do the temperatures of New York compare these temperatures with that of your hometown?

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Marking	
3 marks	Table created showing the maximum and minimum temperatures for each month. At least <i>two</i> comparisons made with students home town.
2 marks	Table created showing the maximum and minimum temperatures for each month. One comparisons made with students home town.

1 mark	Table created showing the maximum and minimum temperatures with no comparisons made.
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24) PowerPoint (3 marks)

Create a PowerPoint that can be used to teach others one mathematical concept that you have learnt this year. This PowerPoint must be a minimum of 5 slides.

Submit a copy of this PowerPoint with your assignment.

Marking	
3 marks	The PowerPoint is comprehensive and accurately teaches the concept. It contains at least 5 slides.
2 marks	The PowerPoint teaches the concept. Some information may be missing or it is only 4 slides.
1 mark	The PowerPoint is missing important information and is less than 5 slides.

25) Compare Number Systems (5 marks)

Research the difference between the Babylonian Number System and today's Hindu-Arabic Number System. Use the URL below to understand how the Babylonian System works.

<https://www.basic-mathematics.com/babylonian-numeration-system.html>

You need to research the answers to the questions below using multiple websites. Present your answers neatly on a separate piece of paper.

a) When was the Babylonian Number System first developed?

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b) What is the 'base' number in the Babylonian Number System?

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c) Draw the number 23 using Babylonian symbols.

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d) In your opinion, why is the Hindu-Arabic Number System commonly used today and not Babylonian?

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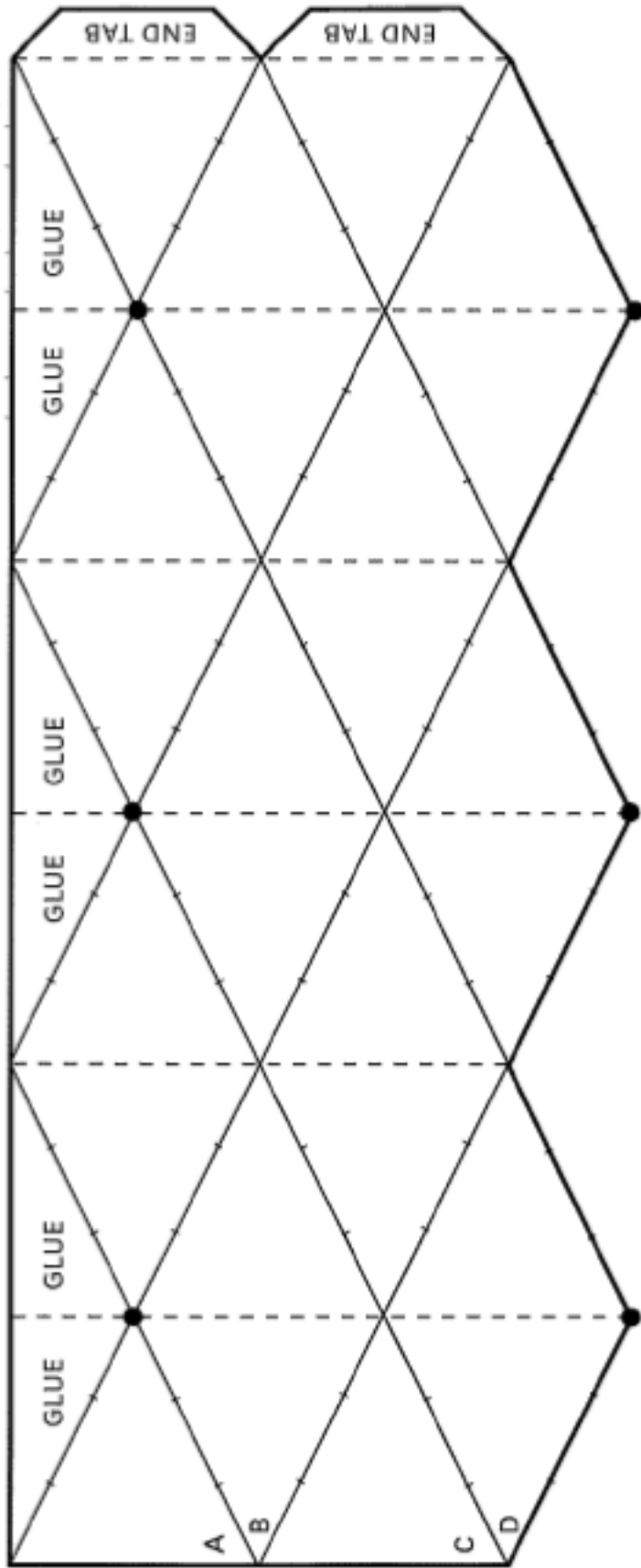
Marking	
1 mark	Part a) Correct answer
1 mark	Part b) Correct answer
1 mark	Part c) Correct drawing of the number 23
2 marks	Part d) Answer includes at least two reasons

Overall marking comments

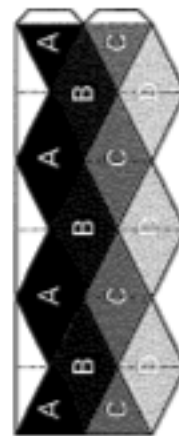


## Flexangle

# Flextangle Template



## Pattern Guide



## Instructions:

1. Draw different designs in each row of triangular sides. Refer to Pattern Guide for row layout. Be sure to connect the designs at the tick marks.
2. Cut along bold line.
3. Crease dashed lines face to face. Unfold.
4. Crease diagonal lines back to back. Unfold.
5. Gently fold paper to match dot to dot and form a tube.
6. Add glue on tabs marked GLUE and press together.
7. Add glue on end tabs and tuck into open end of tube. Press to seal.

