



Full name: _____

Teacher: _____

Due date: _____

YEAR 7 MATHEMATICS

Assignment 1

2019

Outcomes Assessed		
<ul style="list-style-type: none">• 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).

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.

Instructions

You do not have to answer all the questions!

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

1. **7MA1 & 7MA2** must include at least two tasks from the *creating* column and at least two tasks from the *evaluating* columns as part of their **30 marks**.
2. **7MA3, 7MA4, 7MA5, 7MA7 and 7MA8** must include at least one task from the *creating* column and at least one task from the *evaluating* columns as part of their **25 marks**.
3. **7MA6** must complete a total of **20 marks**.
4. Most 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. Answer in sequential order. Use a separate sheet of A4 paper for each question.
5. Please highlight on the Task Grid which tasks you are completing.

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: Six Thinking Levels					
	Knowing	Understanding	Applying	Analysing	Creating	Evaluating
Verbal/Linguistic I enjoy reading, writing & speaking	1) Synonyms (2 marks)	2) Supporters (2 marks)	3) What's on the back? (2 marks)	4) Consecutive Numbers (2 marks)	5) The Number 2 (3 marks)	6) Digit Detector (2 marks)
Logical/Mathematical I enjoy working with numbers & science	7) Ballet (1 mark)	8) Waterfalls (3 marks)	9) Dizzy Digits (3 marks)	10) Distance (2 marks)	11) The Largest Number (2 marks)	12) So Many Sums (4 marks)
Visual/Spatial I enjoy painting, drawing & visualising	13) Factor Tree (2 marks)	14) Balloon Bursting (2 marks)	15) Where should the numbers go? (2 marks)	16) Multiplication Table (3 marks)	17) Drawing Letters (3 marks)	18) Broken Machine (3 marks)
Bodily/Kinaesthetic I enjoy doing hands-on activities, sports & dance	19) Counting Cars (2 marks)	20) Not 3 in a Line (3 marks)	21) Heights (3 marks)	22) Flexangles (2 marks)	23) Kahoot (3 marks)	24) Paper Planes (3 marks)
Technology I enjoy using computers	25) Spreadsheet (2 marks)	26) Difference (3 marks)	27) Average Temperatures (2 marks)	28) New York (3 marks)	29) PowerPoint (3 marks)	30) Comparing Number Systems (5 marks)

Task Details

Verbal/Linguistic

1) Synonyms (2 marks)

List 3 synonyms for each of the following words: addition, subtraction, multiplication and division

Marking	
1/2 mark	For each correct group of 3 synonyms for each term

2) Supporters (2 marks)

A crowd of 29 641 attended the 2012 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.

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

3) 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?

Marking	
1/2 mark	For each correct pairing

4) 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.

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

5) 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 and must be typed or neatly printed.

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.

6) 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

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

Logical/Mathematical

7) Ballet (1 mark)



Julia was performing in the ballet and needed to buy a tutu, pointe shoes and white tights. How much did she spend in total on her costume?

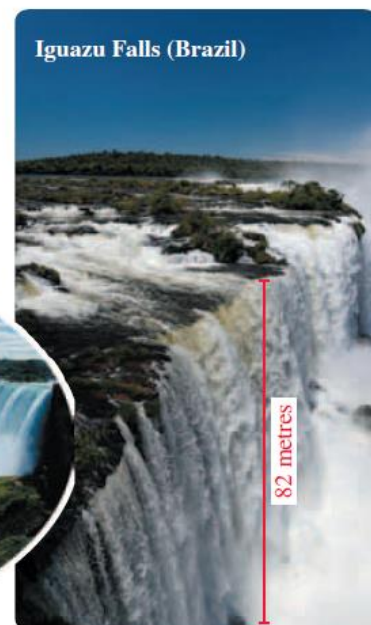
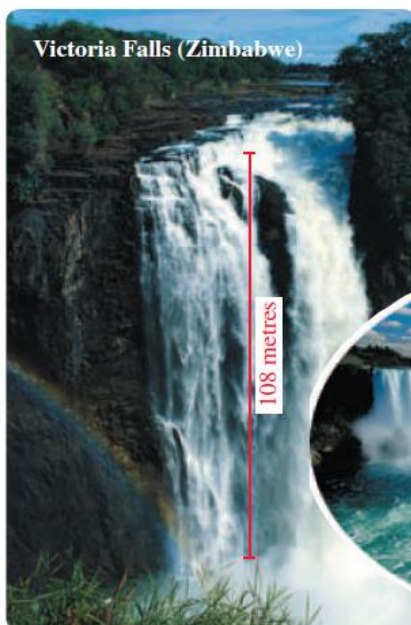
Marking	
1 mark	Correct total calculated

8) Waterfalls (3 marks)

The photographs show three of the highest waterfalls in the world. How much higher are the:

- a) Victoria Falls than the Iguazu Falls?
- b) Iguazu Falls than the Niagara Falls?
- c) Victoria Falls than the Niagara Falls?

Marking	
1 mark	For each correct answer



9) Dizzy Digits (3 marks)

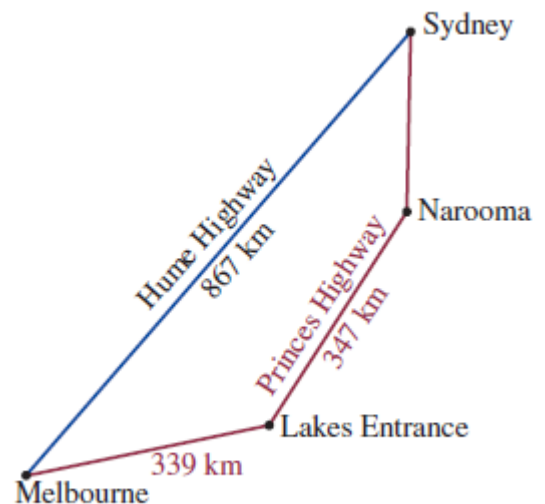
Using +, -, x and ÷ complete each of the following:

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

Marking	
1 mark	For each correct answer

10) 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.
- b) How far did Lucy and Ty travel on the third day? Show all working out.

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

11) The Largest Number (2 marks)

Using the numbers 2, 4, 6 and 8 and +, x and =, what is the largest number that can be made? Show your working.

Marking	
2 marks	Correct solution with working

12) So Many Sums (4 marks)

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

$$\begin{array}{r} \\ + \\ \hline \end{array}$$

Find the value of each letter

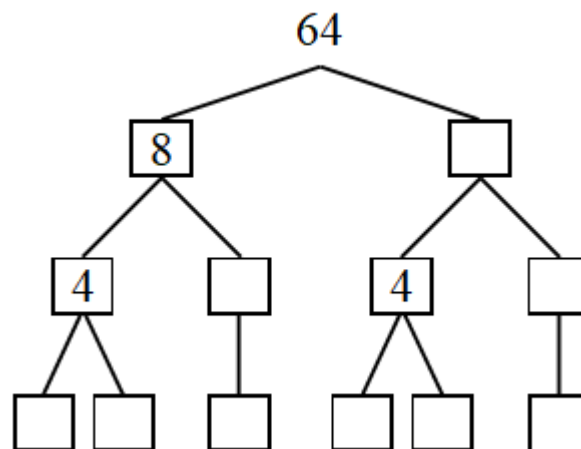
What is the value of $Y \times O$?

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

Visual/Spatial

13) Factor Tree (2 marks)

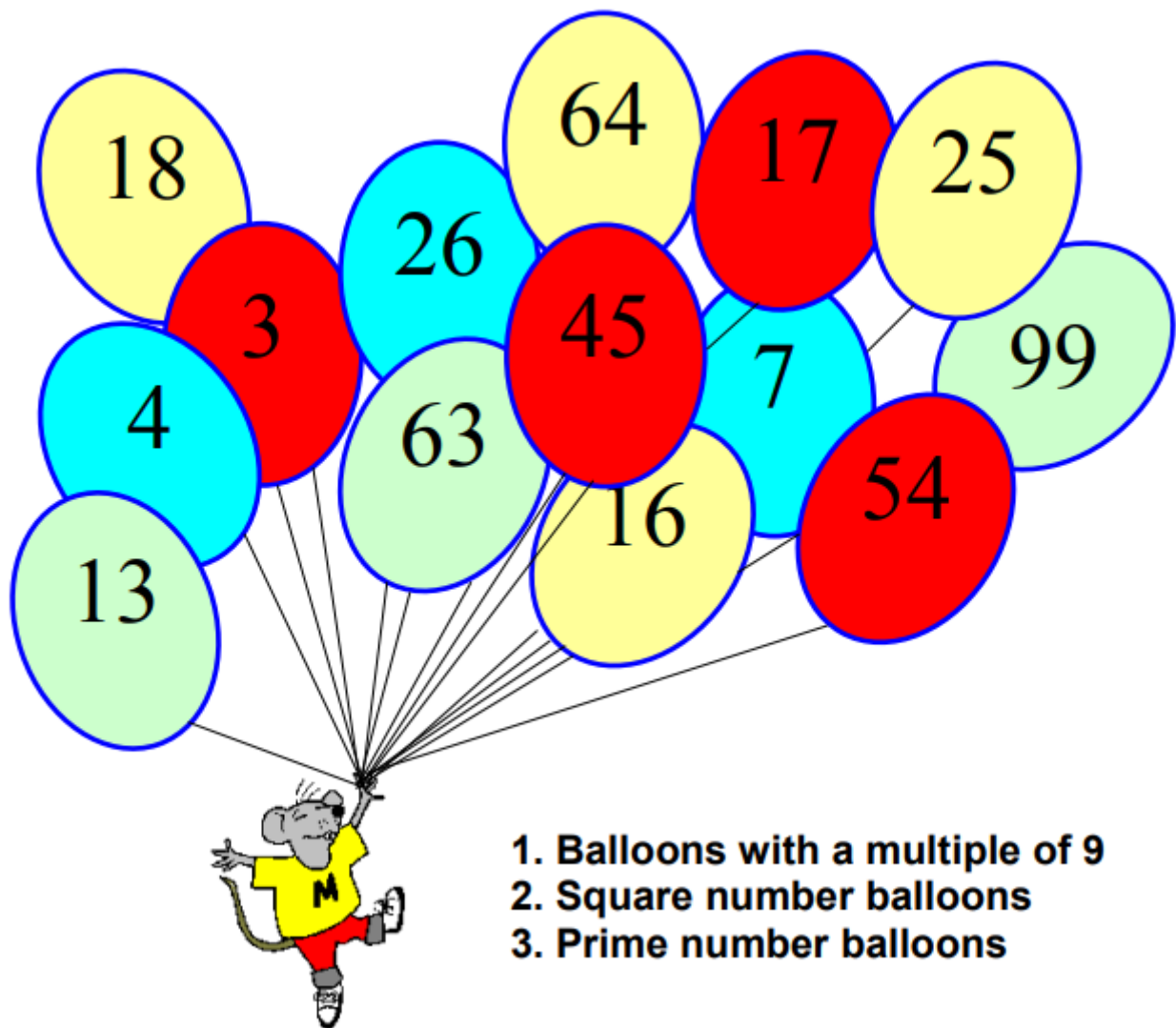
Complete the factor tree below, then write 64 as a product of its prime factors



Marking	
2 marks	Factor tree accurately completed including 64 written as a product of prime factors
1 mark	1 or 2 mistakes in the factor tree or 64 has not been written as a product of its prime factors

14) 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?

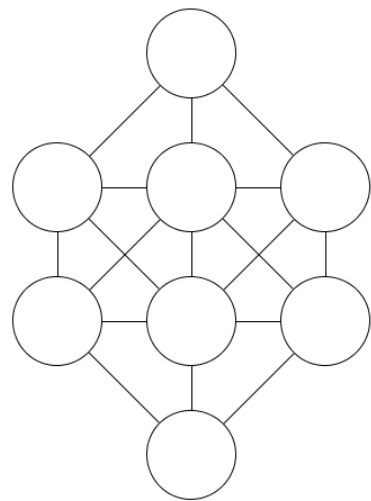


Marking	
2 marks	Correct solution found

15) 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

16) 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.

- a) Complete the table
- b) 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

The following information is required for Questions 17 and 18

In Bob's factory, there are 10 machines. Each machine performs only one specific job as displayed below.

- Machine 1 makes letters 1 cm high.
- Machine 2 enlarges the letters, so they are twice as high as machine one.
- Machine 3 enlarges the letters, so they are 3 times as high as machine one.
- Machine 4 enlarges the letters, so they are 4 times as high as machine one.
- Machine 5 enlarges the letters, so they are 5 times as high as machine one.
- Machine 6 enlarges the letters, so they are 6 times as high as machine one.
- Machine 7 enlarges the letters, so they are 7 times as high as machine one.
- Machine 8 enlarges the letters, so they are 8 times as high as machine one.
- Machine 9 enlarges the letters, so they are 9 times as high as machine one.
- Machine 10 enlarges the letters, so they are 10 times as high as machine one.

17) Drawing Letters (3 marks)

Select one letter from the alphabet, draw this letter as it would appear when printed from machine 1. This printout is then placed into machine 3, draw the printout. The printout from machine 3 is then placed into machine 5, draw the printout.

Marking	
1 mark	1 mark for each correct drawing

18) Broken Machine (3 marks)

Bob has a thriving business and relies heavily on all his machines working. This morning he arrived to process a large order of 6-cm-high letters only to find that machine 6 was not working. He gathered his staff together to discuss the problem.

'No problem!' said Ken. 'As long as the other machines are working we can still get this order done'.

- Suggest a solution that Ken might have proposed.
- If Bob can do without machine 6, are there others he can also do without? Explain your answer.

Marking	
1 mark	part a) Correct solution identified
2 marks	part b) Correct machines identified with explanations

Bodily/Kinaesthetic

19) Counting Cars (2 marks)

Stand on the pavement of a street and record the colours of 30 cars in the table below.

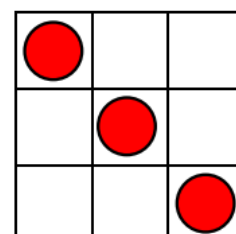
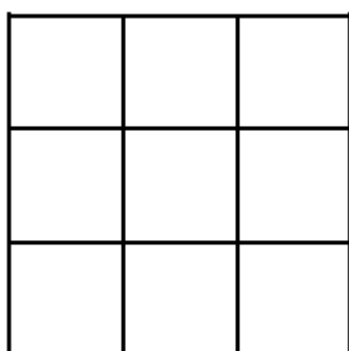
Car Colour	Tally	Frequency (Number)
White		
Black		
Red/Maroon		
Grey/Silver		
Blue		
Green		
Other		

Marking	
2 marks	Table completed with a total of 30 cars
1 mark	Table has not been fully completed or survey did not include 30 cars

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

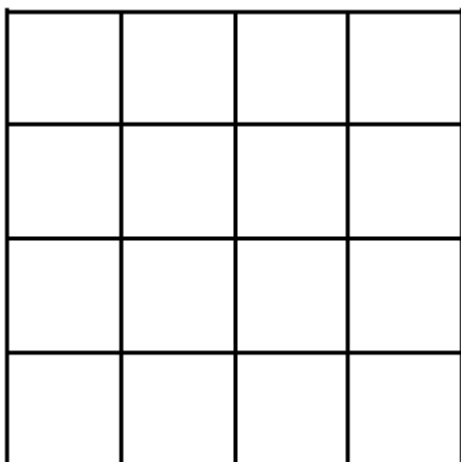
This 3 x 3 square has three counters in it in a row.

- 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.



* Task 20 continues over the page

- 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

21) Heights (3 marks)

Measure the height, in centimetres, of five people. Record the heights in an appropriate format and submit with your assignment. Use these heights to answer the following questions.

- find the total
- find the difference between the shortest and tallest people.

Marking	
1 mark	Heights recorded
1 mark	Part a) Correct total calculated
1 mark	Part b) Correct difference calculated

22) 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

23) Kahoot (3 marks)

Create a Kahoot with at least 10 mathematical based questions using real life applications of whole numbers. Take screenshots of each question and submit these with your assignment.

Marking	
3 marks	The Kahoot contains at least 10 questions that are mathematics based.
2 marks	The Kahoot contains 10 questions but some are not mathematics based
1 mark	The Kahoot contains only 5 to 7 questions

24) 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.

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

Technology

Use the data below for questions 25 and 26

The data shows the maximum and minimum daily temperatures for Thredbo NSW for two weeks in July 2010.

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

25) Spreadsheet (2 marks)

Enter the above data into an Excel spreadsheet. Submit a screen shot.

Marking	
2 marks	Data accurately entered into a spreadsheet
1 mark	Data entered into spreadsheet with some minor errors

26) Difference (3 marks)

In cell D1, enter the label 'Difference'. As shown in the picture below.

	A	B	C	D
	Date	Min Temp (deg C)	Max Temp (deg C)	Difference
1	Sun 18	-5	4.8	9.8
2	Mon 19	0	4	
3	Tue 20	-8.5	5	
4	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

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

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

27) Average Temperatures (2 marks)

Go to http://www.bom.gov.au/climate/averages/tables/ca_nsw_names.shtml and find your hometown. Create a table showing the mean (average) maximum and minimum temperatures for each month of the year.

Marking	
2 marks	Table created with maximum and minimums for each month

28) 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. Compare these temperatures with that of your hometown (from question 27).

Marking	
3 marks	Table created showing the maximum and minimum temperatures for each month. At least <i>three</i> comparisons with town from Q27 made.
2 marks	Table created showing the maximum and minimum temperatures for each month. One or two comparisons with town from Q27 made.
1 mark	Table created showing the maximum and minimum temperatures with no comparisons made.

29) 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.

30) 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?
- b) What is the 'base' number in the Babylonian Number System?
- c) Draw the number 23 using Babylonian symbols.
- d) In your opinion, why is the Hindu-Arabic Number System commonly used today and not Babylonian?

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