



Mission Heights Junior College  
Year 9 Examination 2016  
Subject: Mathematics

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

## Water Whanau

Instructions:

Time allowed for this examination is 1 and a half hours.

You should attempt all the required questions in this examination. You are allowed to use a calculator.

Start writing when you are instructed to do so. You have 5 minutes of reading time before you start writing.

Use the space provided after each question to write all your answers. If you need extra writing sheets then ask your teacher. You are expected to show your working steps to get the correct grade.

Check that this booklet has pages 1-14 in the correct order and a separate planning sheet.

**YOU MUST HAND THIS BOOKLET TO THE TEACHER AT THE END OF THE TEST.**

Working Towards	Achieved	Merit	Excellence

## Water's Year 9 Mathematics Exam: WAME

Strand/Section	Working Towards	Achieved	Merit	Excellence
<b>Measurement 'Goat Island'</b>	You have attempted to make calculations to solve measurement problems	You have made calculations to solve measurement problems	You have made two step calculations to solve measurement problems	You have made multi step calculations to solve measurement problems
<b>Statistics 'Goat Island'</b>	You have attempted questions relating to graphs and perform basic statistical calculations	You have answered questions relating to graphs and perform basic statistical calculations	You have answered questions relating to graphs and perform basic statistical calculations	You have interpreted graphs and reports
<b>Algebra 'IPENZ'</b>	You have attempted to describe simple arithmetic or geometric patterns and plot and interpret simple graphs	You have described simple arithmetic or geometric patterns and plot and interpret simple graphs	You have found terms and rules for patterns and interpret linear graphs	You have solved algebra problems using graphs and manipulation
<b>Number 'The Real Game'</b>	You have attempted to solve problems involving integers, decimals and fractions	You have solved problems involving integers, decimals, fractions, simple interest, discount	You have solved number and simple interest problems	You have solved number problems in context involving several steps
<b>Examination Conditions</b>	You have completed this assessment, however you did not adhere to Examination conditions	You have completed this assessment, however you did not adhere to Examination conditions	You have completed this assessment, adhering to Examination conditions	You have completed this assessment, adhering to Examination conditions

### Section A: Measurement - 'Goat Island Marine Reserve'

During Terms 1 and 2 we explored concepts of Measurement and Statistics.



**Section instructions:** You are required to answer all questions in this section. You should spend 20 minutes completing this section.

**Useful Formulae:**  $Circumference\ of\ circle = \pi \times d$ ,  $Area\ of\ circle = \pi \times r^2$   $Volume\ of\ cylinder = \pi \times r^2 \times h$ ,

**QUESTION ONE**

a) Caleb loved to fish, but after his 'Goat Island' trip he packed his fishing gear away in a box, shown below. Calculate the volume of this box. (A)



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b) On the way to 'Goat Island' Salah, Darien and Joel asked Mr Field-Mitchell to stop their car at the 'Snow Planet' ice skating facility, as they were early. The diameter of the Snow Planet ice skating rink is 50m. Calculate the area of the ice skating rink. (M)

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c) Adam, an Olympic boxer, stood on the scales at the 'Goat Island' official weigh in to check if he was eligible to board the glass bottom boat. What was Adam's weight? (A)

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d) Adam likes to have a vitamin drink every morning. Calculate the volume of the can of vitamin drink, below. (M)

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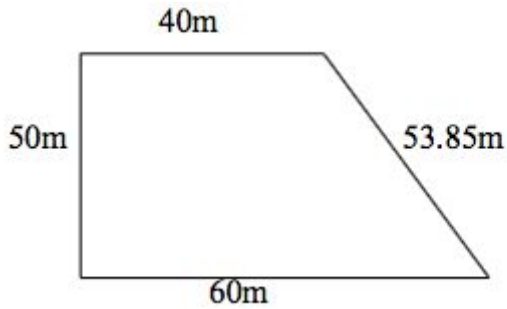
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**QUESTION TWO**

The 'Goat Island' fishing reserve has an area which is to be redeveloped for students who visit the facility. They need to fill it with cement and river pebbles.



a) Calculate the perimeter of the shape given. (A)

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b) The whole shape is filled with the mixture of cement and river pebbles that is 10cm thick. Calculate the volume of cement and river pebbles that fills in the redevelopment area.

(E)

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**QUESTION THREE**

- (a) 2m = \_\_\_\_\_ cm 3/6(A)
- (b) 3.5kg = \_\_\_\_\_ g 4/6 (M)
- (c) 2500m= \_\_\_\_\_ km 5/6 (E)
- (d) 200ml= \_\_\_\_\_ litres
- (e) 3km = \_\_\_\_\_ cm
- (f) 3 tonnes = \_\_\_\_\_ kg

## Section B: Statistics - 'Goat Island Marine Reserve'

During Term 2 we developed 'Interpretation Skills' in Statistics. We used a science experiment to gather information about our lung capacity.

**Section instructions:** You are required to answer all questions in this section. You should spend 25 minutes of time completing this section.

### QUESTION ONE

During the 'Goat Island' trip it was noticed that many students had smart phones, and they took photos on these during their trip. Pulkit decided to survey her class to find out how many Social Media accounts each student has.

These are her results:

3, 5, 4, 1, 2, 3, 5, 4, 1, 2, 3, 2, 5, 4, 1, 1, 6, 3, 2, 0, 6, 3, 2, 3, 4, 4, 2, 3, 6, 4,

a) Complete the frequency table below for the number of social media accounts. (A)

No of social media accounts	Tally marks	Frequency
0	/	1
1	////	4
2		
3		
4		
5		
6		

b) What is the median number of Social Media accounts in Pulkit's class? (M)

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c) What is the total number of Social Media accounts owned by all of the students in Pulkit's class?

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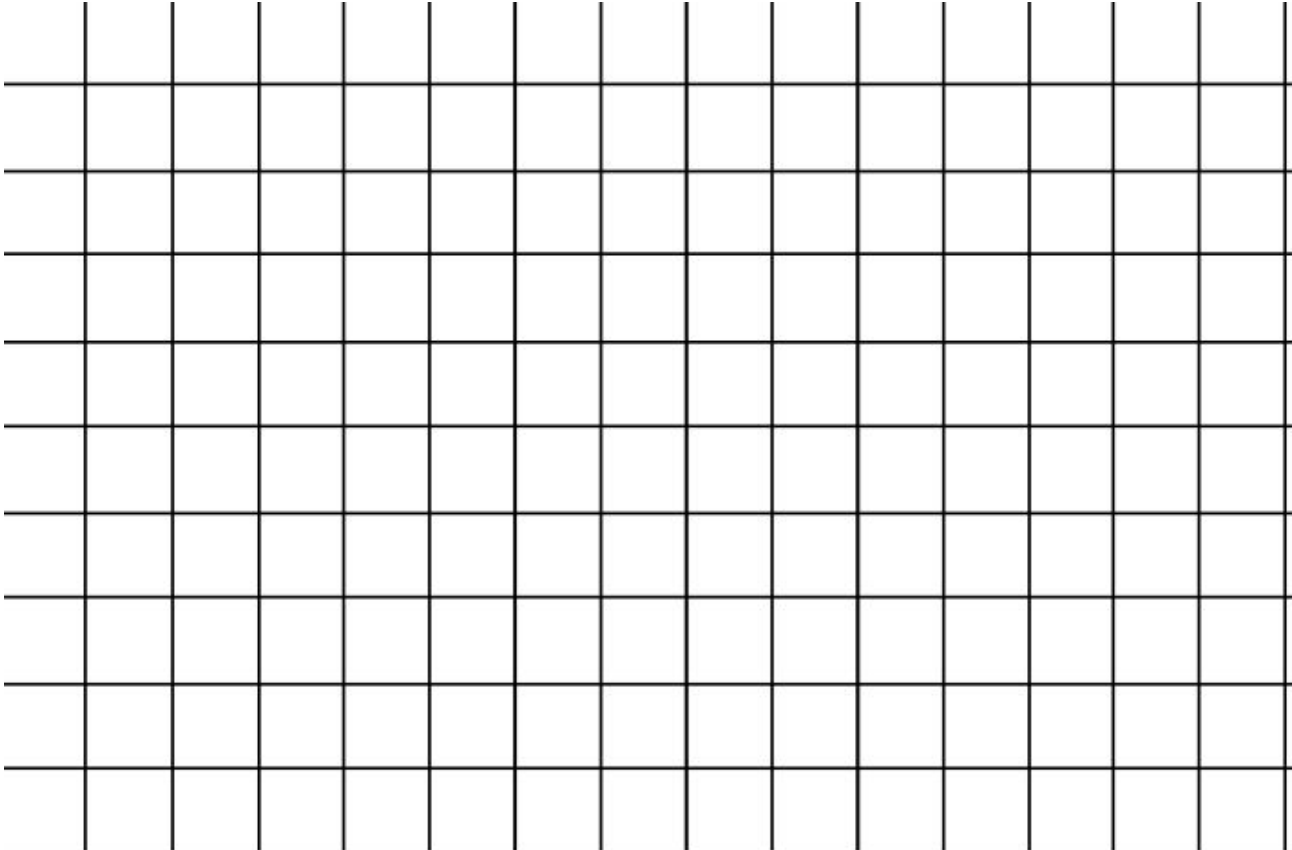
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d) What is the mode number of social media accounts? Explain what this number represents. (M)

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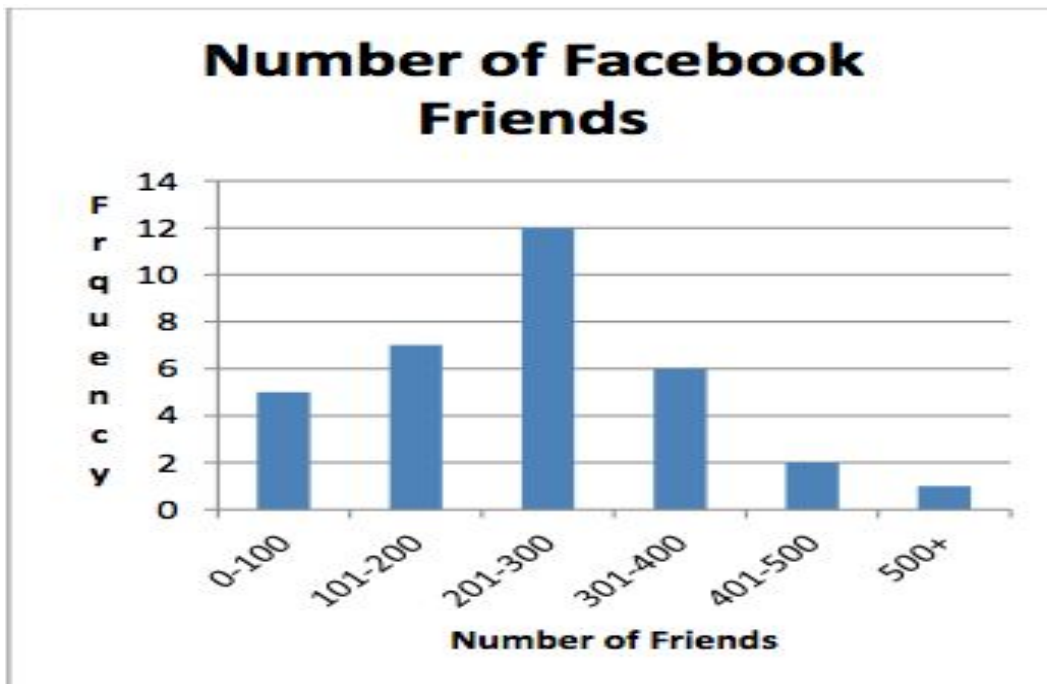
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e) On the grid below, draw a dot plot for the number of social media accounts. (M)



**QUESTION TWO**

Two classes 9W1 and 9W2 decided to compare This bar graph shows the number of Facebook friends students in Athena’s class have.



a) How many students have between 200 and 300 friends? (A)

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b) What was the greatest number of Facebook friends? (A)

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c) How many students have between 100 and 400 friends? (M)

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### QUESTION THREE

Pulkit thinks that 9W2 students will have more Facebook friends than Athena's class. She surveyed 20 9W1 students and 20 students in her 9W2 class.

#### Number of Facebook Friends: 9W1

120, 188, 196, 199, 230, 245, 245, 266, 277, 278, 288, 299, 320, 340, 350, 366, 367, 455, 499, 500, 900

#### Number of Facebook Friends 9W2

180, 275, 289, 356, 366, 376, 420, 488, 490, 499, 534, 567, 589, 597, 652, 688, 698, 798, 817, 827, 947

a) Complete the table below

(E)

	9W1	9W2
Lowest Value		
Lower Quartile		
Median		
Upper Quartile		
Highest Value		

## Section C: Algebra “IPENZ”

*During the later part of Term 2 we focused on....*



**Section instructions:** You should spend 25 minutes completing this section.

### QUESTION ONE

List the next three terms in each of the sequences:

(a) 1, 5, 9, 13, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ (A)

(b) 1, 3, 7, 15, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ (M)

### QUESTION TWO

Some Year 9 students are selling apples at the farmers' market to raise money for their IPENZ project. It costs \$50 to purchase a stall at the market. The students purchase the apples from the orchard for \$1.50 a kilogram. They will sell the apples for \$3.50 a kilogram.

a) Write an equation the students could use to calculate the possible profit from selling apples, using P for profit and A for the number of apples sold. (M)

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b) Use your equation to calculate the number of apples the students would need to sell if they want to make a \$2000 profit. (E)

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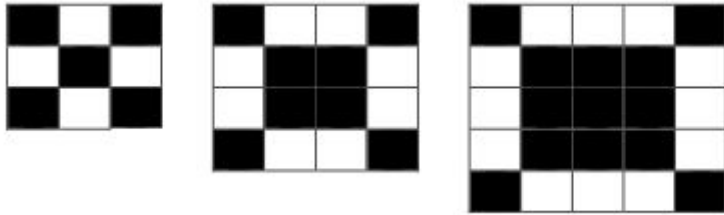
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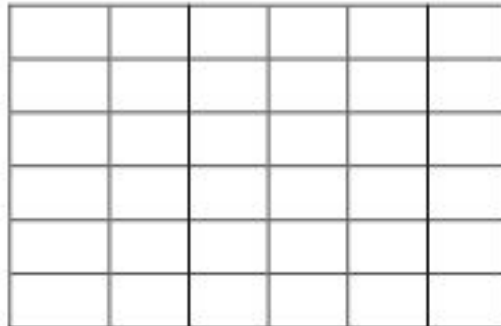
**QUESTION THREE**

Iris is designing a pattern for her story book. She is considering a possible pattern using black and white tiles.

Here are some tile designs that she is considering...



a) Following the pattern that Iris has been using, draw a picture of the tile design with a length of 6 squares. (A)



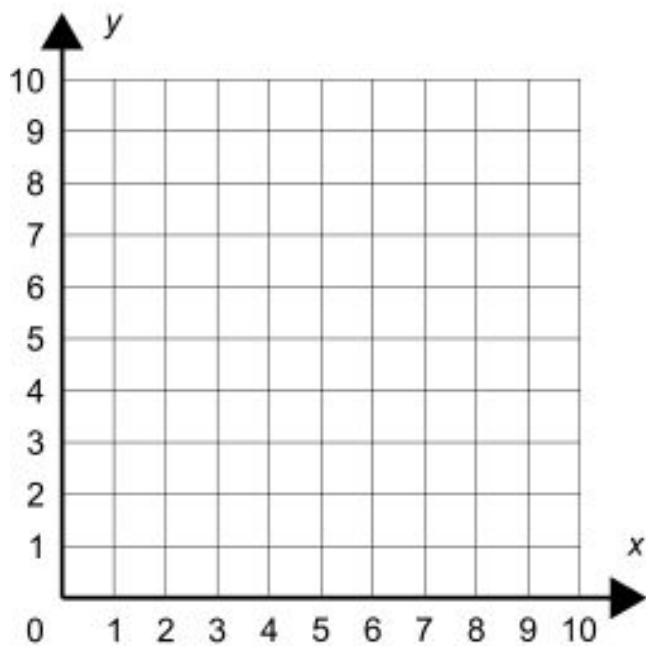
b) On father's day Nick got a nice gift for his father, but decided to buy a dozen roses for his mother. Each rose costed \$2. Due to the heavy demand, the florist decided to charge an extra \$1 as a booking fee.

Complete the table below (A)

No of roses	0 (booking)	1	2	3	4
Money					

c) Draw a graph for the values plotted in your table.

(M)



d) Write an equation for your graph using  $y = mx + c$

(E)

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**Section D: Number - “The Real Game”**

During Term 3 we used 'The Real Game' as an authentic context to gain a deep understanding of financial literacy and careers education. 'The Real Game' uses elements of role-play, group work and individual investigation to create situations that allow students to freely explore and imagine possibilities for themselves and others, post-school.

**Section instructions:** You are required to answer all questions in this section. You should spend 20 minutes completing this section.



**QUESTION ONE**

a) Leane decided to start a new job at the chocolate factory to earn some extra money. At the 'Sweet Toths Chocolate Factory' each machine makes 50 chocolate bars per minute. If the factory has 20 machines, how many chocolate bars can the factory make per minute? (A)

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b) Each machine uses 3500 mL of liquid chocolate per 50 chocolate bars. How many mLs of liquid chocolate is used to make one chocolate bar? (A)

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c) Last year 273 750 000 chocolate bars were made. How many bars were made per day? (A)

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d) One fifth of the chocolate bars made last year were caramello flavoured. How many caramello flavoured bars were made last year? (M)

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e) The ratio of white chocolate bars to dark chocolate bars is 1:3. How many of the

273 750 000 bars were made with white chocolate?

( M)

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f) The chocolate bars are packed into small boxes. Each small box holds 60 bars. The small boxes are then packed into a larger box for delivery. Each large box holds 50 small boxes. How many large delivery boxes were packed last year? ( E)

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## QUESTION TWO

a) The chocolate factory owner, Toby invested a certain amount of money and got back an amount of \$ 8400. If the bank paid an interest of \$ 1200, find the amount Toby invested.

(A)

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b) The chocolate factory accountant, Latika invested some amount for 4 years, and she earned the Interest of \$ 1800; at the Rate of 4.5% p.a. What was the principal amount? (E)

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c) The chocolate factory decided to buy a new cooling machine from 'Tommy & co' and the price of a cooler is \$ 14650. 'Tommy & co' offers an off-season discount of 15% on it. Find its selling price. (M)

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