

MARKER CODE			



STUDENT ENROLMENT NUMBER (SEN)									

FORM TWO COMMON EXAMINATION 2019 MATHEMATICS

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours + 10 minutes reading

INSTRUCTIONS:

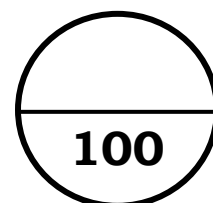
1. This paper has **FIVE QUESTIONS**. ALL Sections are **COMPULSORY**.

QUESTION	TOPIC	MARKS
I	NUMBER	28
II	GEOMETRY	15
III	MEASUREMENTS	22
IV	STATISTICS	14
V	ALGEBRA	21
TOTAL MARKS		100

2. Write your **Student Enrolment Number (SEN)** on the top right hand corner of this page and on page **23**.
3. Answer **ALL** questions in the spaces provided.
4. You are not allowed to use a calculator.
5. Use a black or blue ball point pen for your written answer. Use a pencil **ONLY** for drawings.
6. Write legibly and work neatly. **SHOW ALL YOUR WORKING.**
7. Check that this booklet contain pages **2-31** in the correct order and that pages 29-30 has been deliberately left blank.
8. If you need more spaces for answers, ask the supervisor for extra paper.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL MARKS



QUESTION I:**NUMBERS****(28 MARKS)****SECTION A:****MULTIPLE CHOICE QUESTIONS****(4 Marks)**Circle the letter of the **BEST** answer.

If the best answer is **A** then circle **A**. If you want to change your answer from A to C, then put a cross through A and then circle C.

For example:



B



D

1. Which of the following numbers is an **integer**?

- A. -1
- B. $\frac{1}{2}$
- C. 2.6
- D. $\sqrt{8}$

2. The $\sqrt{169}$ is _____.

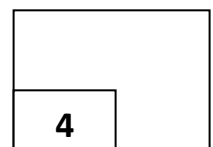
- A. 3
- B. 13
- C. 23
- D. 33

3. What is the **place value** of 5 in 246.7539?

- A. tens
- B. tenths
- C. hundredths
- D. thousandths

4. The **smallest prime number** is _____

- A. 1
- B. 2
- C. 3
- D. 5

P.2

SECTION B: SHORT ANSWER QUESTIONS (9 Marks)**ANSWER ALL THE QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

Each question is worth 1 mark.

1. Calculate:

a. $4 - 5 + 7$ (1 mark)

--

b. $9.62 - 2.5$ (1 mark)

--

c. 203×12 (1 mark)

--

d. $7.23 \div 10^2$ (1 mark)

--

e. 2^5 (1 mark)

--

P.3

5

2. Express $\frac{45}{8}$ as a mixed number (1 mark)

--

3. Samu buys chickens for \$3 and sells them for \$5. State the ratio of the selling price to cost price. (1 mark)

--

4. A retailer bought a TV screen which was \$1200. He increases his selling price by 10%.

- a. Calculate the 10% increase in selling price of the TV screen. (1 mark)

--

- b. Find the selling price of the TV screen. (1 mark)

--

SECTION C: LONG ANSWER QUESTIONS**(15 Marks)****ANSWER ALL QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

It is in your best interest to **SHOW ALL YOUR WORKING**, as some marks are allocated for correct methods and partially correct answers.

1. Write 306,000,589 in words. (2 marks)

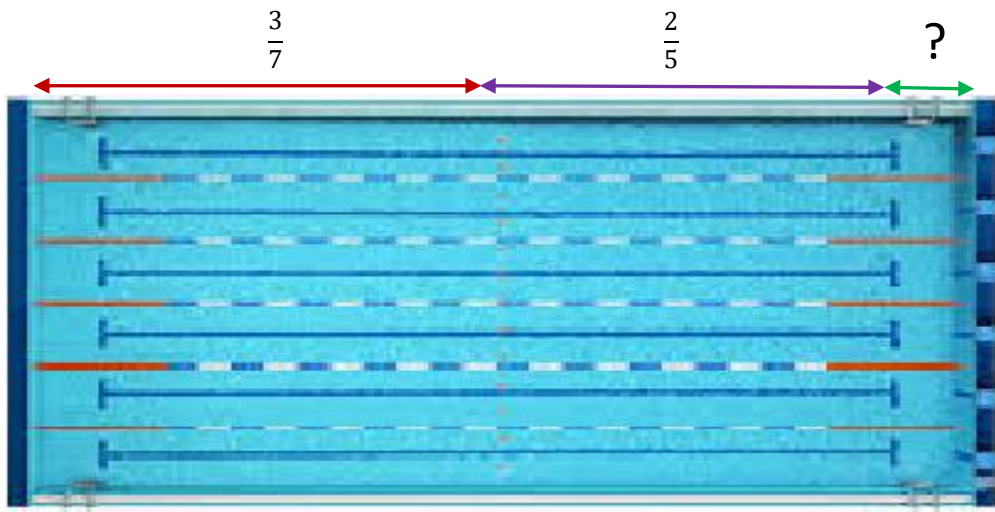
2. Calculate $1 + 2 + 3 + \dots + 200$. (Hint: Use Gauss method) (2 marks)

3. Calculate $\frac{3}{3} \times \frac{2}{3} \div \frac{3}{4}$ (2 marks)

P.5

4. Express $33\frac{1}{3}\%$ as a fraction in its simplest form (2 marks)

5. A swimmer swims $\frac{3}{7}$ of a swimming pool in the first hour and $\frac{2}{5}$ in the second hour.



Source: turbosquid.com

What fraction of the swimming pool has the swimmer left to swim? (2 marks)

6. Find the **prime factors** of 36. Give your answer in index form. (2 marks)

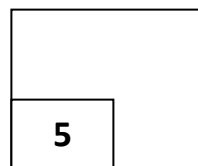
7. At an athletic team's competition, the 4 by 100 metres relay times for the 4 team competing was as follows:

Team	Runner 1 (sec)	Runner 2 (sec)	Runner 3 (sec)	Runner 4 (sec)
Team 1	10.31	10.04	10.46	10.09
Team 2	9.98	10.68	10.10	10.18
Team 3	10.06	10.13	10.24	10.01
Team 4	10.53	10.96	10.42	10.18

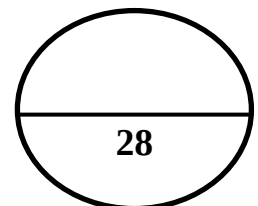
- a. Which team came first? (2 marks)

- b. Who is the fastest in all the runners and which team? (1 mark)

P.7



Q.I



QUESTION II:

GEOMETRY

(15 MARKS)

SECTION A: MULTIPLE CHOICE QUESTIONS

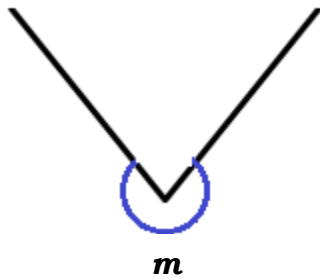
(3 Marks)

Circle the letter of the **BEST** answer.

1. A **nine sided** figure is called a _____

- A. hexagon
- B. octagon
- C. pentagon
- D. nonagon

Use the diagram below to answer question 2 and 3.



2. Name angle **m**.

- A. acute
- B. reflex
- C. straight
- D. obtuse

3. The **estimated** size of **angle m** is _____.

- A. 45°
- B. 80°
- C. 195°
- D. 290°

SECTION B: SHORT ANSWER QUESTIONS**(6 Marks)****ANSWER ALL THE QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

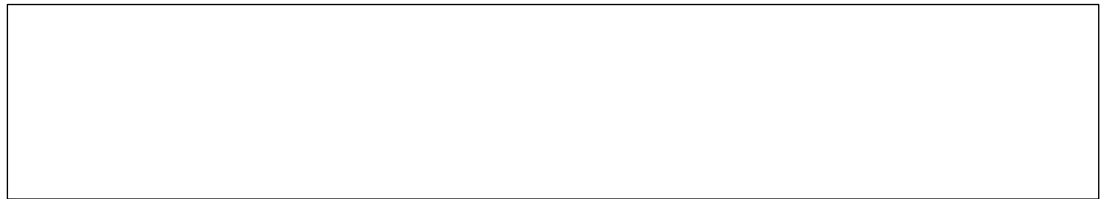
Each question is worth 1 mark.

1. a. Draw a **regular** pentagon. (1 mark)

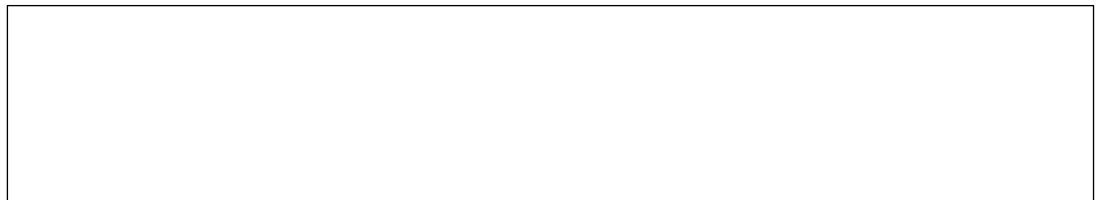


- b. What is the size of **ONE** (1):

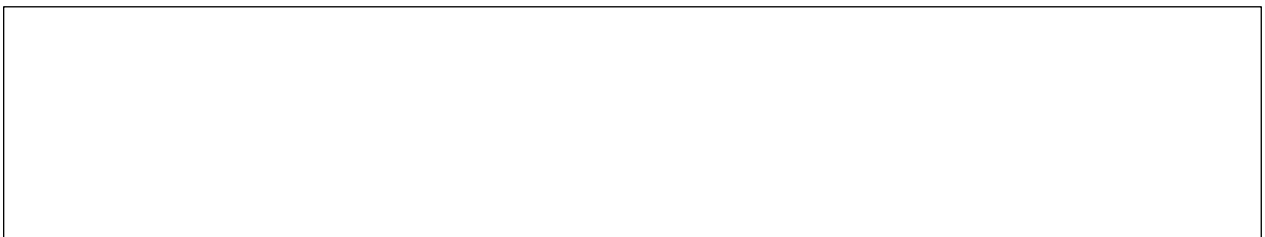
- i. **interior angle** of a regular pentagon. (1 mark)



- ii. **exterior angle** of a regular pentagon. (1 mark)

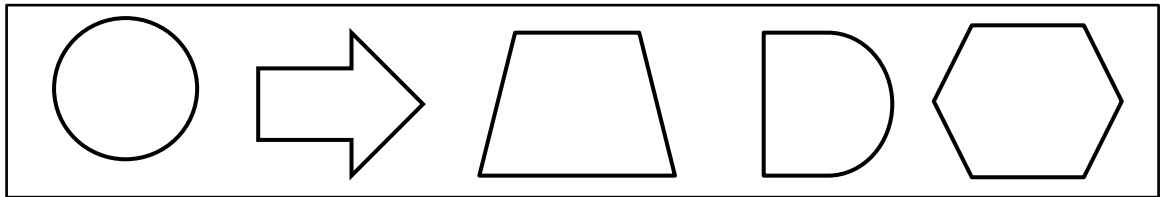


2. Draw 2 **similar** triangles. (1 mark)



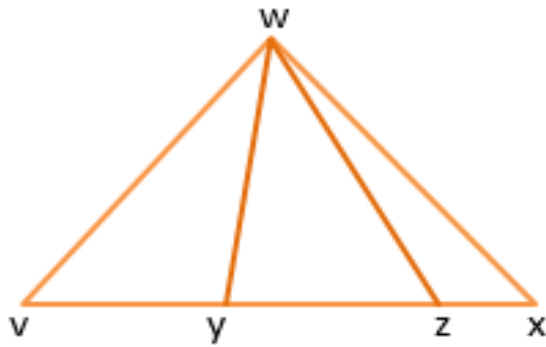
3. a. Name a **quadrilateral** from **Figure 2.1**. (1 mark)

Figure 2.1



- b. How many embedded shapes in **Figure 2.2**? (1 mark)

Figure 2.2

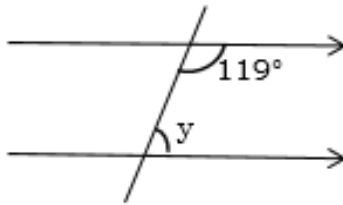


SECTION C: LONG ANSWER QUESTIONS**(6 Marks)****ANSWER ALL QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

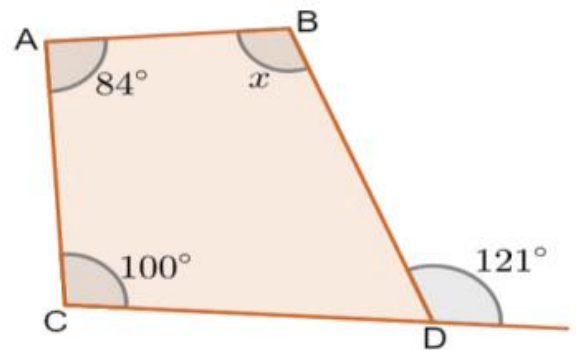
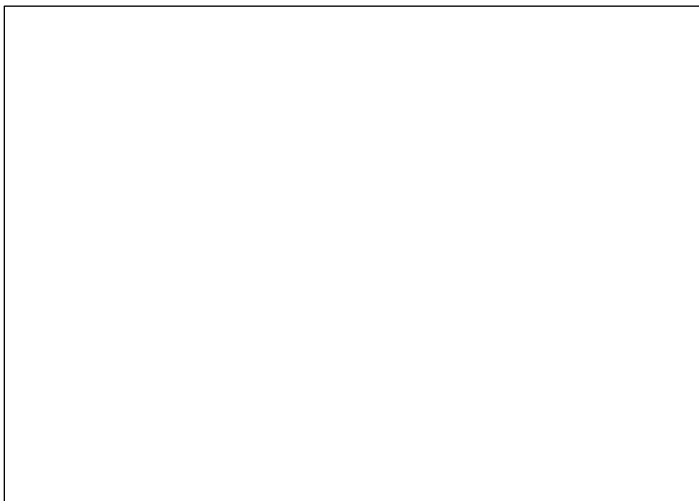
It is in your best interest to **SHOW ALL YOUR WORKING**, as some marks are allocated for correct methods and partially correct answers.

1. Find the size of angle **y**. Give a reason for your answer. (2 marks)



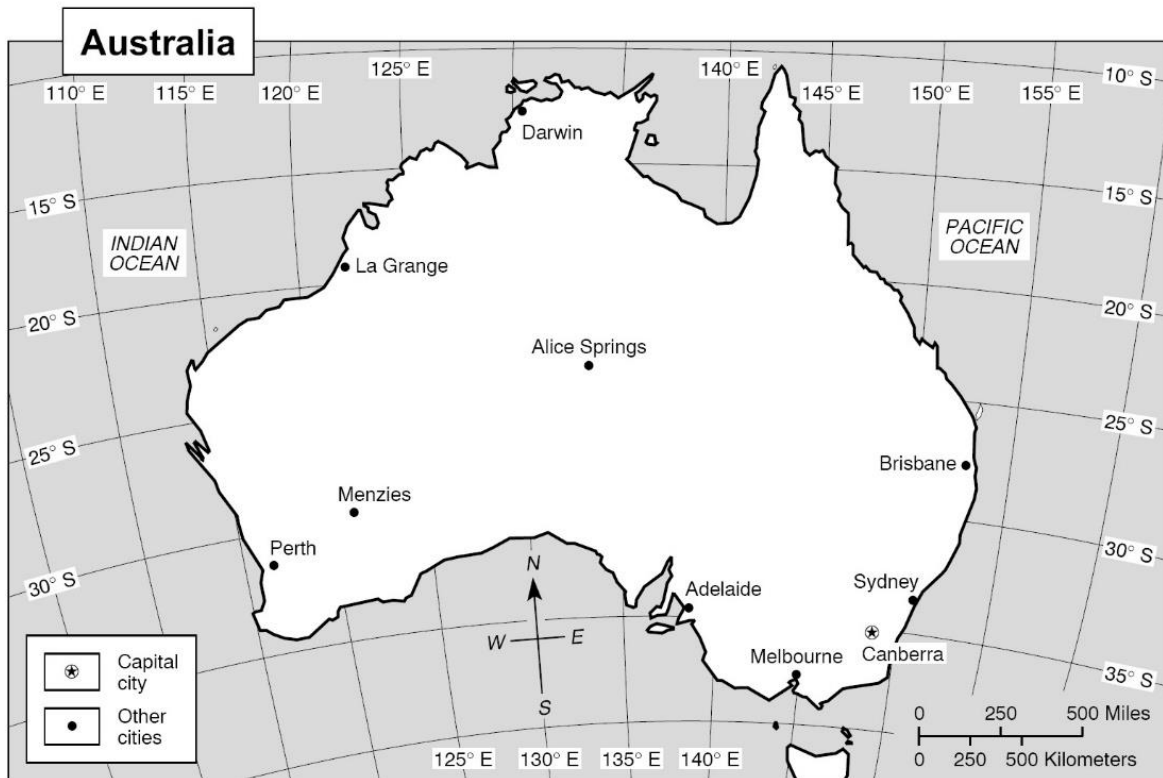
y = _____ Reason: _____

2. Use the angle rules to find the missing angle marked with letter *x*. (2 marks)



3. This is a map of Australia. Answer the questions given below from the map.

Example: Melbourne 38°S 145°E



- a. Write the coordinates of Brisbane. (1 mark)

- b. Name the place with the coordinates 32°S 116°E . (1 mark)

P.12

2	

Q.II

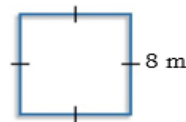
15

QUESTION III:**MEASUREMENT****(22 MARKS)****SECTION A: MULTIPLE CHOICE QUESTIONS (5 Marks)**

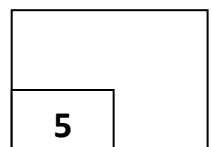
Circle the letter of the **BEST** answer.

1. **Summer solstice** is usually _____.
 - A. 8 hours daylight
 - B. 9 hours daylight
 - C. 11 hours daylight
 - D. 15 hours daylight
2. The time in Australia is 3 hours **behind** the time in Tonga. What time in Australia if the time in Tonga is 0350 hours on a Tuesday.
 - A. 0050 hours Tuesday
 - B. 0650 hours Tuesday
 - C. 0050 hours Monday
 - D. 0650 hours Monday
3. What day is Christmas of this year (2019)?
 - A. Tuesday
 - B. Wednesday
 - C. Thursday
 - D. Friday

4. **Figure 3.1** is a square. Its perimeter is ____

Figure 3.1

- A. 8m
 - B. 16m
 - C. 32m
 - D. 64m
5. A circle has a perimeter of 9π cm. Its diameter is _____.
 - A. 3cm
 - B. 4.5 cm
 - C. 6cm
 - D. 9cm

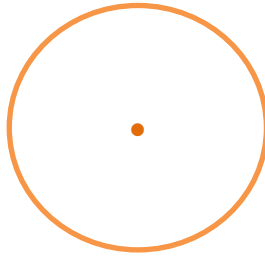
P.13

SECTION B: SHORT ANSWER QUESTIONS**(6 Marks)****ANSWER ALL THE QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

Each question is worth 1 mark.

1. a. Clearly draw a radius in the circle shown below. (1 mark)



- b. The perimeter of a circle is called the _____. (1 mark)

2. Convert the following measurements to the given units.

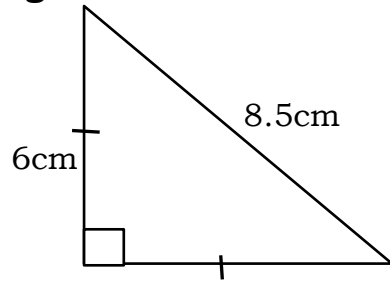
- a. 5 cm³ to mL *[Hint: 1cm³ = 1mL]* (1 mark)

- b. 1.25 ha to m² *[Hint: 1 ha = 10 000 m²]* (1 mark)

P.14

3. **Figure 3.2** is an Isosceles triangle.

Figure 3.2



Calculate the ;

- a. perimeter the triangle. (1 mark)

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- b. area of the triangle. (1 mark)

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SECTION C: LONG ANSWER QUESTIONS (11 Marks)

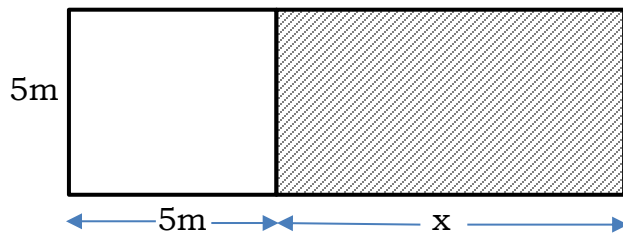
ANSWER ALL QUESTIONS IN THIS SECTION.

Write the answer to each question in the spaces provided.

It is in your best interest to **SHOW ALL YOUR WORKING**, as some marks are allocated for correct methods and partially correct answers.

1. The total area of **Figure 3.3** below is 60m^2 .

Figure 3.3



Calculate the value of x.

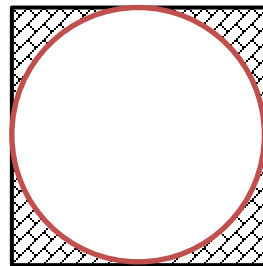
(2 marks)

2. In **Figure 3.4**, a circle is inscribed in a square. The area of the square is 16 cm^2 .

Calculate the area of the circle. (Use $\pi = 3.1$)

Figure 3.4

(2 marks)



P.16

4	

3. Given below is a timetable for MV Friendly Islands.

Nuku'alofa to 'Eua

Date	Departs	Arrives
9/12	0810hrs	1110hrs
10/12	0935hrs	1235hrs
11/12	1100hrs	1330hrs
12/12 – 13/12	1515hrs	1815hrs
14/12	1900hrs	2200hrs

'Eua to Nuku'alofa

Date	Departs	Arrives
9/12	3:00am	6:00am
9/12 – 10/12	2:00pm	5:00pm
11/12	3:15pm	5:45pm
12/12 – 13/12	8:00pm	11:00pm

- a. What time, in 12 hour clock, does MV Friendly Islands;

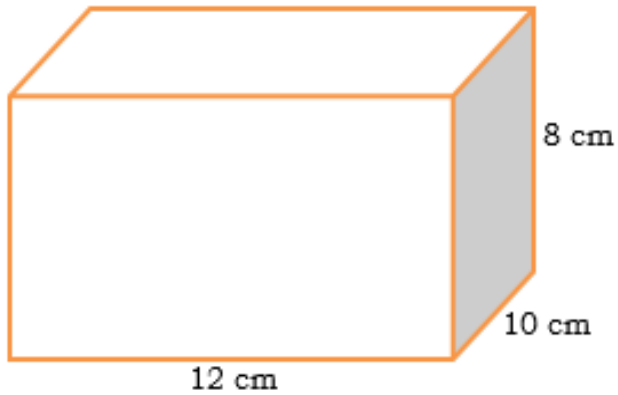
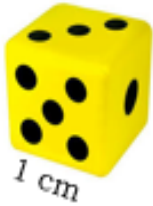
- i. depart Nuku'alofa on the 9th of December? (1 mark)

- ii. arrive at 'Eua on the 12th of December? (1 mark)

- b. How long did MV Friendly Islands travel from Nuku'alofa to 'Eua on December 11th. (2 marks)

4. A manufacturer of games makes dice. Each die measures 1cm by 1cm by 1cm. They are packed into a carton measuring 12cm by 10cm by 8cm.

Diagrams not to scale

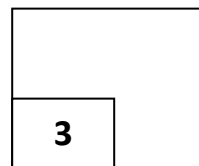


- a. How many dice can be placed in the bottom layer of the carton? (1 mark)

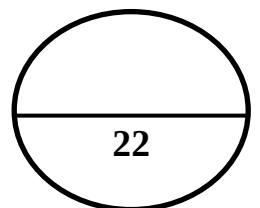
- b. How many layers of dice fit inside the carton altogether? (1 mark)

- c. Calculate the volume of the carton. (1 mark)

P.18



Q.III



QUESTION IV:**STATISTICS****(14 MARKS)****SECTION A:****MULTIPLE CHOICE QUESTIONS****(4 Marks)**

1. Which of the following is an example of a **continuous data**?
 - A. Number of children in the room.
 - B. Height of students in Form 2T.
 - C. Colours of classrooms.
 - D. Ice-cream flavours to be eaten by Moana's family.

2. In statistics, the set of scores with the **highest frequency** is the _____.
 - A. mode
 - B. mean
 - C. median
 - D. range

3. Loni throws a die. What is the **probability** that he will throw a 2?
 - A. $\frac{1}{6}$
 - B. $\frac{2}{6}$
 - C. $\frac{3}{6}$
 - D. $\frac{4}{6}$

4. Which of these events is **impossible**?
 - A. Tomorrow will be sunny.
 - B. Every human is born as a baby.
 - C. I will go to town tomorrow.
 - D. This is October, the next month is December.

SECTION B: SHORT ANSWER QUESTIONS (4 Marks)

ANSWER ALL THE QUESTIONS IN THIS SECTION.

Write the answer to each question in the spaces provided.

Each question is worth 1 mark.

1. Use the set of scores below to answer the following questions.

7 ,9 ,6 ,9 ,8 ,7 ,7 ,6 ,6 ,6 ,9 ,9 ,9

Calculate the;

- a. range. (1 mark)

- b. median. (1 mark)

2. A card is drawn randomly from an ordinary deck of 52 cards.

Find the probability of drawing;

- a. an ace (1 mark)

- b. a diamond (1 mark)

SECTION C: LONG ANSWER QUESTIONS**(6 Marks)****ANSWER ALL QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

It is in your best interest to **SHOW ALL YOUR WORKING**, as some marks are allocated for correct methods and partially correct answers.

1. The set of data given below are the **weights** of fifteen young chickens to the nearest gram.

45, 62, 57, 73, 66, 72, 70, 60, 51, 48, 50, 86, 63, 80, 62

- a. Display the weights on a **stem and leaf** diagram (2 marks)

--	--

- b. Calculate the **mean weight** of the young chickens. (2 marks)

--	--

2. Table 4.1 summarizes the number of female students in each subject for form 2 level of a high school.

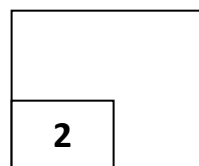
Table 4.1

Subjects	Female
English	45
Mathematics	25
Science	40
Lea Faka-Tonga	50

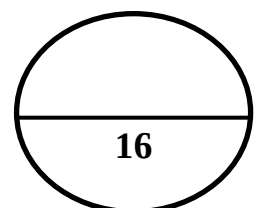
What is the probability of female students taking Mathematics OR English?

(2 marks)

P.22

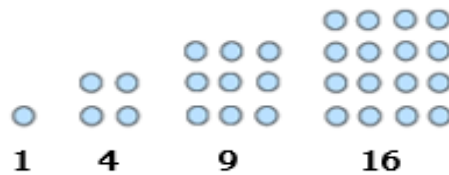


Q.IV



QUESTION V :**ALGEBRA****(21 MARKS)****SECTION A: MULTIPLE CHOICE QUESTIONS (4 Marks)**

1. The expression for “**square the number (n)**” is _____.
- A. $2n$
 B. n^2
 C. $n + n$
 D. $n \div n$
2. Below is an example of a square dot pattern. How many **dots** needed to build a square with 6 dots at the bottom row?



- A. 6
 B. 12
 C. 36
 D. 144
3. Find the **value** of x if $x - 3 = 9$.
- A. 3
 B. 6
 C. 9
 D. 12
4. Subtract 5 from 16. Multiply the difference by 5. The answer is ____.
- A. 11
 B. 24
 C. 36
 D. 55

SECTION B: SHORT ANSWER QUESTIONS**(6 Marks)****ANSWER ALL THE QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

Each question is worth 1 mark.

1. Simplify

a. $7m + 6n - 4n$

(1 mark)

--

b. $3m \times 2m$

(1 mark)

--

c. $m^5 \div m^2$

(1 mark)

--

2. Write the next number in this pattern.

(1 mark)

 $1^2 + 1, 2^2 + 1, 3^2 + 1, \dots$

--

3. Expand $2(n + 5)$ (1 mark)

--

4. Two consecutive odd numbers add to 16. What are the odd numbers? (1 mark)

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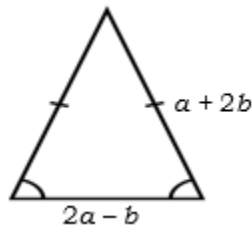
SECTION C: LONG ANSWER QUESTIONS**(11 Marks)****ANSWER ALL QUESTIONS IN THIS SECTION.**

Write the answer to each question in the spaces provided.

It is in your best interest to **SHOW ALL YOUR WORKING**, as some marks are allocated for correct methods and partially correct answers.

1. Write an expression, in its simplest form, for the perimeter of this figure.

(2 marks)



2. Solve these equations:

a. $\frac{a}{2} + 4 = 8$

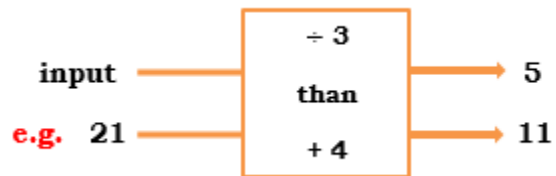
(2 marks)

b. $3(2x - 3) = 9$

(2 marks)

3. Reverse the rule to find the input. An example is given below.

(2 marks)



Input =

4. The table for $y = 4x + 1$ is given below.

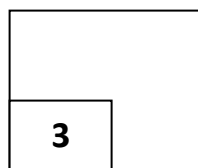
(3 marks)

x	0	1	2	3
$y = 4x + 1$	1	5	9	13

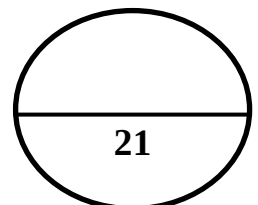
Plot the ordered pairs on the pair of axes and draw a line to join them.



P.28



Q.V



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STUDENT ENROLMENT NUMBER (SEN)

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FORM TWO COMMON EXAMINATION

2019

MATHEMATICS

(For Markers Use Only)

QUESTION	MARKS	CHECK MARKS	TOTAL MARKS
I			28
II			15
III			22
IV			14
V			21
TOTAL MARKS			100