

MARKER CODE			



STUDENT ENROLMENT NUMBER (SEN)							

SECONDARY ENTRANCE EXAMINATION

2022

MATHEMATICS

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours + 10 minutes reading

INSTRUCTIONS

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

SECTION	TOPIC	MARKS
ONE	NUMBER CONCEPT	30
TWO	GEOMETRY	15
THREE	MEASUREMENT	20
FOUR	ALGEBRA	20
FIVE	STATISTICS AND PROBABILITY	15
TOTAL MARKS		100

2. Write your **Student Enrolment Number (SEN)** on the top right hand corner of this page and on page 26.
3. Answer **ALL** questions in the spaces provided.
4. Use a black or blue ball point pen for your written answers. Use a pencil **ONLY** for drawings.
5. Write legibly and work neatly.
6. Check that this booklet contains **26** pages in the correct order and that pages 25 - 26 have been deliberately left blank.
7. If you need more spaces for answers, ask the supervisor for extra paper and write your SEN on the extra page(s).

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

TOTAL MARKS

100

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:  A B  C D

1. Which of the following is the smallest negative integer?
- A. -2
B. -1
C. -3
D. 0
2. Which of the decimal numbers remain unchanged in value if zero is left out ?
- A. 320
B. 50.25
C. 7.06
D. 5.80
3. $\frac{1}{10,000}$ is equal to
- A. 0.0001
B. 0.001
C. 10^{-3}
D. 10^{-2}
4. A sport shoe is on sale with 20% discount. How much is the discount price on the given shoes?
- A. \$20
B. \$80
C. \$60
D. \$50



SPORT SHOES

Normal Price \$100

Discount 20%

4

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MATHEMATICS

(FOR MARKERS USE ONLY)

SECTION	TOPIC	MARKS	CHECKED MARKS	TOTAL MARKS
ONE	NUMBER CONCEPT			30
TWO	GEOMETRY			15
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TOTAL MARKS				100

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5. The value of $5^4 \times 5^2$ in index form is

- A. 5^8
- B. 5^6
- C. 5^2
- D. 5^{42}

ANSWER ALL THE QUESTIONS IN THIS SECTION.

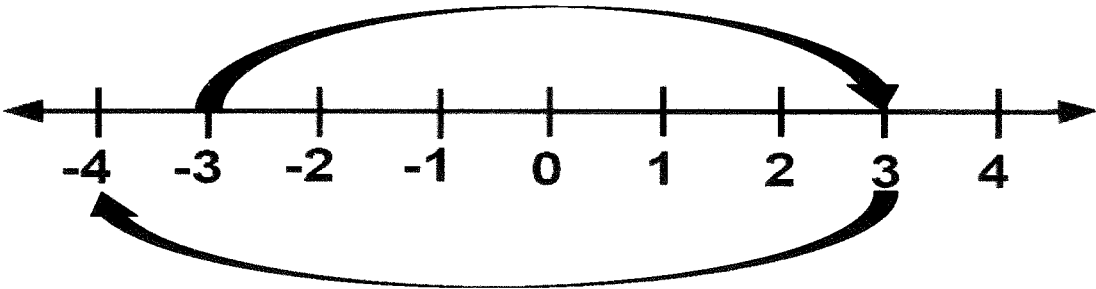
Write the answer to each question in the spaces provided. **Show ALL your working.** Marks are awarded for correct methods and partially correct answers.

1. Calculate

a. $\frac{3}{7} - \frac{2}{5}$ (2 marks)

b. $3 \times 5 + 121 \div 11$ (3 marks)

2. Write the equation for the number line & arrow below. (2 marks)



Equation =

4. Lita has 100 marbles in her bag. There are 40 red marbles and 25 blue marbles. The rest of the marbles are green.

Find the probability that Lita will select a green marble from her bag. (3 marks)

3. Express 256 in prime factors using index notation. (3 marks)

4. Philipa spends \$128.50 on a pair of shoes, \$20.65 on some shorts and \$5.75 on a dress.

a. How much does she spend in total? (2 marks)

P.24

3

S.FIVE

15

P.5

5

- b. Philipa has \$250 dollars and her sister gave her \$100. Calculate how much change did she get. (3 marks)

5. Jack rolls out a biscuit dough into a piece that is 16.8cm wide. He divides it into equal parts with a width of 0.6cm.

- a. How many parts did he cut? (2 marks)

P.6

5	

2. 'Ofa is a netball player. The number of goals she scored in her first ten games was:

2,5,5,7,5,4,8,9,6,3.

- a. Calculate the **mean** score. (2 marks)

- b. Calculate the **range**. (1 mark)

3. Sione is a basketball player. After his eight matches, his total score was 216 points. After three more matches his mean score was 29 points.

Calculate the total number of points he scored in all his eight matches and the last three games.

(3 marks)

P.23

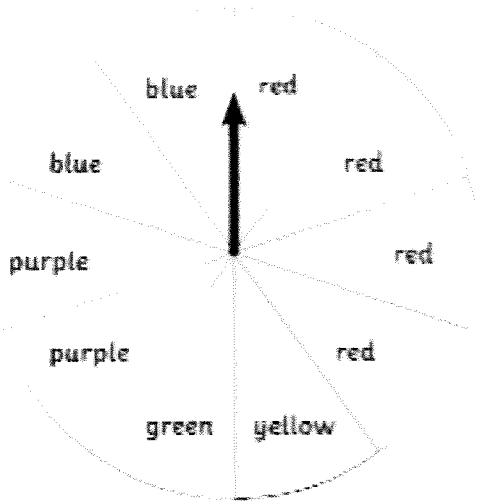
6	

PART B:LONG ANSWER QUESTIONS(13 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**. Some marks are awarded for correct methods and partially correct answers.

1. The diagram below shows a colour wheel spinner.



a. What is the probability that the spinner will point to red? (1 mark)

b. What is the probability of the spinner landing on green and purple. (2 marks)

c. What is the probability of the spinner landing on the colour pink? (1 mark)

4

b. One part of the dough makes one piece of biscuit and there are four pieces in a packet. The price for each packet is \$5.00.

Calculate how much Jack gets from selling all his biscuits. (3 marks)

6. Lui’s salary is deposited in his savings account in the bank every week. His salary is \$350 per week. He spends 40% weekly and he saved the rest of his salary.

a. Calculate how much he spends weekly. (2 marks)

b. How much can he save in 3 months. (3 marks)

(Hint: 1 month = 4 weeks)

8

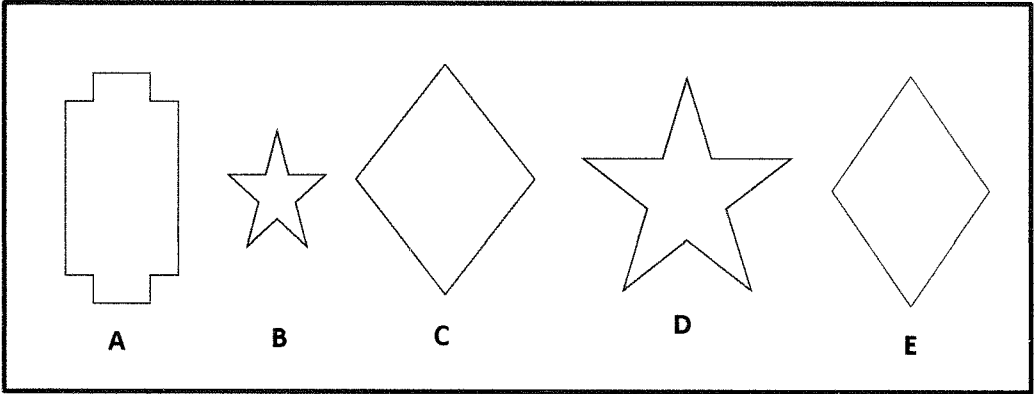
30

SECTION TWO: GEOMETRY (15 MARKS)

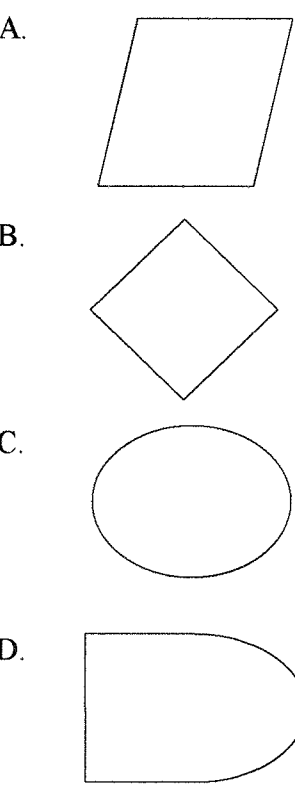
PART A: MULTIPLE CHOICE QUESTIONS (4 Marks)

Circle the letter of the BEST answer.

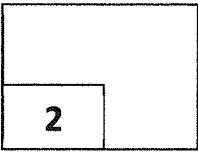
1. The two figures in the box that are congruent are:



- A. A and E
 - B. C and E
 - C. B and D
 - D. A and C
2. An example of a compound shape is:



P.8



SECTION FIVE: STATISTICS AND PROBABILITY (15 MARKS)

PART A: MULTIPLE CHOICE QUESTIONS (2 Marks)

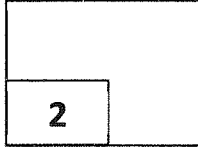
1. A six – sided dice is rolled once.



What is the probability that the number rolled is an even number.

- A. $\frac{2}{6}$
 - B. $\frac{3}{6}$
 - C. $\frac{4}{6}$
 - D. $\frac{5}{6}$
2. From the list of scores 31,30,32,33,30. The mode is ____.
- A. 30
 - B. 31
 - C. 32
 - D. 33

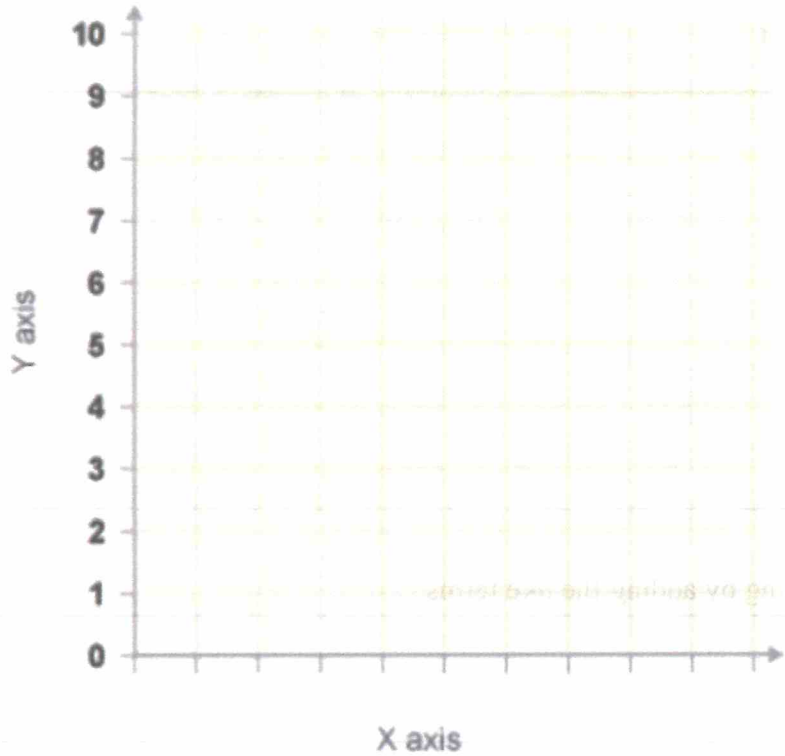
P.21



6. a. Use the rule $y = 2x + 1$ to complete this table. (2 marks)

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

b. Use the ordered pairs in your table above to draw a line graph on the axis given below. (3 marks)



3. Which of the following pair of angles are complementary?

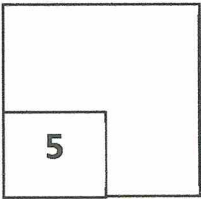
- A. 20° and 25°
- B. 30° and 60°
- C. 60° and 120°
- D. 120° and 240°

4. Which of the following is a regular quadrilateral?

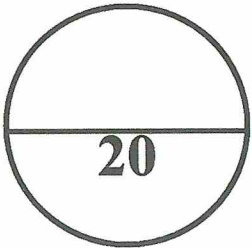
- A. Square
- B. Rectangle
- C. Triangle
- D. Parallelogram



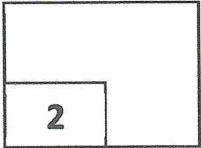
P.20



S.FOUR



P.9

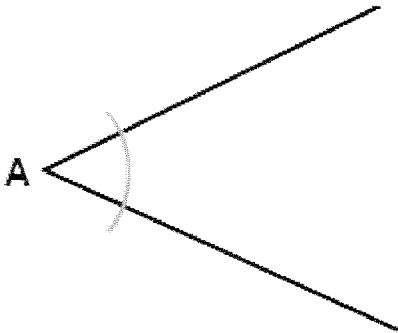


PART B:LONG ANSWER QUESTIONS(11 Marks)

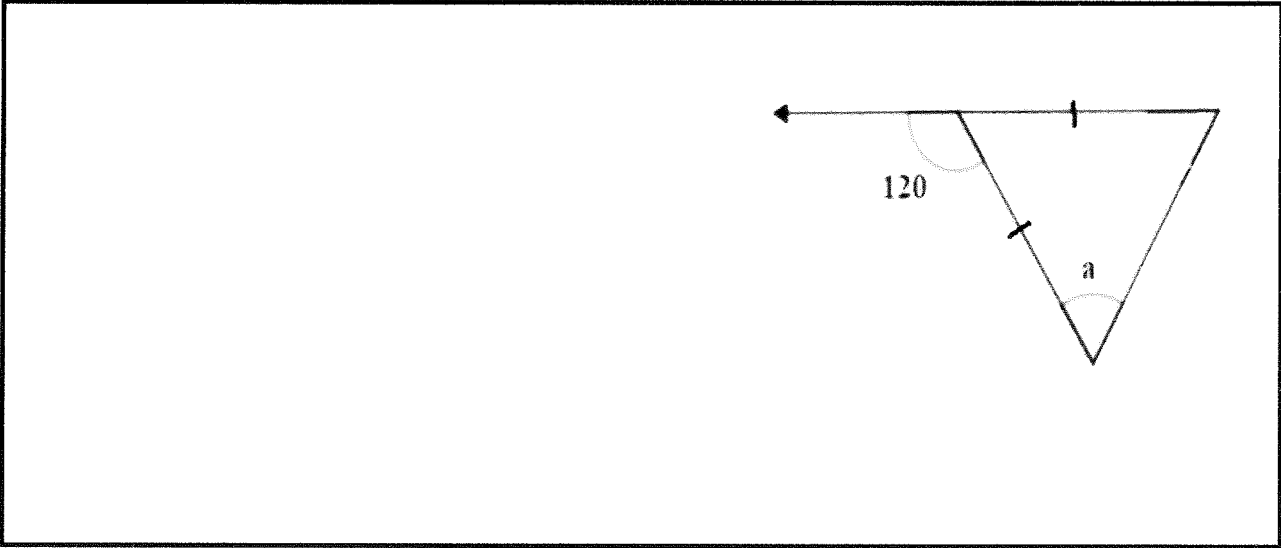
ANSWER ALL QUESTIONS IN THIS SECTION.

Write the answer to each question in the spaces provided.
It is in your best interest to **SHOW ALL YOUR WORKING**. Marks are awarded for correct methods and partially correct answers.

1. Use a compass and a ruler to bisect the angle below. (2 marks)



2. Work out the size of the angle marked by variable a. (3 marks)



3. Solve these equations.

a. $3x - 2 = -8$ (2 marks)

b. $3(2n + 1) = 21$ (3 marks)

4. Simplify the following by adding the like terms. (1 mark)

$3 + 7c + 3c$

5. Calculate the 10th triangular number. (2 marks)

Hint: $\frac{n(n+1)}{2}$

PART B:LONG ANSWER QUESTIONS(17 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**. Marks are awarded for correct methods and partially correct answers.

1. Find the value of the number in the box to make the equation true.

a. $3 + \boxed{} = 1$ (1 mark)

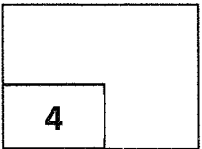
b. $\frac{\boxed{}}{3} = 3$ (1 mark)

2. Write down the missing term in this sequence.

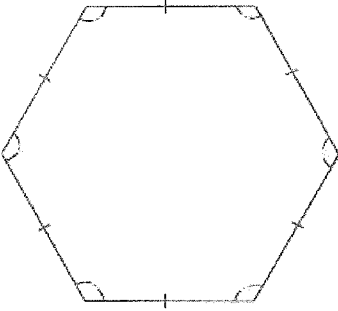
a. 3,7,11,15,____ (1 mark)

b. _____,4,9,16,25 (1 mark)

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3. Shown below is a regular hexagon.



a. What is the sum of all the interior angles? (2 marks)

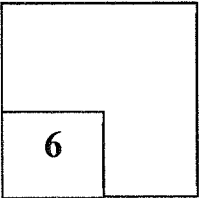
b. Calculate the angle size for one exterior angle. (1 mark)

4. Each interior angle of a regular polygon equals to 108° .

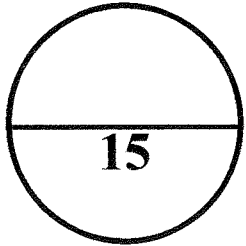
a. How many sides does this polygon have? (3 marks)

Number of sides = _____

P.11



S.TWO



SECTION THREE:

MEASUREMENT

(20 MARKS)

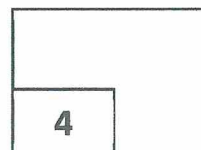
PART A: MULTIPLE CHOICE QUESTIONS

(4 Marks)

Circle the letter of the BEST answer.

- In a circle, what is the longest chord?
 - Circumference
 - Radius
 - Diameter
 - Arc
- On a map, 1 cm represents 40 km. What is the actual distance of a 5.2 cm measured on the map?
 - 200 km
 - 205 km
 - 208 km
 - 280 km
- One hectare is equivalent to _____.
 - 100 meter square
 - 1,000 meter square
 - 10,000 meter square
 - 100,000 meter square
- Singapore is 2 hours behind Tonga. Jeff is in Tonga and calls his brother in Singapore at 2200 hours time.
What time is it in Singapore?
 - 8am
 - 8pm
 - 10am
 - 10pm

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SECTION FOUR:

ALGEBRA

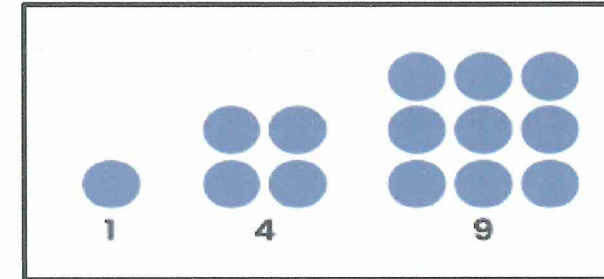
(20 MARKS)

PART A: MULTIPLE CHOICE QUESTIONS

(3 Marks)

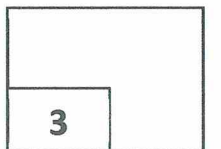
Circle the letter of the BEST answer.

- The number of dots in the next two patterns are:



- 14 and 19
 - 16 and 36
 - 14 and 25
 - 16 and 25
- The algebraic expression "*twice of x*" is equivalent to
 - $x + 2$
 - $2x$
 - x^2
 - $2x^2$
 - When using the distributive law; $7(x - 3)$ is the same as:
 - $7x - 3$
 - $7x - 21x$
 - $7 - 3x$
 - $7x - 21$

P.17



6. Lisa can type 120 words in a minute.

Calculate how many words she can type in 10 seconds. (3 marks)

P.16

3

S.THREE

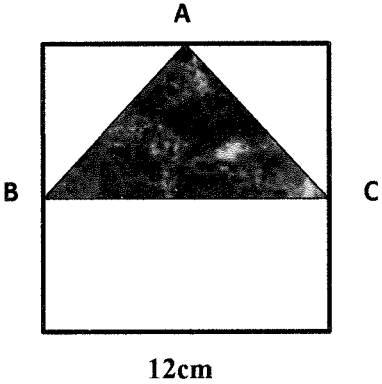
20

PART B:LONG ANSWER QUESTIONS(16 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**. Some marks are awarded for correct methods and partially correct answers.

1. A, B and C are mid points of 3 sides of a square.



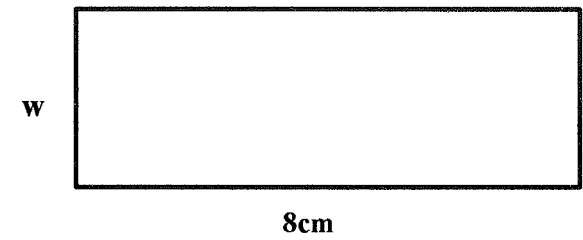
Find the **area** of the triangle in square centimeters. (2 marks)

2. Change 4800 km into m. (1 mark)

P.13

3

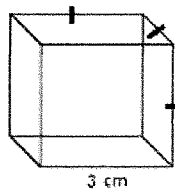
- 14
3. Consider the rectangle below. It's perimeter is 26 cm.



- a. Find the width labelled w. (2 marks)

- b. Find the area of the rectangle above. (1 mark)

4. Calculate the total surface area of the cube.

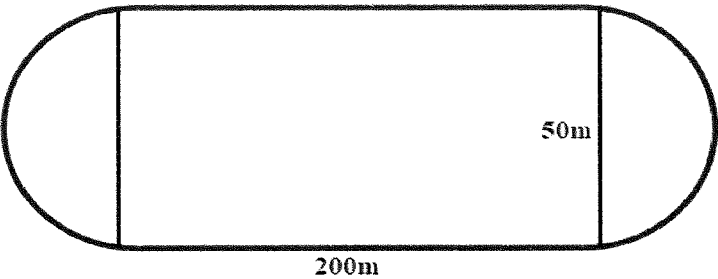


(2 marks)

P.14

5

- 15
5. The track shown below is made up of 2 semi – circles and a rectangle.



- a. Peter ran around the complete track. What distance did Peter run? (Use $\pi = 3.1$) (3 marks)

Hint: 2 semi-circles = 1 circle

- b. If Peter ran around the rectangular part of the track only, how much shorter is the distance he ran? (2 marks)

P.15

5