Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

MATHEMATICS ORDINARY LEVEL 4324/2

PAPER 2 (Extended) 1 hour 30 minutes

Marks 80 **2020**

Additional Materials: Geometrical instruments
Non-programmable calculator

INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Candidates answer on the Question Paper in the spaces provided.
- Write your Centre Number, Candidate Number and Name in the spaces at the top of this page.
- Write in dark blue or black pen.
- You may use a soft pencil for any diagrams or graphs.
- Do not use correction fluid.
- Do not write in the margin *For Examiner's Use*.

- Answer **all** questions.

- If working is needed for any question it must be shown below, or where working is indicated.
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Non-programmable calculators may be used.
- If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to **three** significant figures. Give answers for angle sizes to **one** decimal place.
- For π, either use your calculator value, or use 3.142.

ORDINARY LEVEL
EXTENDED

For Examiner's Use

Marker	
Checker	

This document consists of **14** printed pages and **2** blank pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

For Examiner's Use

1 Write the recurring decimal $0.\dot{4}\dot{9}$ as a vulgar fraction.
[$0.\dot{4}\dot{9}$ means 0.49494949...]

Answer..... [1]

---

2 The attendance of a football match at the Independence stadium in Windhoek was 9 723.
Write 9 723 correct to

(a) the nearest thousand,

Answer **(a)** ..... [1]

(b) 3 significant figures.

Answer **(b)** ..... [1]

---

3 Population growth is calculated in the same way as compound interest. If the population of the world grows at a rate of 1.1% per year, find the number of years it takes for the population to grow from 7.6 billion to 9.88 billion.

Give your answer correct to the nearest whole number of years.

Answer.....years [3]

For Examiner's Use

4 Miss Hawenga had 84 pens and 60 pencils. She uses all the pens and pencils by packing them equally into as many gift boxes as possible.

(a) Find the number of gift boxes that she had packed.

Answer **(a)** .....boxes [2]

(b) Find the number of pens and the number of pencils in each box.

Answer **(b)** pens =.....and pencils = ... [2]

---

5 Express the following ratio in its simplest form.

$$\frac{2}{3} : \frac{1}{2}$$

Answer ..... [2]

---

6 A shopkeeper wants to sell a jacket at a price of N$ 330. The customer must pay 15% VAT on the selling price.

What will the customer pay for the jacket?

Answer N$ ..... [2]

For Examiner's Use

7 The price for an electric toothbrush refill is N$ 60.90. There is a special offer, and the discounted price is N$ 140.40 for three refills.
Work out the percentage discount.

Answer ..... % [3]

---

8 **(a)** George needed to answer a question on loci in an examination.

He was asked to construct the locus of

(i) points which are 5 cm from a point A,

(ii) points that are equidistant from a line AB and a line BC.

Fully describe the constructions (do not do the construction) George needed to do.

Answer **(a)(i)** ..... [1]

Answer **(a)(ii)** .....

..... [2]

(b) Construct the perpendicular bisector of XY.

X •

Y •

[2]

For Examiner's Use

9 Find the value of p and q in the following equations ($x \neq 0$).

(a) $(x^3)^p = 1$

Answer **(a)** p = ... [1]

(b) $x^{2q+2} = \frac{1}{x^{18}}$

Answer **(b)** q = ... [2]

---

10 It is given that $\frac{3x^4 \times (2x)^3}{12x^{-2}} = Ax^n$, where A and n are integers.

Find the values of A and n.

Answer A = ...

n = ... [4]

---

11 Express the following as a single fraction in its lowest terms.

$$\frac{2x}{x^2 - 1} - \frac{1}{x + 1}$$

Answer ..... [3]

For Examiner's Use

12 Gideon's present age is x years and Ruan's present age is y years.

(a) Complete the table below for the age of Gideon in terms of x and the age of Ruan in terms of y.

	Age 4 years ago	Present age	Age in 4 years' time
Gideon	$x - 4$	x	
Ruan		y	$y + 4$

[1]

(b) Four years ago, Gideon was three times as old as Ruan. Four years from now, Gideon will be only twice as old as Ruan.
Use the information in the table in **part (a)** to write down 2 equations in terms of x and y.

Simplify your equations as far as possible.

Answer **(b)** First equation.....

Second equation..... [4]

---

13 The graph of $y = 13 - 8x - x^2$ can be expressed in the form of $y = -(x + h)^2 + k$ where h and k are rational numbers.

Find the value of h and the value of k.

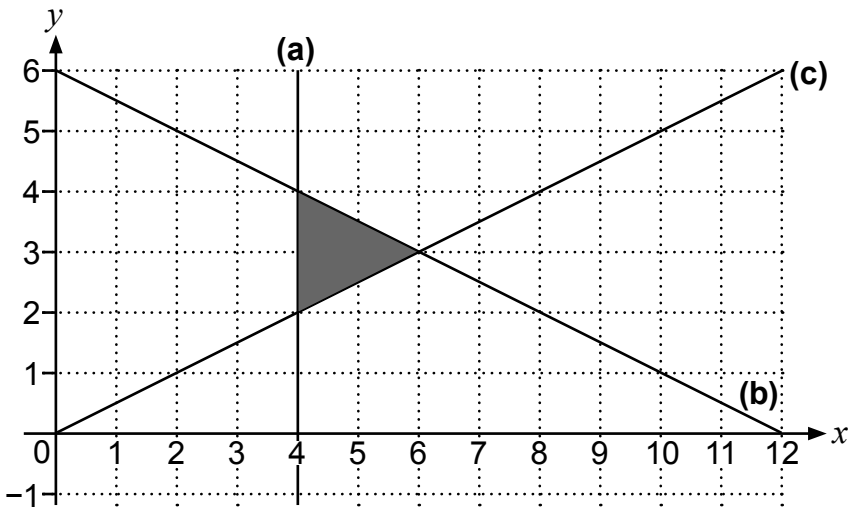
Answer h = ... and k = ... [3]

14 Solve the inequality

$$-\frac{1}{4}x + 5 \geq 12.$$

Answer ..... [2]

15



Write down the 3 inequalities that define the shaded region.

Answer **(a)** .....

(b) .....

(c) ..... [6]

For Examiner's Use

16 A hollow hemisphere of negligible thickness has a volume of 144π cm^3.

[Volume of a sphere = $\frac{4}{3}\pi r^3$ and the surface area of a sphere = $4\pi r^2$]

Calculate

(a) its radius,

Answer **(a)** .....cm [2]

(b) the surface area of the hollow hemisphere. (Leave your answer in terms of π)

Answer **(b)** ..... cm^2 [2]

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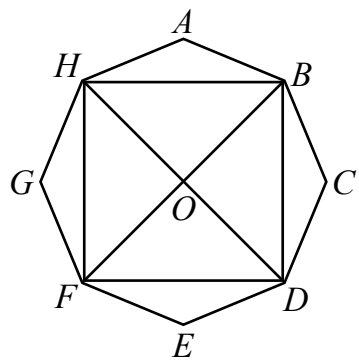
17 The regular octagon given below has the diagonals BF and HD intersecting at O with $OB = OD = OF = OH$.

NOT TO SCALE



(a) (i) What type of a triangle is triangle ABH?

(in terms of the lengths of its sides)

Answer **(a)(i)** ..... [1]

(ii) What type of triangle is triangle BOH?

(in terms of the sizes of its angles)

Answer **(a)(ii)** ..... [1]

(b) What type of quadrilateral is

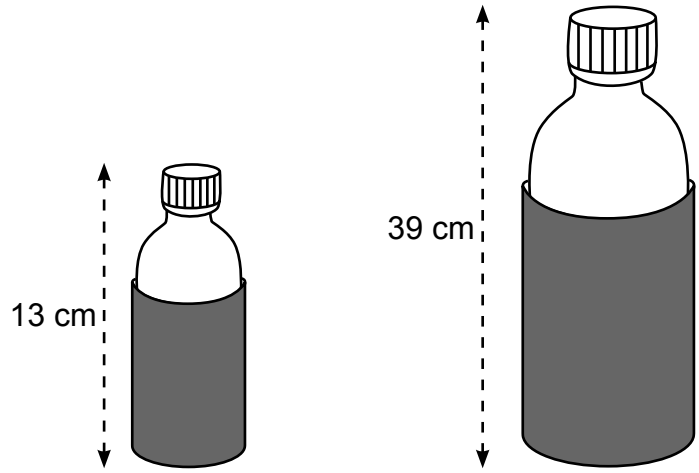
(i) $ABOH$,

Answer **(b)(i)**..... [1]

(ii) $BDFH$?

Answer **(b)(ii)**..... [1]

18 A liquid is sold in plastic bottles of two sizes.



The two bottles are exactly similar in shape.

Their heights are 13 cm and 39 cm.

(a) Find the ratio in the form 1 : n, of the areas of the plastic used to make the two bottles.

Answer **(a)** 1 : ..... [1]

(b) The smaller bottle holds 250 millilitres.
Calculate the volume that the larger bottle holds.

Answer **(b)** .....ml [2]

For Examiner's Use

19 In a toy factory, three machines, A, B and C, produce trucks which are identical except for their colour.

Of the combined output of the machines, A produces one quarter which are red, B produces one third which are blue and C produces the remainder which are yellow.

(a) If one truck is taken at random from the combined output, find the probability that it is yellow. Write your answer as a fraction in its lowest terms.

Answer **(a)** ..... [2]

(b) Two trucks are taken together from the combined output.

Using a tree diagram, or otherwise, obtain the probability that one truck is red and the other is blue.

Answer **(b)** ..... [2]

For Examiner's Use

20 Solve the following equations simultaneously

$x - 2y = 3$,

$x^2 - 3y = 18$.

Show all your working.

Answer (..... , ...)

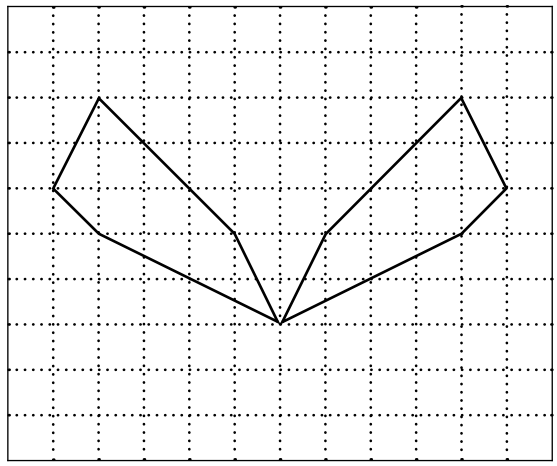
or

(..... , ...) [4]

For Examiner's Use

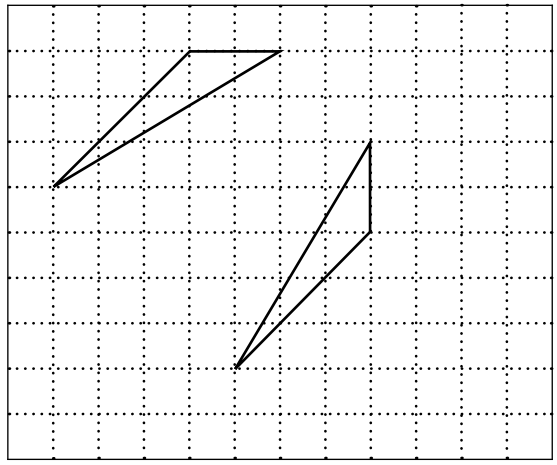
21 **(a)** In each of the following cases draw the line of reflection.

(i)



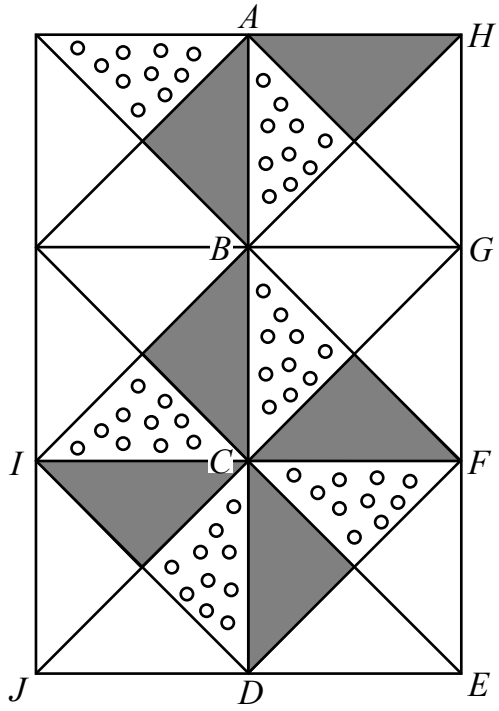
[1]

(ii)



[1]

(b) The diagram shows the pattern of a patch-work quilt.



Describe fully the single transformation which maps

(i) the square $ABGH$ onto square $CBGF$,

Answer **(b)(i)** .....

..... [2]

(ii) the square $BGFC$ onto square $FEDC$.

Answer **(b)(ii)** .....

.....

..... [3]

22 The following data represents the percentage of family income allocated to groceries for a sample of 60 shoppers.

Percentage (x)	Frequency
$16 < x \leq 25$	18
$25 < x \leq 29$	15
$29 < x \leq 40$	22
$40 < x \leq 60$	5

(a) A histogram was drawn to show this information.

The height of the column for the interval $16 < x \leq 25$ was 8 cm.

Calculate the height of

(i) the column $25 < x \leq 29$,

(ii) the column $29 < x \leq 40$,

(iii) the column $40 < x \leq 60$.

[Do not draw the histogram]

Answer **(c)** Height of **(i)** $25 < x \leq 29$.....cm

(ii) $29 < x \leq 40$.....cm

(iii) $40 < x \leq 60$.....cm [4]

(b) Hence, write down the modal class.

Give a reason for your answer.

Answer **(a)**.....

Reason..... [2]

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