Centre Number	Candidate Number	Candidate Name

NAMIBIA SENIOR SECONDARY CERTIFICATE

MATHEMATICS ORDINARY LEVEL 4324/2

PAPER 2 (Extended) 1 hour 30 minutes

Marks 80 **2018**

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.

For Examiner's Use	
Marker	
Checker	

This document consists of **12** printed pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

1 $$p = \frac{27.5 \times 1.85}{2.55 - 0.77}$$

(a) Rewrite the fraction by writing each number correct to 1 significant figure.

Answer **(a)**

[2]

(b) Use your answer to part **(a)** to estimate the value of p.

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

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2 A chemical is stored at −42.3°C. It is heated so that its temperature rises by 87.3°C.

What is its new temperature?

Answer ..... °C [1]

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3 In 2016 Keith exchanged €200 to Namibian dollars (N$).
The exchange rate was €1 = N$17.96.

How much did he receive in Namibian dollars?

Answer N$ ..... [2]

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4 The distance, d km, between Otjiwarongo and Omuthiya is 350 km, correct to 2 significant figures.

Complete the statement below about distance, d.

Answer ..... km ≤ d < ..... km [2]

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5 A bottle of cooking oil is sold for N$15.25 in a supermarket. The price includes VAT of 15%.

Calculate the amount of VAT included.

Answer N$ ..... [2]

For Examiner's Use

6 The first three terms of an arithmetic progression are $2x - 1$, $3x - 2$ and $5x + 1$.
Find the value of x.

Answer x = ... [3]

---

7 **(a)** Solve the inequality $-5 \leq 2x + 1 < 5$.

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

(b) Write down

(i) all the integers that satisfy the inequality in **(a)**,

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

(ii) all the whole numbers that satisfy the inequality in **(a)**.

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

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8 Make a the subject of the formula $\sqrt{(b - a)} = c$.

Answer a = ... [2]

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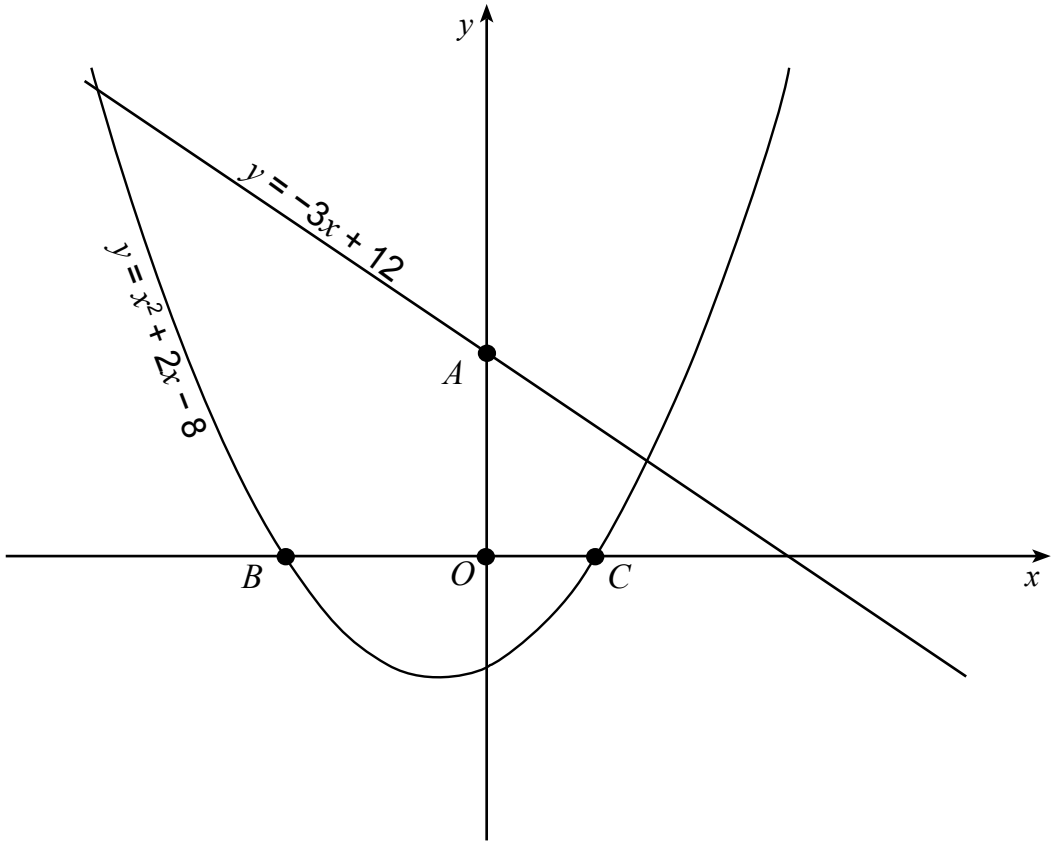
9 Express $-2x^2 + 6x + 4$ in the form $a(x - p)^2 + q$ and write down the values of a, p and q.

Answer a = ... p = ... q = ... [3]

For Examiner's Use

10 The diagram shows the curve $y = x^2 + 2x - 8$ and the straight line $y = -3x + 12$.



(a) Write down the coordinates of point A.

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

(b) Calculate the coordinates of points B and C.

Answer **(b)** B (..... , ...)

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

For Examiner's Use

11 Simplify

(a) $\dfrac{x^3 - x^2y}{xy^2 - y^3}$,

Answer **(a)** ..... [3]

(b) $\left(\dfrac{25}{9x^6}\right)^{-\frac{3}{2}}$.

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

12 Solve the equation $7^{x-3} = 20$.

Answer x = ... [3]

For Examiner's Use

13 The formula for the total surface area, A, of a cylinder of height, h, and a radius of r, is $A = 2\pi r(r + h)$.

(a) If $A = 220$ cm^2, $\pi = \frac{22}{7}$ and $h = 6.5$ cm, show that $A = 2\pi r(r + h)$ simplifies to $22r^2 + 143r - 770 = 0$.

Answer **(a)**

[3]

(b) Solve the equation $22r^2 + 143r - 770 = 0$ to find r, the radius of the cylinder.

Answer **(b)** $r =$ ..... cm [4]

14 The volume, V, of a sphere is proportional to the cube of its radius r. When $V = 1372$ cm^3, $r = 7$ cm.

(a) Write down an equation connecting V and r.

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

(b) Find the radius of a sphere when $V = 400$ cm^3.

Answer **(b)** $r =$ ..... cm [2]

For Examiner's Use

15 A regular polygon has n sides. Each exterior angle is equal to $\frac{n}{40}$ degrees.

(a) Find the value of n.

Answer **(a)** n = ... sides [3]

(b) Find the size of an interior angle of this polygon.

Answer **(b)** .....° [2]

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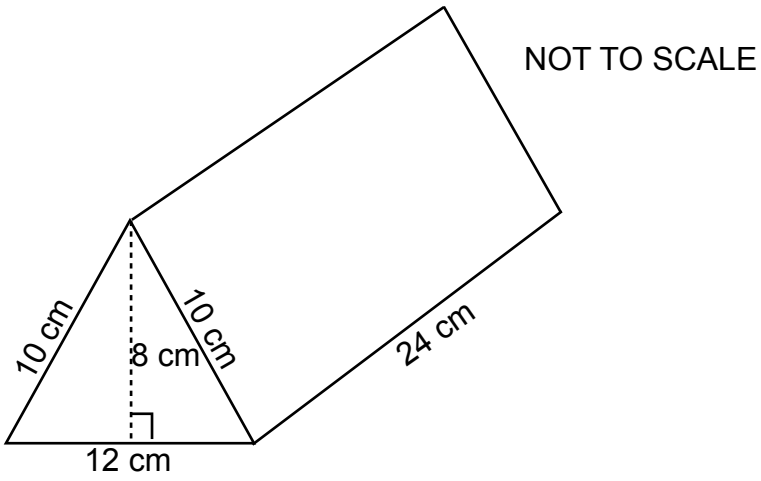
16 The diagram shows a three dimensional shape such that the front is a triangle with sides 10 cm, 10 cm and 12 cm. The perpendicular height of the triangle is 8 cm. The shape has a length of 24 cm.



(a) What is the geometrical name of the shape shown above?

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

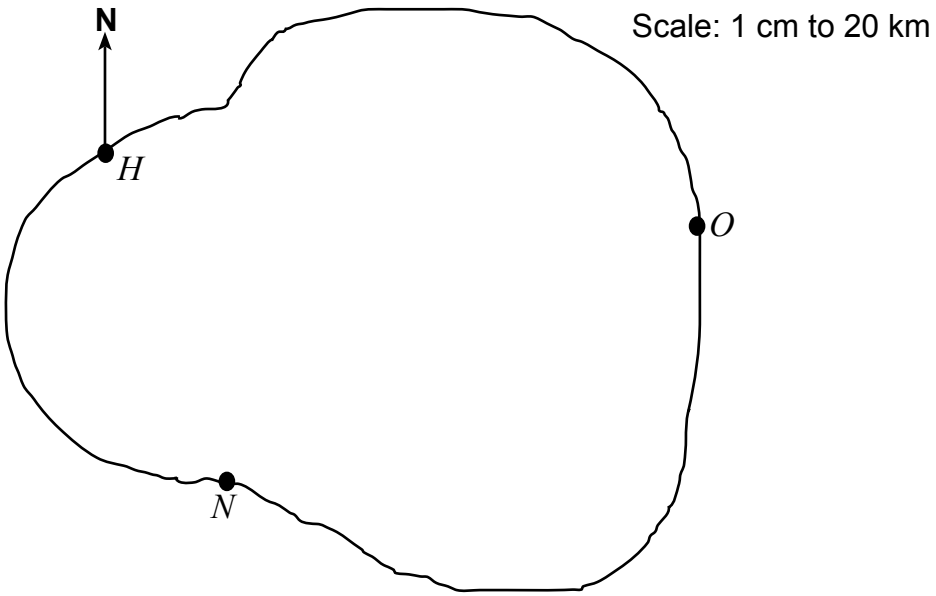
(b) Calculate the volume of the shape shown above.

Answer **(b)** ..... cm^3 [3]

For Examiner's Use

17 The diagram below represents the map of a game farm. The map is drawn to a scale of 1 cm to 20 km.

The points O, H and N mark the positions of three camps on the farm.



(a) By making appropriate measurements, find

(i) the distance, in kilometres, of camp H from camp N,

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

(ii) the bearing of camp N from camp H.

Answer **(a) (ii)** .....° [1]

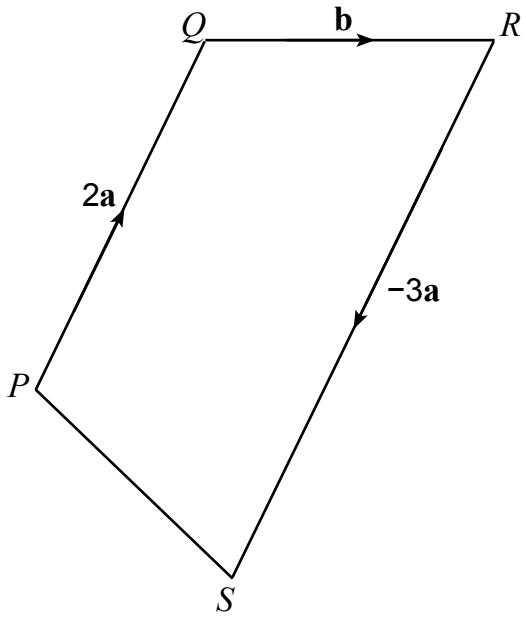
(b) It is intended to build an airfield which is closer to O than H and not more than 70 km from N.

(i) Using straight edge and compasses only, construct the locus of points which are equidistant from H and O. [2]

(ii) Draw the locus of points which are 70 km from N **inside** the game farm. [1]

(iii) Shade the region in the diagram which represents the possible location of the airfield. [1]

18



NOT TO SCALE

The diagram shows the quadrilateral $PQRS$ such that $\overrightarrow{PQ} = 2\mathbf{a}$, $\overrightarrow{QR} = \mathbf{b}$ and $\overrightarrow{RS} = -3\mathbf{a}$.

(a) What is the special name given to the quadrilateral $PQRS$?

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

(b) Express $\overrightarrow{SP}$ in terms of $\mathbf{a}$ and $\mathbf{b}$, giving your answer in its simplest form.

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

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19 The results of 35 learners obtained in a Mathematics test is presented in a frequency table below.

Marks	1	2	3	4	5
Frequency	1	4	7	8	15

Find the,

(a) median mark,

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

(b) modal mark,

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

(c) mean mark.

Answer **(c)** ..... [3]

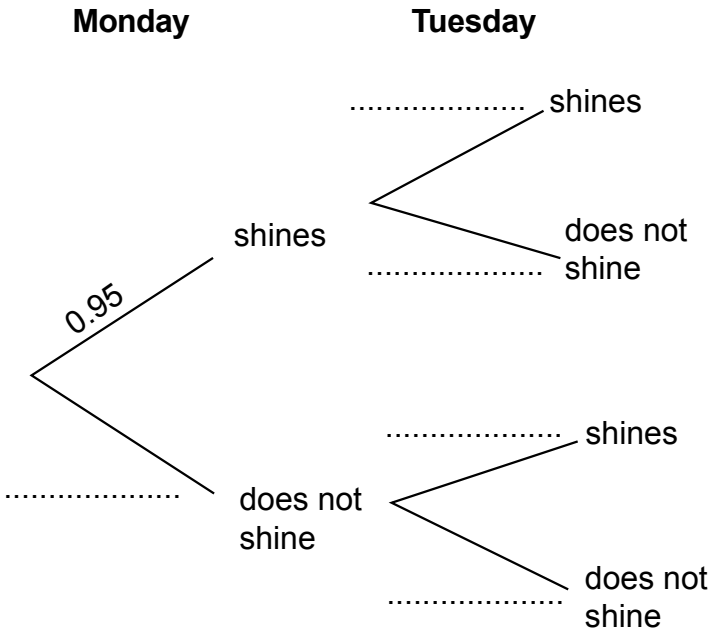
For Examiner's Use

20 The probability that the sun will shine in Windhoek on a Monday in March is 0.95.

If the sun shines, the probability that the sun shines on Tuesday is 1.

If the sun does not shine on the Monday, the probability that it shines on the Tuesday is 0.45.

(a) Complete the probability tree below.



[3]

(b) Find the probability that the sun shines on both days.

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

(c) Find the probability that the sun shines on either Monday or Tuesday.

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

For Examiner's Use

21 The age distribution of the population of Namibia in 2011 is given in the table below.

Age at last birthday	0 − 5	6 − 10	11 − 19	20 − 39	40 − 60	61 − 70	71 − 89
Frequency in thousands	160	557	416	323	290	183	74

(a) If you had to illustrate this data, why would you rather draw a histogram and not a bar chart?

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

..... [1]

(b) Calculate the frequency density of the age range 20 − 39 years.

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

(c) It is given that the height of the column for the age range 0 − 5 is 6.2 cm. Without drawing a histogram, find the height of the column for the age range 20 − 39.

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