

KULLEGG SAN BENEDITTU

Secondary School, Kirkop

Mark

HALF YEARLY EXAMINATION – 2015/2016

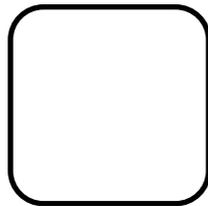
Track 3

FORM 4

MATHEMATICS Track 3

TIME: 20 mins

Non Calculator Paper

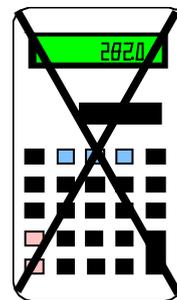


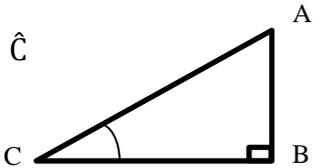
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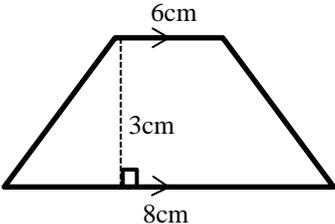
NAME AND SURNAME: _____ CLASS: _____

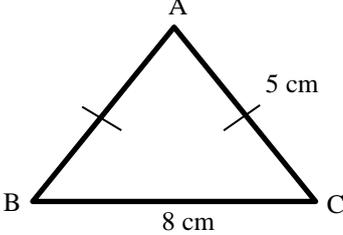
INSTRUCTIONS TO CANDIDATES:

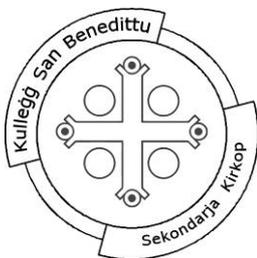
- Answer all questions.
- This paper carries 20 marks.
- **Calculators and protractors are NOT ALLOWED.**



No.	Question	Space for working, if required.
1	Evaluate, giving your answer as a mixed number . $3^2 + 2^{-3}$ Ans: _____	
2	Calculate, giving your answer in standard form : $\frac{5 \times 10^8}{2.5 \times 10^3}$ Ans: _____	
3	Simplify: $\frac{20x^2y^5}{2xy^{-1}}$ Ans: _____	
4	Find x : $3^x = \frac{1}{9}$ Ans: _____	
5	Evaluate: $13.7 \times 7 + 13.7 \times 3$ Ans: _____	
6	Factorise: $9x^2 - 16$ Ans: _____	
7	If $\tan \hat{C} = \frac{5}{12}$, find $\sin \hat{C}$ <div style="text-align: center;">  </div> Ans: _____	

8	<p>I have a bag of marbles which I can share equally among 2, 3 and 7 children. What is the least number of marbles that I can have in the bag?</p> <p style="text-align: right;">Ans: _____ marbles</p>	
9	<p>Make r subject of the formula:</p> $V = \pi r^2 h$ <p style="text-align: right;">Ans: _____</p>	
10	<p>Write down the equation of a line passing through the points (0,2) and (3,5)</p> <p style="text-align: right;">Ans: _____</p>	
11	<p>The volume of a prism is 280 cm^3. Find the area of the cross-section if the length is 14 cm.</p> <p style="text-align: right;">Ans: _____ cm^2</p>	
12	<p>A book costs €25 and is sold at €10. Work out the percentage loss.</p> <p style="text-align: right;">Ans: _____ %</p>	
13	<p>What sum of money is invested to get a simple interest of €50 at 5% p.a. for 5 years?</p> <p style="text-align: right;">Ans: € _____</p>	
14	<p>Work out the area of this shape.</p>  <p style="text-align: right;">Ans: _____ cm^2</p>	

15	Work out $6 \times 3^2 + 2$ Ans: _____	
16	Factorise: $x^2 + 5x - 6$ Ans: _____	
17	What is the height of the triangle?  Ans: _____ cm	
18	Give the gradient of the line whose equation is $2y - 5 = 8x$ Ans: _____	
19	Which fraction is not equivalent to 0.3? $\frac{3}{10}$, $\frac{1}{3}$, $\frac{6}{20}$, $\frac{15}{50}$ Ans: _____	
20	Write down the Logo Commands using the repeat command to draw a square of side 50 turtle steps . Ans: _____	



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Track 3

FORM 4

MATHEMATICS Track 3

TIME: 1 hr 40 mins

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Main	NC	Global Mark
Max. Mark	5	6	3	3	9	6	5	6	8	6	8	6	9	80	20	100
Mark																

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NAME AND SURNAME: _____ CLASS: _____

INSTRUCTIONS TO CANDIDATES:

- Answer all questions.
- This paper carries 80 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1. a) Express 154 and 165 as a product of their prime factors.

Ans: $154 =$ _____ $165 =$ _____

b) Hence or otherwise find (i) the LCM and (ii) the HCF of 154 and 165.

Ans: (i) LCM = _____

(ii) HCF = _____

(5 marks)

2. The table below shows the number of English speaking persons in a number of countries.

Country	Number of English speakers
Australia	1.52×10^7
Canada	1.77×10^7
Jamaica	2.4×10^6
New Zealand	3.2×10^6
USA	2.25×10^8
UK	5.68×10^7
Guyana	4.8×10^5

a) Which of these countries has the largest number of English speakers?

b) Which country has an English speaking population of almost half a million?

c) What is the difference in the number of English speakers between USA and UK?
(Give your answer in standard form).

d) List the countries in order, start with the country having the **least** number of English speakers.

(6 marks)

3. The population of a town grows by 13% in one year and by 16% in the next year. What is the overall percentage increase?

Ans: _____

(3 marks)

Name : _____ Class : _____

Track 3

4. Convert:

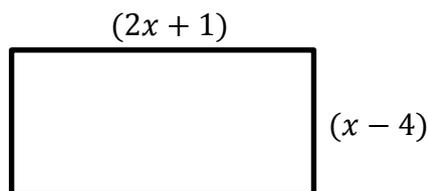
a) $2500 \text{ cm} = \underline{\hspace{2cm}}$ km.

b) $536 \text{ cm}^2 = \underline{\hspace{2cm}}$ m²

c) $35 \text{ m}^3 = \underline{\hspace{2cm}}$ cm³

(3 marks)

5. a)



i) Write down an expression for the area of the rectangle.

Ans: _____

ii) Given that $x = 10 \text{ cm}$, find the area of the rectangle.

Ans: _____ cm²

b) Factorise fully i) $3x^2 - 6x$

Ans: _____

ii) $25x^2 - 81y^2$

Ans: _____

iii) $3p^2 + 12p - 36$

Ans: _____

(9 marks)

6. The price of a house increases by 15% each year. The value of a house in 2015 was €150,000.

a) What was the value of the house in 2014 correct to the nearest €1000?

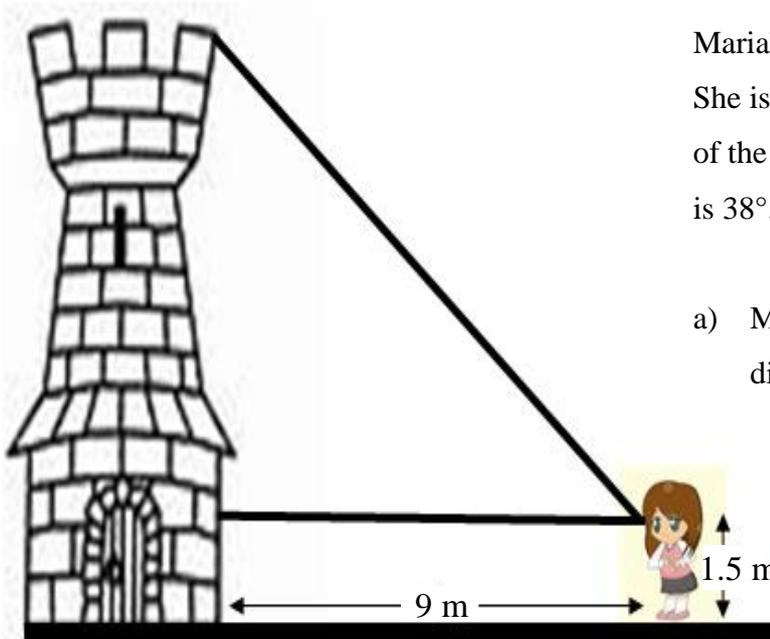
Ans: _____

b) What will the value of the house be in 2016?
(Do NOT round your answer).

Ans: _____

(6 marks)

7.



Mariah is standing 9 m away from a tower. She is 1.5 m tall and the angle of elevation of the top of the tower from Mariah's eyes is 38° .

a) Mark the angle of elevation on the diagram.

b) Find the height of the tower correct to 3 significant figures.

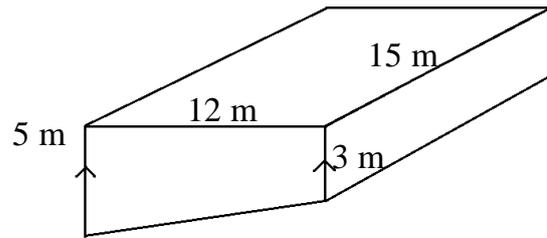
Ans: _____ m

c) Mariah gets closer to the tower. What happens to the angle of elevation?

(5 marks)

8. A pool has the cross-section in the form of a trapezium.

a) Find the area of cross-section.



Ans: _____ m²

b) The length of the pool is 15 m. Work out the volume of the pool.

Ans: _____ m³

c) How many litres of water are needed to fill the pool?

Ans: _____ litres

(6 marks)

9. Make x the subject of the formula:

a) $x(a - b) = 3$

Ans: _____

b) $x^2y = a$

Ans: _____

c) $\sqrt{bx} = c$

Ans: _____

d) $ax + t = rt + bx$

Ans: _____

(8 marks)

10. Mr Millionaire inherited €720,000,000. He is going to invest:

* half of the sum of money at 5% p.a. simple interest for five years

* the remaining half of the sum of money at 2% p.a. compound interest for 5 years

Find the total interest gained after 5 years.

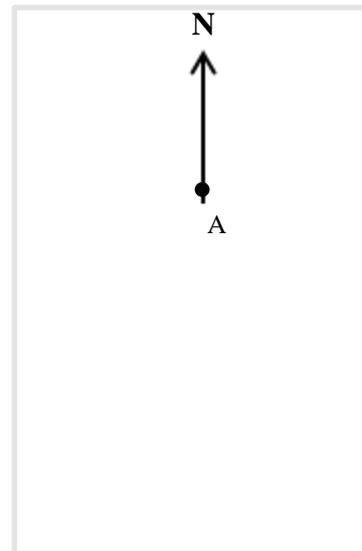
Ans: _____

(6 marks)

11. Mark starts from point A. He walks a distance of 5 km West and then 13 km South to point B.

a) Continue the rough sketch to show Mark's journey.

b) Mark walks back from B to A. Calculate the distance AB correct to 1d.p.



Ans: _____ km

c) Find the bearing of B from A. Give your answer to the nearest degree.

Ans: _____

(8 marks)

12. The formula for the area of a trapezium can be written as $A = \frac{(a + b)h}{2}$

a) Make a the subject of the formula.

Ans: _____

b) Find the value of length a given that a trapezium has an area of 25 cm^2 , its height h is 5 cm and length b is 3 cm .

Ans: _____ cm

(6 marks)

13. a) Complete the table for $y = 2x + 5$ for the values of x from -3 to 3 .

x	-3	-2	-1	0	1	2	3
$2x$							
$+5$							
y							

b) Plot the graph of $y = 2x + 5$ using a suitable scale.

c) Use the graph to find:

i) the value of x when $y = 6$

Ans: $x =$ _____

ii) the value of y when $x = 0.2$

Ans: $x =$ _____

d) Which one of the following lines is parallel to the graph with equation $y = 2x + 5$?

A) $2x + 2y = \frac{1}{2}$

B) $y + 2x = 8$

C) $y - 2x = 7$

(9 marks)

