

KULLEGG SAN BENEDITTU Secondary School, Kirkop

Mark

HALF YEARLY EXAMINATION – 2016/2017

Track 2

FORM 4

MATHEMATICS

TIME: 20 mins

Non Calculator Paper

Mark

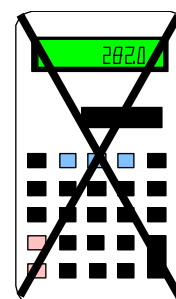
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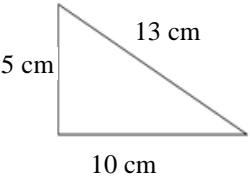
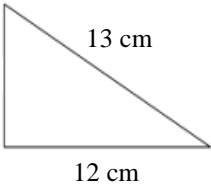
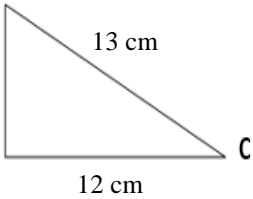
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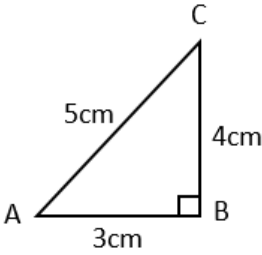
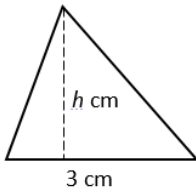
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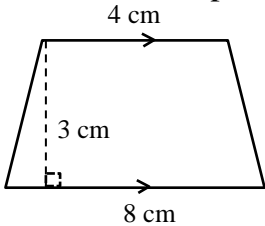
Instructions to Candidates

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

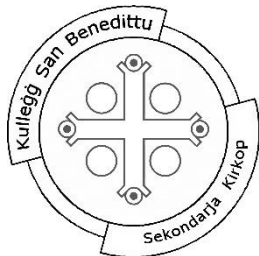


No.	Question	Space for working, if required.
1	Write: <i>eight thousand five hundred and four</i> in figures. Ans: _____	
2	Express 36 as a product of prime factors. Ans: _____	
3	Simplify: $a^4 \times a^{-3}$. Ans: _____	
4	A calculator costs €39.90 . Find the cost of 10 calculators. Ans: € _____	
5	Which of the triangles A, B and C is right-angled ? <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>A</p> </div> <div style="text-align: center;">  <p>B</p> </div> <div style="text-align: center;">  <p>C</p> </div> </div> Ans: _____	
6	The number 2.358×10^{-3} is in standard form. Write it as an ordinary number . Ans: _____	

7	<p>Which one of the following is correct?</p> <p>A) $\tan A = \frac{3}{4}$ B) $\tan C = \frac{3}{5}$ C) $\tan C = \frac{3}{4}$</p>  <p>Ans: _____</p>	
8	<p>Simplify: $3p - 12 - 8p + 8$</p> <p>Ans: _____</p>	
9	<p>The area of this triangle is 12 cm². What is its height?</p>  <p>Ans: _____ cm</p>	
10	<p>Work out: $2\frac{6}{10} - 1\frac{1}{2}$</p> <p>Ans: _____</p>	
11	<p>Factorise completely: $8xy - 16x$</p> <p>Ans: _____</p>	
12	<p>Write 0.8 as a fraction in its lowest terms.</p> <p>Ans: _____</p>	

13	<p>What is the area of this trapezium?</p>  <p>Ans: _____ cm²</p>	
14	<p>Calculate $\frac{8}{9} \div \frac{2}{3}$</p> <p>Ans: _____</p>	
15	<p>What fraction of a day is 16 hours? Express your fraction in its lowest terms.</p> <p>Ans: _____</p>	
16	<p>A map is drawn on a scale of 1 : 2,000. What is the map distance when the actual distance is 11,000 cm?</p> <p>Ans: _____ cm</p>	
17	<p>What is the Least Common Multiple (LCM) of 16 and 12?</p> <p>Ans: _____</p>	
18	<p>Write a prime number between 40 and 50.</p> <p>Ans: _____</p>	
19	<p>Express 20 cm² in mm²</p> <p>Ans: _____ mm²</p>	
20	<p>Six window cleaners take 20 hours to clean all windows. How long do five window cleaners take to clean the same number of windows?</p> <p>Ans: _____ hours</p>	

END OF NON CALCULATOR PAPER



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HALF YEARLY EXAMINATION – 2016/2017

Track 2

FORM 4

MATHEMATICS

TIME: 1 hr 40 mins

Main Paper

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

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Name: _____

Class: _____

INSTRUCTIONS TO CANDIDATES:

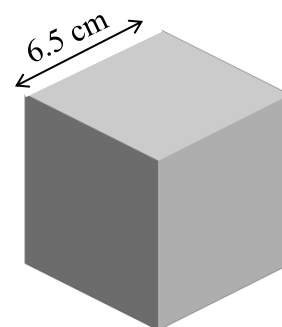
Read all the questions carefully before you start answering.

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

1. a) How many **faces** does a cube have?

Ans: _____ faces

b) Work out the total surface **area** of this cube?



Ans: _____ cm²
(4 marks)

2. a) Simplify:

i) $p \times q^0$

ii) $2^3 \times (a^7)^3$

Ans: _____

Ans: _____

b) Find the values of x and w in $2^x \times 11^w = 968$

Ans: $x =$ _____ and $w =$ _____

(6 marks)

3.

$a = 3 \times 10^7$ and $b = 2 \times 10^{-2}$

a) Calculate the value of $a \times b$. Give your answer in **standard form**.

Ans: _____

b) Calculate the value of $a + b$. Give your answer as an **ordinary number**.

Ans: _____

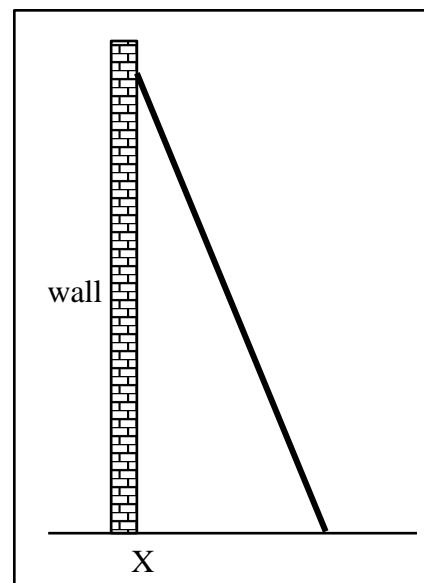
c) Work out: $\frac{a \times b}{a + b}$. Give your answer as an ordinary number correct to **2 decimal places**.

Ans: _____

(7 marks)

4. A ladder PQ is 5.6 m long. It stands on a horizontal ground and leans against a vertical wall. The foot of the ladder, Q, is 1.5 m away from the foot of the wall X.

- a) On the diagram mark point P, point Q and the two measurements.
- b) Calculate the angle that the ladder makes with the ground ($\angle PQX$).



Ans: _____

(4 marks)

5. In a store, people work from 7:30 a.m. to 4:15 p.m.
Lunch break is 45 minutes long. Each of the **two** coffee breaks is 15 minutes long.

- a) Calculate, in minutes, the total time they spend **at work** (including breaks).

Ans: _____ minutes

- b) Calculate the total **break** time in hours and minutes.

Ans: _____ hour _____ minutes

- c) Write down the following ratio in the form $k : 1$.
*the total time they spend **at work** (including breaks) : the total **break** time in minutes*

Ans: _____ : 1

(7 marks)

6. a) On her phone, Jenny can text 32 words per minute.
She sends 8 SMSs with an average of 80 words each. How long does it take her?

_____ minutes

- b) Two piles consist of paper $\frac{7}{1000}$ cm thick. The **taller** pile is $10\frac{1}{2}$ cm high.



- i) Work out $10\frac{1}{2} \div \frac{7}{1000}$

Ans: _____

- ii) What is the number of sheets in the **taller** pile?

Ans: _____

- iii) The ratio *height of taller pile : height of shorter pile* is **3 : 2**.
Work out the number of sheets of paper in the **shorter** pile.

Ans: _____

(8 marks)

7. a) In the table below, p and q can be several numbers. To get the value of q , p is first multiplied by a number and then another number is added.

p	1	5	10
	3	15	30
q	10	22	37

- i) Complete the formula for p and q .

$$q = \underline{\hspace{2cm}}$$

- ii) What is the value of p when $q = 52$?

Ans:

- b) Make d subject of the formula:

$$k = 4d - 1$$

Ans: $d = \underline{\hspace{2cm}}$

- c) Expand: $-3(4x - 5)$

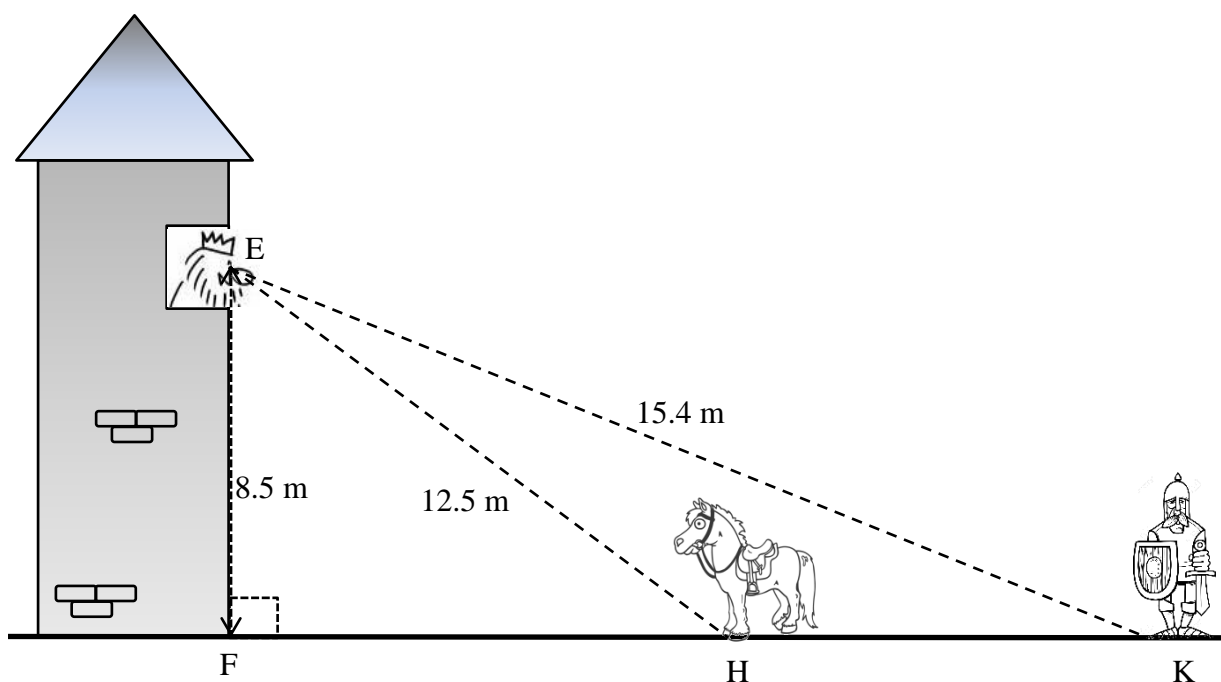
Ans:

- d) Simplify: $\frac{6x + 4}{4 - 8x}$

Ans:

(10 marks)

8. King Arthur is looking from his window. His eyes E are 8.5 m vertically above the ground. A horse H and a knight K stand on a horizontal ground. $EH = 12.5$ m and $EK = 15.4$ m.



- a) Use triangle EFH to calculate the distance **FH**.
Give your answer correct to 1 decimal place.

Ans: _____ m

- b) Calculate the distance **FK**, giving your answer correct to 3 significant figures.

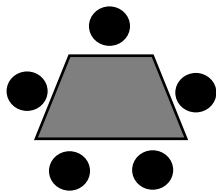
Ans: _____ m

- c) What is the **distance** between the knight and the horse?

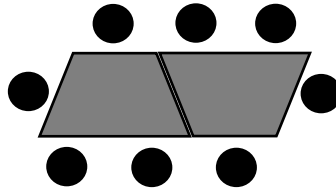
Ans: _____ m

(8 marks)

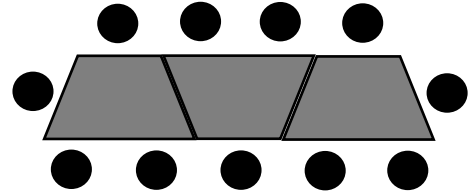
9. In a playschool the teachers set the tables and stools as shown in this diagram.



1 Table



2 Tables



3 Tables

a) Draw a diagram when **4 Tables** are set up.

b) Complete the table.

Number of Tables	1	2	3	4	5	6
Number of Stools	5	8				

c) Write an expression for the **number of stools**, when n tables are used.

Ans: _____

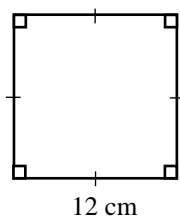
d) Find the number of stools needed when **10 tables** are put together.

Ans: _____ stools

(8 marks)

10. a) Work out the **area** of the following shapes.
When necessary, give your answers correct to **1 decimal place**.

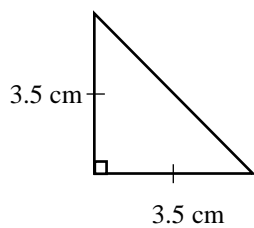
(i)



A **square** of side 12 cm.

Area = _____ cm^2

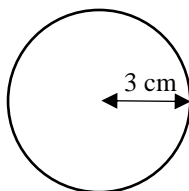
(ii)



A right-angled isosceles **triangle**.

Area = _____ cm^2

(iii)



A **circle** of radius 3 cm.

Area = _____ cm^2

- b) The cross-section of a nut consists of a regular octagon with a circular hollow inside.

Its dimensions are shown in the diagram below.

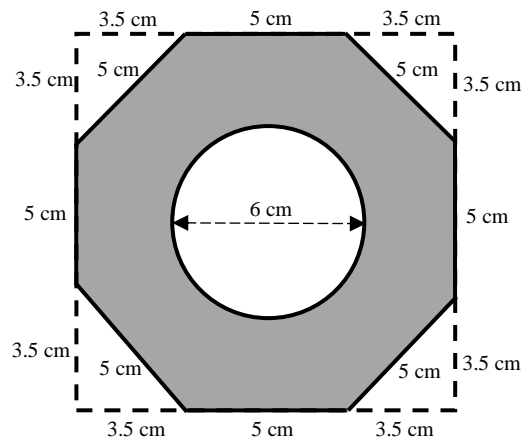


Diagram not drawn to scale

Use your results in *part a*) to find the **area** of cross-section of the nut (shaded).
Give your answer correct to **1 decimal place**.

Area = _____ cm²

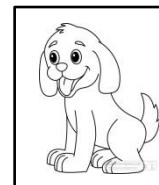
- c) The nut is cast in solid metal. Its thickness is 4.2 cm, as shown in the diagram.
What is the volume of metal used?



Volume = _____ cm³
(11 marks)

11. Teenagers are playing a game in Mdina. There are puppy pictures hidden in the streets. The job of each teenager is to find as much pictures as possible. This frequency table shows the results.

Puppy pictures collected (p)	Frequency
$0 < p \leq 5$	4
$5 < p \leq 10$	3
$10 < p \leq 15$	0
$15 < p \leq 20$	6
$20 < p \leq 25$	2



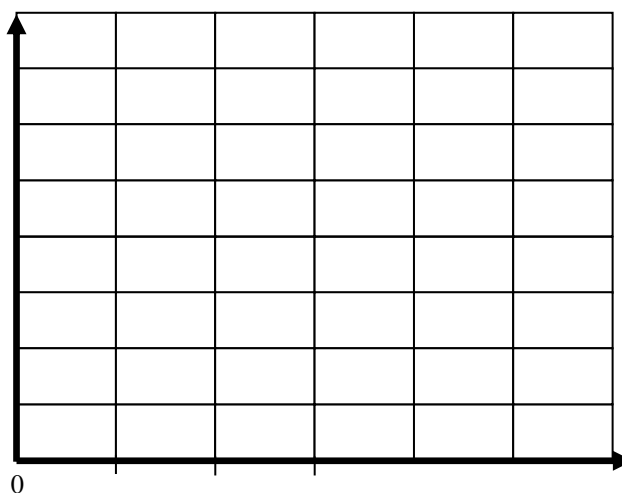
- a) How many teenagers participated in the game?

Ans: _____

- b) How many teenagers collected 10 puppy pictures or less?

Ans: _____

- c) Use the grid below to draw a histogram for the data in the frequency table above.



(7 marks)

END OF EXAM PAPER