



STELLA MARIS COLLEGE, GZIRA  
FORM 1

ANNUAL EXAMINATIONS 2014  
MATHEMATICS

TIME: 2 hrs

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Name: \_\_\_\_\_

Class: \_\_\_\_\_

**ATTEMPT ALL QUESTIONS:**

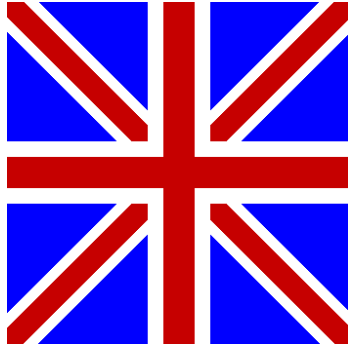
- ✓ Write your answers in the space available on the examination paper.
- ✓ Show clearly all the necessary steps and explanations in your working.
- ✓ Diagrams are **NOT** drawn to scale.
- ✓ The use of calculators is **NOT** allowed.
- ✓ This paper carries a total of 100 marks.

1. Consider the following shapes.

a) On the diagram, show all **axes of symmetry** for each of the following shapes.

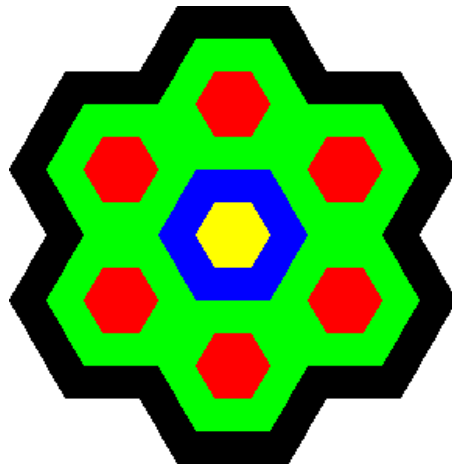
b) State the **order of rotation** for each of the following shapes.

i.



Order of rotation \_\_\_\_\_.

ii.



Order of rotation \_\_\_\_\_.

(2 marks)

2. Work out the following:

a)  $8 \times 2^2 - 10 \div 5$

b)  $450 - (+ 300) + (- 250) - (- 600)$

c)  $\frac{314156.823}{1000000} =$

(3 marks)

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3. Calculate the **areas** of the given fields.

a) Tom has a rectangular piece of land measuring 2000m by 250m.

b) Sam owns a triangular piece of land of base 150m and height 6000m.

c) Robert two pieces of land. One land measures 45m by 45m. His second land measures 150m by 300m.

d) Who owns the **largest amount of land** Tom, Sam or Robert?

(4 marks)

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4. Complete these sums.

a) Circle the **smallest number**.

0.35, 0.305, 3.05, 0.035, 3.5

(1 mark)

b) Circle the decimals which have the same value as  $\frac{3}{5}$

0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9

c) Circle the **two** fractions equal to  $\frac{2}{3}$

$\frac{4}{5}$ ,  $\frac{10}{15}$ ,  $\frac{2}{6}$ ,  $\frac{3}{2}$ ,  $\frac{6}{9}$ ,  $\frac{4}{12}$

(4 marks)

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5. Work out the following:

i.  $4\frac{3}{8} + 2\frac{5}{16}$

ii.  $8\frac{3}{10} - 5\frac{7}{20}$

(2 marks)

iii.  $\frac{9}{25} \times \frac{45}{90} \times \frac{100}{135}$

iv.  $\frac{35}{200} \times \frac{40}{75} \div \frac{20}{100}$

(4 marks)

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6. Here is a list of numbers:

**- 8, - 5, - 2, - 1, 1, 3, 6**

a) Choose two numbers from the list which **add up to 1**.

b) Choose two numbers from the list that have a **difference of -6**.

c) Choose two numbers from the list that have a **product of 5**.

(3 marks)

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7.

a) The three-digit number **495** has **9** and **5** as factors.

Write another number between 400 and 500 that has **9** and **5** as **factors**.

b) The three numbers missing are all **prime numbers** bigger than 3. Fill in the gaps.

$$\square \times \square \times \square = 455$$

c) Find the **LCM** and **HCF** of **175** and **200**.

**LCM** \_\_\_\_\_ **HCF** \_\_\_\_\_

(4 marks)

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8. Use a **ruler**, a **protractor** and a **compass** to make an accurate copy of the diagrams described below.
- a) Construct the following triangles.
- i. Triangle PQR where PQ measures 8cm, angle PQR  $55^\circ$  and angle RPQ  $45^\circ$ .

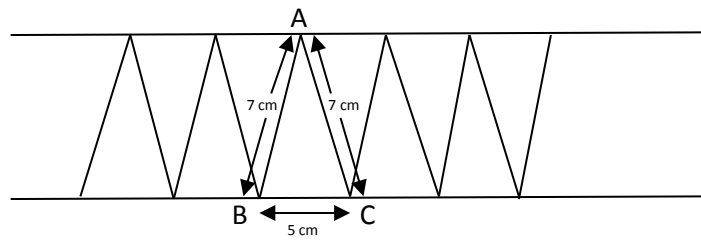
(3 marks)

- ii. Triangle XYZ where angle XYZ measures  $70^\circ$ , XY measures 6cm and YZ measures 8cm.

(3 marks)

b) Below is the sketch of a model bridge.

i. Make an accurate copy of **one of the triangles**, using the lengths shown.



(3 marks)

ii. By finding the midpoint of the base of triangle ABC, draw a perpendicular line which passes through vertex A and the midpoint.  
Hence, **measure the height of triangle ABC.**

Height \_\_\_\_\_ .  
(1 mark)

iii. Using the value obtained for the height of triangle ABC, calculate the **area of triangle ABC.**



(2 marks)

9. The shoe sizes for 12 girls and 12 boys were recorded.

<b>GIRLS</b>	5	6	9	6	6	4	8	6	6	7	8	7
<b>BOYS</b>	6	8	7	10	9	8	7	8	8	9	6	11

a. Find the **mode** for both the girls and the boys.

b. Find the **median** for both the girls and the boys.

c. Find the **range** for both the girls and the boys.

d. Use these values to state why the **mode** is more useful than the **mean** when measuring the average shoe size.

(4 marks)



10. Work out the following:

- a) A factory makes matches that are 3.55 cm long. When the matches made by a faulty machine are 0.15 cm longer or shorter than 3.55 cm, then they are rejected. The lengths of some matches are shown below

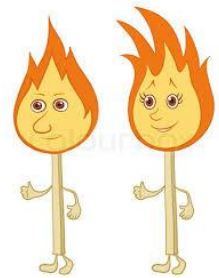
3.695 cm, 3.715 cm, 3.485 cm, 3.39 cm, 3.7 cm, 3.605 cm.

Circle the faulty matches.

- b) 950 000 matches are produced per day. If  $\frac{1}{50}$  of the matches produced per day are classified as faulty and discarded, how many **matches are thrown away?**

- c) Work out the number of **faulty matches produced in a week** if the factory does not operate on Saturdays and Sundays.

- d) Work out the number of **faulty matches produced in a year** of 52 weeks.



(4 marks)

11. Work out the following:

a) Find the next four terms of this sequence.

2, 9, 16, 23, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

(2 marks)

b) Describe the **term-to-term rule** of the sequence below.

84, 73, 62, 51, ...

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c) Consider the following number sequence

5, 8, 11, 14, 17, ...

i. What is the **position-to-term rule** of the sequence?

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ii. What is the 10<sup>th</sup> term of the sequence?

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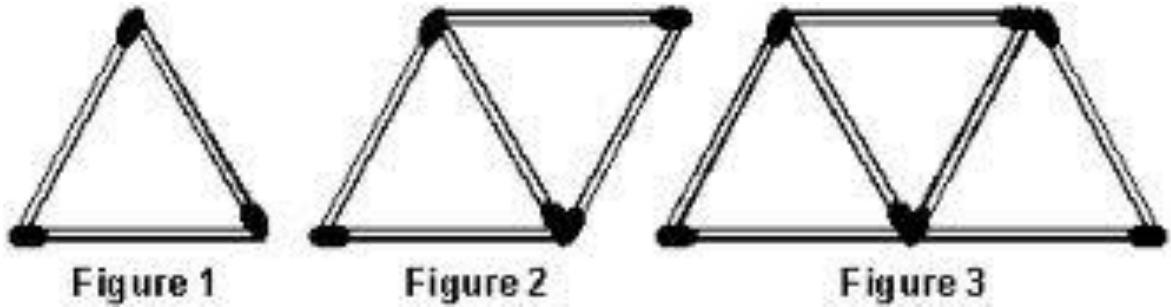
(3 marks)

iii. Generate the next four terms of the sequence.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.

(2 marks)

d) A sequence is generated by a set of matchsticks as shown in the set of figures below.



i. Complete the table.

<b>POSITION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>MATCHSTICKS</b>				

ii. What is the **term-to-term rule** of the sequence?

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iii. What is the **position-to-term rule** of the sequence?

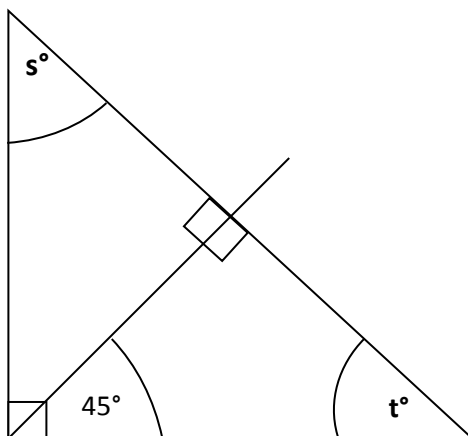
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iv. What is the 100<sup>th</sup> term of the sequence?

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(4 marks)

12. Work out the values of the missing angles  $s^\circ$  and  $t^\circ$  for the diagram below giving reasons for your answers.



$s^\circ =$  \_\_\_\_\_

$t^\circ =$  \_\_\_\_\_

(4 marks)



14. a) The list below shows the ages of **20 people** seriously injured last year.

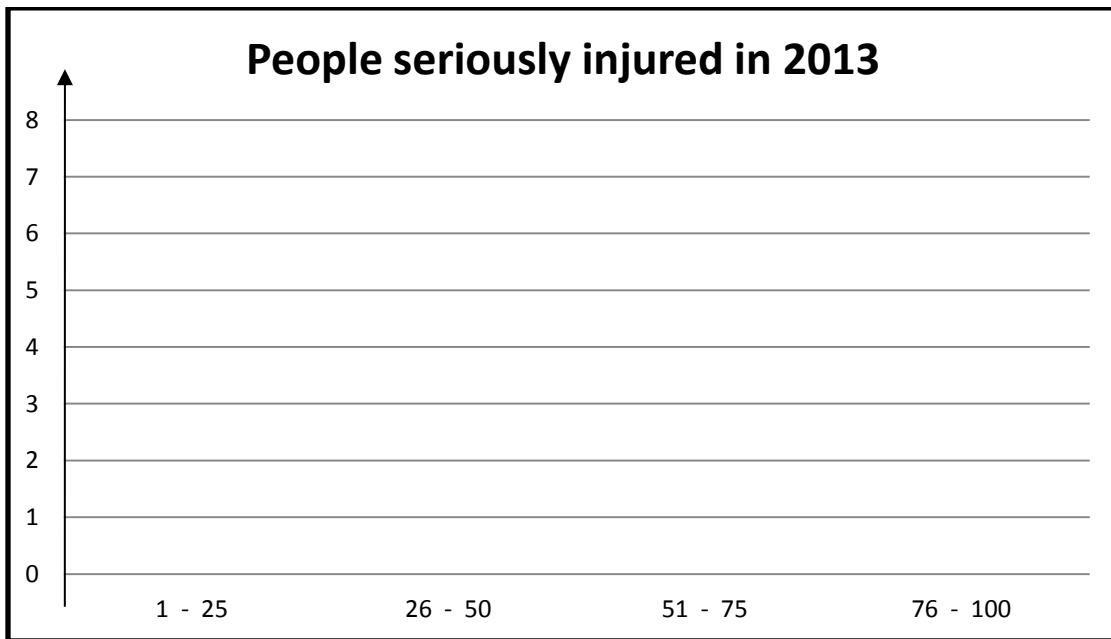
**10, 1, 50, 78, 88, 26, 25, 11, 25, 40,**  
**45, 39, 89, 56, 5, 43, 78, 92, 38, 87**

i. Complete the **tally chart** and **frequency table** shown below.

AGE GROUPS	TALLY CHART	FREQUENCY
1 - 25		
26 - 50		
51 - 75		
76 - 100		

(1 mark)

ii. Draw a **grouped frequency diagram** to illustrate the data.



(2 marks)

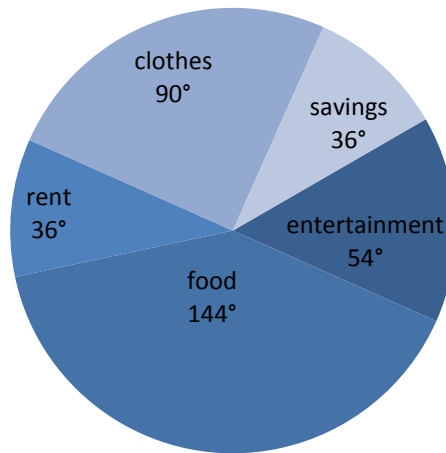
iii. Which **two age groups** have the same number of injured people?

\_\_\_\_\_ , \_\_\_\_\_ .

(1 mark)

- b) Simon works with a private company. His income is **€240 per week**. The pie chart below shows the way he spends his money every month.

### Monthly Salary

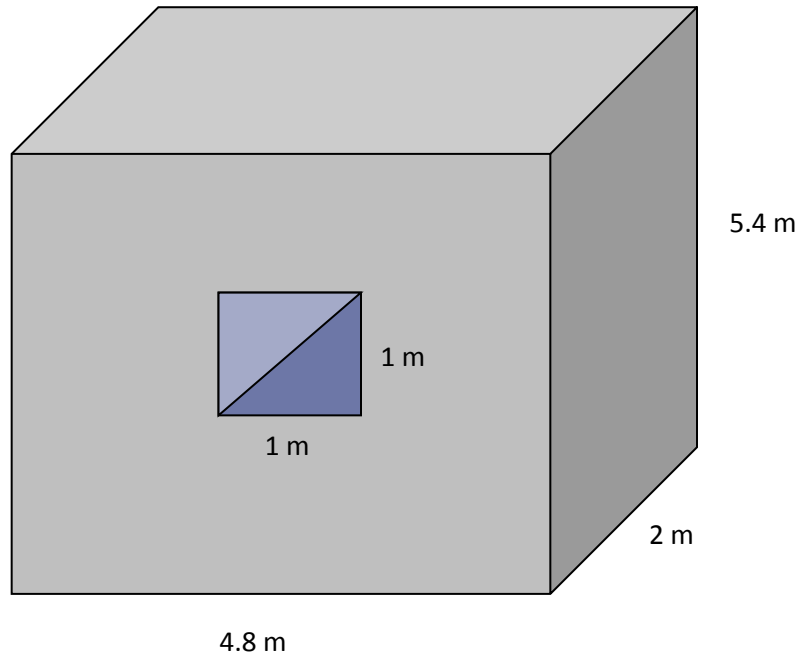


If Simon earns his salary every fourth week of the month,

- i. Work out **Simon's monthly salary**.
  
  
  
  
  
  
  
  
  
  
- ii. How much money does Simon spend on **food**?
  
  
  
  
  
  
  
  
  
  
- iii. What might be the amount of money which he **saves per month**?

(6 marks)

15. A concrete brick of dimensions 2 m by 4.8 m by 5.4 m is being used on a building site.



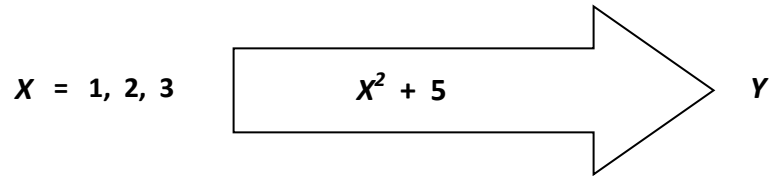
If the brick has a ventilation tube measuring 1 m by 1 m by 2 m drilled right through it, what is the **amount of concrete** needed to produce such a brick?

(3 marks)



16. Work out these problems.

a) Find the **Youtputs** for the **Xinputs 1, 2, 3** of the machine below.



- i. Input 1, Output \_\_\_\_\_
- ii. Input 2, Output \_\_\_\_\_
- iii. Input 3, Output \_\_\_\_\_

(1.5 marks)

b) Simplify the following expressions.

i.  $3ab + a - b + 4ab - b$

ii.  $2w + 4v - 2 + 3w - 2v + 6$

iii.  $5d + 10d^2 + 8d^2 - 11d + 2d^2$

iv.  $7(4f + 3) + 5(6f - 2)$

(3 marks)

v.  $7(10y - 2) - 10(7y - 9)$

(4 marks)

c) Solve the following equations.

i.  $5(x - 3) = 25$

(1.5 marks)

ii.  $3(x + 1) + 5(x + 5) = 44$

(3 marks)

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17. Doctors sometimes use this formula to calculate how much medicine to give a child.

$$c = \frac{ay}{12 + y}$$

$c$  is the correct amount for a child, in ml

$a$  is the amount for an adult, in ml

$y$  is the age of the child, in years

Peter who is 4 years old needs some medicine. If the amount for an adult is 20ml, use the formula above to work out the correct amount for Peter.

(3 marks)

18. On the grid provided and using a scale of 2cm represents 1 unit, plot out the following coordinates and join A to H.

A	B	C	D	E	F	G	H
$(-2, -6)$	$(-1, -4)$	$(-1, 4)$	$(0, 7)$	$(1, 4)$	$(1, -4)$	$(2, -6)$	$(-2, -6)$

(4 marks)

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**END OF PAPER**