



St. Nicholas College  
Boys Secondary Naxxar

**BS**  
*Naxxar*

Half-Yearly Examinations  
February 2014

**FORM 3**

**MATHEMATICS TRACK 2**  
**Main Paper**

**TIME: 1 h 30 mins**

Question	1	2	3	4	5	6	7	8	9	10	11	Non Calc.	Main	Total
Mark														

**DO NOT WRITE ABOVE THIS LINE**

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

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

- Answer ALL questions.
- This paper carries a total of 75 marks.
- Calculators and mathematical instruments are allowed, but all necessary working must be shown.

1. (a) Change  $3\frac{2}{5}$  into an improper fraction. Ans. \_\_\_\_\_

(b) Change  $\frac{17}{4}$  into a mixed number. Ans. \_\_\_\_\_

(c) Put these fractions in order of size, **smallest first**.

$$\frac{9}{10}, \frac{3}{4}, \frac{4}{5}, \frac{1}{2}$$

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

(d) Complete:

$$\frac{6}{32} = \frac{3}{\boxed{\phantom{00}}} = \frac{\boxed{\phantom{00}}}{64} = \frac{36}{\boxed{\phantom{00}}}$$

(7 marks)

2. (a) The distance from the Earth to the Sun is  $9.3 \times 10^7$  miles.  
Write this number as **an ordinary number**.

Ans. \_\_\_\_\_ miles

- (b) Work out the value of  $(1.3 \times 10^{13}) \times (6.1 \times 10^{-3})$ . Give your answer in **standard form**.

Ans. \_\_\_\_\_

- (c) In 2012, the population of Italy was 59 477 000 and the population of France was 65 632 000. How many **more** people were living in France than in Italy?  
Give your answer in **standard form**.

Ans. \_\_\_\_\_

(4 marks)

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3. (a) **Simplify:**

(i)  $7a - 3 - 5a - 4$

Ans. \_\_\_\_\_

(ii)  $4a \times 3a$

Ans. \_\_\_\_\_

(iii)  $2c^2 + 7c^2 - c^2$

Ans. \_\_\_\_\_

- (b) Rearrange the formula  $c = 5d - 6$  to make **d** the subject.

Ans. \_\_\_\_\_

(5 marks)

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Name \_\_\_\_\_

Class \_\_\_\_\_

4. (a) Find the values of **a** and **b**:

$$\frac{9}{20} = \frac{a}{100} = b\%$$

Ans. **a** = \_\_\_\_\_, **b** = \_\_\_\_\_%

- (b) Work out: (45% of €4.80) – (35% of €3.60)

Ans. € \_\_\_\_\_

- (c) In a village, 45% of the population is **male**. The total population is 5200.

- (i) What percentage of the population is female?

Ans. \_\_\_\_\_%

- (ii) Find the number of females.

Ans. \_\_\_\_\_ females

- (d) Thomas earns €1740 per month. He receives a rise of 10% in his salary.  
How much will his new monthly salary be?

Ans. € \_\_\_\_\_

(9 marks)

5. (a) Simplify the following ratios:

(i) 14 mm : 4 cm

Ans. \_\_\_\_ : \_\_\_\_

(ii) 9 minutes :  $1\frac{1}{2}$  hours

Ans. \_\_\_\_ : \_\_\_\_

(b) Chris has 56 sweets. He shares them in the ratio 4 : 3 with his sister. Chris takes the **larger** share. How many sweets does Chris take?



Ans. \_\_\_\_\_

(c) The ratio of the **length** of a room to its **width** is 5 : 4. The room is 20 m wide. What is the length of the room?

Ans. \_\_\_\_\_ m

(d) On a map a distance of 450 km is represented by 2 cm. What distance on the map will represent 1125 km?



Ans. \_\_\_\_\_ cm

(9 marks)

6. (a) Each exterior angle of a **regular** polygon is  $15^\circ$ . How many sides does this polygon have?

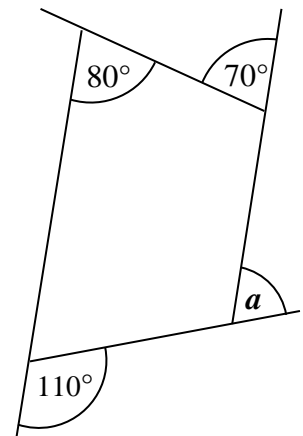
Ans. \_\_\_\_\_

- (b) Find the sum of the **interior** angles of a regular **hexagon**.

Ans. \_\_\_\_\_ °

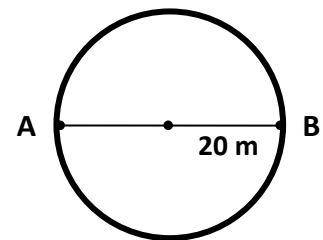
- (c) Find the size of the angle marked  $a$ .

Ans.  $a$  = \_\_\_\_\_ °



(7 marks)

7. The diagram represents a circular running track with a **radius** of 20 m. Martha and Reuben have a race.



- (a) Martha runs **along the diameter** from A to B and back again.  
How much does Martha run?

Ans. \_\_\_\_\_ m

- (b) Reuben starts at A and runs all the way **round the track** to A again.  
How much does Reuben run? Give answer correct to 1 d.p.

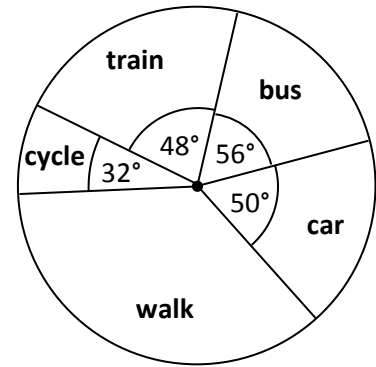
Ans. \_\_\_\_\_ m

- (c) How much further does Reuben run than Martha? Give answer correct to 1 d.p.

Ans. \_\_\_\_\_ m

(5 marks)

8. 720 students were asked how they travelled to school. The pie chart shows the results of this survey.



- (a) How many students travelled to school by bus?

Ans. \_\_\_\_\_ students

- (b) What **fraction** of the students travelled to school by train?  
Give your answer in its lowest terms.

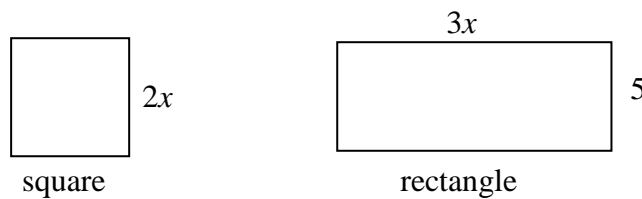
Ans. \_\_\_\_\_

- (c) How many students walked to school?

Ans. \_\_\_\_\_ students

(6 marks)

9. The diagram shows a square and a rectangle. The square has sides of length  $2x$  metres. The rectangle has length  $3x$  metres and width 5 metres.



- (a) Write down and simplify an expression for the perimeter of the **square**.

Ans. \_\_\_\_\_

- (b) Write down and simplify an expression for the perimeter of the **rectangle**.

Ans. \_\_\_\_\_

- (c) The perimeter of the square is **equal** to the perimeter of the rectangle.  
Form an equation and solve it to find the value of  $x$ .

Ans.  $x =$  \_\_\_\_\_

(7 marks)

10. This is a list of the favourite colours of a group of children. The students chose from red (R), green (G), blue (B), yellow (Y) and pink (P).

R B P Y G R B B  
P Y Y B B R Y Y  
B G B G P R R R  
Y B R R B Y G B

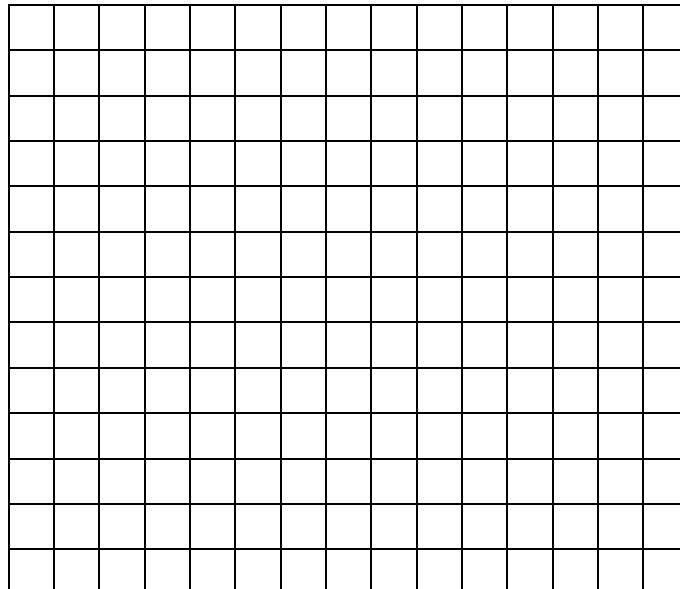
(a) Complete the frequency table for this list.

Colour	Tally	Frequency
Red (R)		
Green (G)		
Blue (B)		
Yellow (Y)		
Pink (P)		

(b) Which is the **most** favourite colour? Ans. \_\_\_\_\_

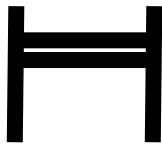
(c) Which is the **least** favourite colour? Ans. \_\_\_\_\_

(d) Draw a bar chart in the grid below to show the above information .

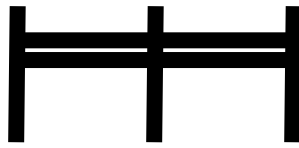


(8 marks)

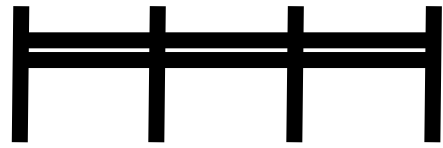
11. Mark builds fences in different lengths using pieces of wood.



Fence length 1



Fence length 2



Fence length 3

(a) Draw fence length 5.

(b) Mark counted the number of pieces he needed to make each fence length. He then drew up the table below. Complete the table to show the number of pieces he would use for lengths 4, 5 and 6.

<b>Fence Length</b>	1	2	3	4	5	6
<b>Number of pieces</b>	4	7	10			

(c) What is the  $n$ th term of this sequence?

Ans. \_\_\_\_\_

(d) Work out the number of pieces of wood needed for **fence length 20**.

Ans. \_\_\_\_\_

(8 marks)

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**END OF PAPER**