MARITZBURG COLLEGE

JUNE 2012

Examiner: S Webley | **MATHEMATICS** | Time: 2 Hrs

Moderator: M Greyling | **FORM 2** | Total: 135

NOTE:

- All questions must be answered.
- Write your name and class on top of your answer booklet.
- Calculators may be used unless otherwise specified, but ALL WORKING DETAILS must be clearly shown.
- Write your answers correct to TWO DECIMAL PLACES unless otherwise specified.
- An Answer Sheet is provided for Questions 7.1.6 and 7.2. This must be detached and handed in inside your answer booklet.

QUESTION 1

Consider the options given:

A - {1 ; 2 ; 3 ; 4 ; 6 ; 12}
B - {12 ; 24 ; 36 ; 48}
C - {2 ; 3}
D - {1}
E - {6}
F - {1 ; 3 ; 6 ; 12 ; 24}

Choose which of the options given above is the best answer for each statement below.
Write only the QUESTION NUMBER and the CORRECT LETTER:
***Each answer can only be used ONCE*.**

1.1 Multiples of 12. (1)
1.2 Perfect number. (1)
1.3 Prime factors of 12. (1)
1.4 All factors of 12. (1)
1.5 Neither prime nor composite. (1)
[5]

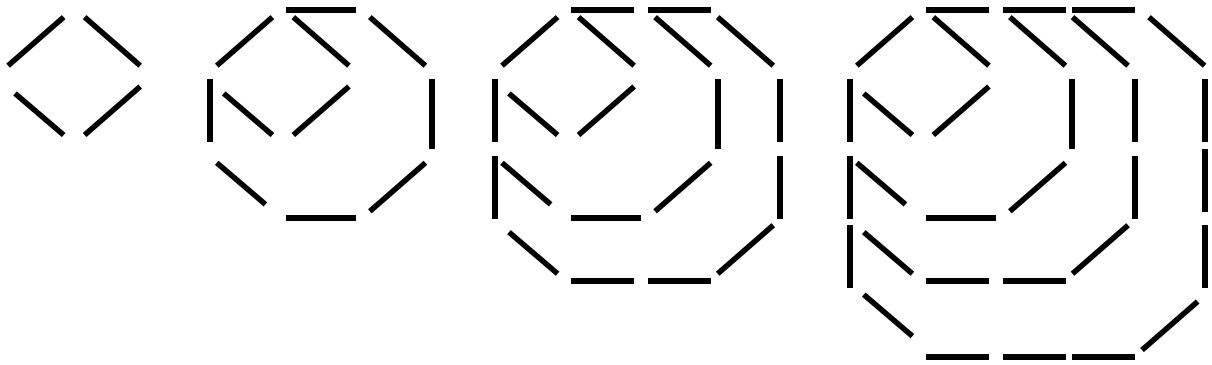
QUESTION 2

2.1 Write down the next 2 terms for each sequence *and* name the sequence:
2.1.1 2 ; 3 ; 5 ; 7 ; (2)
2.1.2 1 ; 8 ; 27 ; (2)

2.2 Write down the 20^{th} term of each sequence:
2.2.1 2^2 ; 2^3 ; 2^4 ; 2^5 ; (1)
2.2.2 1 ; 3 ; 3 ; 3 ; 5 ; 3 ; 7 ; (1)

2.3 Consider the following patterns made from matchsticks.

Pattern1 Pattern 2 Pattern 3 Pattern 4



2.3.1 Copy and complete the following statements:

Pattern 1 = 4 matches
Pattern 2 = 4 +..... = ... matches
Pattern 3 = 4 +..... +..... = ... matches
Pattern 4 = 4 +..... +..... + ... = ... matches (3)

2.3.2 Use the pattern above to work out how many matches there would be in the 8^{th} pattern. (2)

[11]

QUESTION 3 - ***Calculators may not be used in this question***

3.1 Use a lowest common denominator to arrange these in descending order:

$\frac{7}{12}$; $\frac{3}{4}$; $\frac{2}{3}$ (3)

3.2 Evaluate the following:

3.2.1 $\frac{2}{3} + \frac{1}{4} - \frac{1}{6}$ (3)

3.2.2 $\frac{3}{4} \times \frac{8}{9}$ (2)

3.2.3 $1\frac{2}{3} \times (-1\frac{1}{2})$ (3)

3.2.4 $3\frac{1}{3} + \frac{2}{5}$ (3)

[14]

QUESTION 4

4.1 Calculate 13% of R345. (2)

4.2 Decrease R450 by 23%. (3)

4.3 The College Shoppe buys College Teddy bear key rings for R22 and sells them for R30 each.

4.3.1 What is their profit as a percentage of their cost? (3)

4.3.2 If inflation is 8% per year, what should the shop sell the key rings for next year to keep up with inflation exactly? (3)

4.4 If Mike invests R 14 500 at a simple interest rate of 11% p.a., how much money will he have at the end of 7 years?
Use the formula $A = P(1 + i.n)$ (3)

[14]

QUESTION 5 - *Calculators may not be used in this question*

Simplify the following, showing ALL necessary working:

5.1 $5 \times 3 + 6 \div 3$ (2)

5.2 $5 \times (3 + 6) \div 3$ (2)

5.3 $(5 \times 3 + 6) \div 3$ (2)

5.4 $5 \times (3 + 6 \div 3)$ (2)

5.5 $-2 + 3 \times 4 - (-6)^2$ (2)

5.6 $-(2 + 3) \times 4 - (-6^2)$ (2)

[12]

QUESTION 6

6.1 Write the following ratios in simplest form:

6.1.1 620 : 300 (1)

6.1.2 1 250g : 2,6kg (2)

6.1.3 $1\frac{2}{3}$ hr : 45mins (2)

6.1.4 $\frac{3}{4} : \frac{4}{5}$ (2)

6.2 Suppose on a sports trip the ratio of hockey players to rugby players was 13 : 10.
If there was a total of 345 players, how many rugby players would there be? (2)

6.3 A car has an average petrol consumption of 9,5 litres per 100km.

6.3.1 How many litres will it use travelling 350km? (2)

6.3.2 The capacity of the car's petrol tank is 45 litres. If the car starts a journey with a full tank, how far can it go before needing to fill up?
Round off your answer correct to the nearest km. (2)

6.4 Ross has recently immigrated to Australia. The exchange rate for the Australian Dollar to the South African Rand is $1 = R8,13.

6.4.1 If his plane ticket cost R6 100, what is that in Australian Dollars? (2)

6.4.2 If his parents now give him $50 pocket money a month, how much is that in Rands? (2)

[17]

QUESTION 7

7.1 At the beginning of the season the players of an U14 Hockey team are weighed and their weights are recorded. They are (in kg):

37	42	50	44	46
53	44	39	52	45
43	40			

Use this data to answer the following questions:

7.1.1 Write the data in descending order (1)

7.1.2 Write down the range. (1)

7.1.3 Calculate the mean mass of the players (3)

7.1.4 Find the median. (1)

7.1.5 Write down the mode. (1)

7.1.6 Write the data in a stem and leaf diagram on the ***Answer Sheet***. (3)

7.1.7 At the end of the season they are weighed again. The new total mass is 543,8kg. On average how much has each player changed in weight? (2)

7.2 In the Mathematics Structured Test during the first term this year, one of the classes in Form 2 had the following distribution of marks:

Percentage	30 – 39%	40 – 49%	50 – 59%	60 – 69%	70 – 79%	80 – 100%
Frequency	2	4	3	10	6	3

7.2.1 Use this data to complete the Grouped Data Table on the ***Answer Sheet***. (The first two have been done for you) (6)

7.2.2 Use your totals from the table to calculate the mean mark for this class. (2)

[20]

QUESTION 8

8.1 Write an expression for each of the following:

8.1.1 The sum of three consecutive numbers if the first one is d. (1)

8.1.2 The sum of a squared and five times b. (2)

8.1.3 The number of girls in a class of 30 if there are x boys. (1)

8.2 For his birthday Jason takes five friends paintballing. The entrance fee is ***a*** rand per person. Cool drinks cost ***b*** rand per drink and wors rolls cost ***c*** rand each.

8.2.1 How much will Jason pay for himself and all his friends to get in? (1)

8.2.2 During the day Jason buys a total of 12 cool drinks and 7 wors rolls. How much does he pay for the food altogether? (2)

8.2.3 If a = R55, b = R5,50 and c = R12, how much did the day cost Jason? (3)

8.3 Consider the expression: $3x^2 + 5xy - 4 - y^3$

8.3.1 Write down the constant. (1)

8.3.2 How many terms does it have? (1)

8.3.3 Write down the coefficient of y^3. (1)

8.3.4 Find the value of the expression if $x = 2$ and $y = -1$. *No Calculators. Show ALL working details.* (3)

[16]

QUESTION 9

Simplify the following:

9.1 $5 \times a$ (1)

9.2 $b(-2).3$ (1)

9.3 $4c - c$ (1)

9.4 $-x + (-3 + 2)x$ (2)

9.5 $d \times 2 \times -a \times 3$ (2)

9.6 $3a - 2a + 7a$ (1)

9.7 $7x + 5 \times 2x - 3x$ (2)

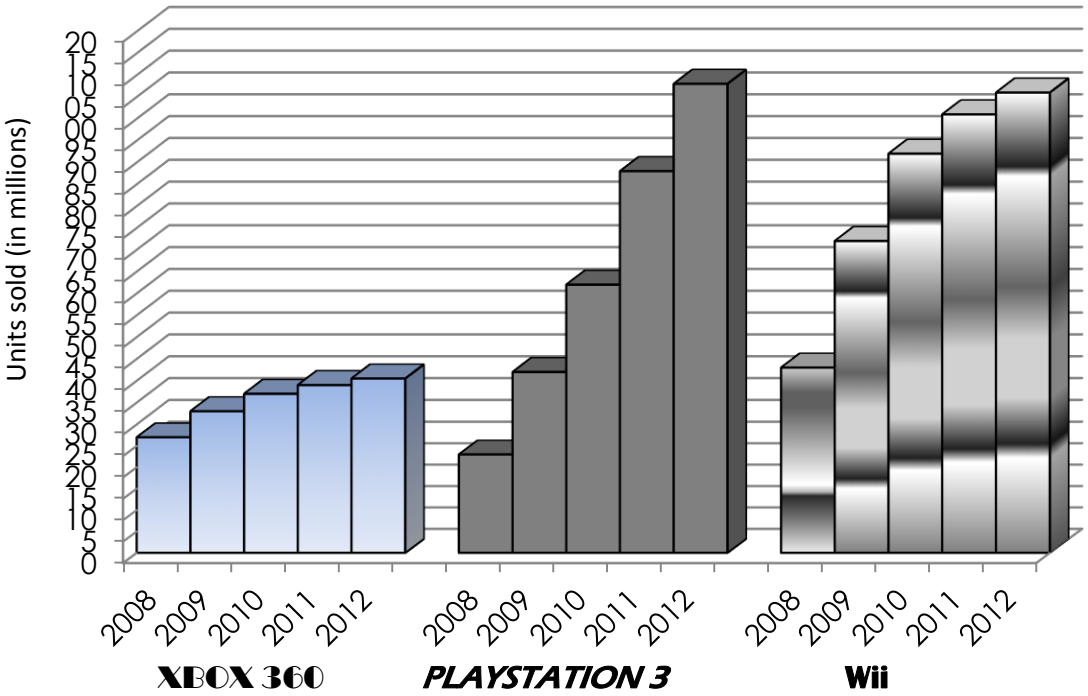
9.8 $4x - 2xy + 3y - y - x + yx$ (3)

9.9 $-3a + (-5a) - (-a)$ (2)

[15]

QUESTION 10

The graph below shows worldwide sales of three gaming consoles.
Use it to answer the questions.



10.1 Which consol was the most successful in 2008? Use data to explain your answer. (2)

10.2 Which console was the first to sell more than 95 000 000 units in one year? What year was that? (2)

10.3 Which console had the biggest jump in sales from one year to the next, and In which years did that happen? (2)

10.4 Which is the only year that XBOX was not the least successful? (1)

[7]

QUESTION 11

A dragon drank $\frac{1}{5}$ of the water in a lake. After a break he drank $\frac{1}{4}$ of the remaining water. After another break he drank $\frac{1}{3}$ of the remaining water. After a final break he drank $\frac{1}{2}$ of what was left.

How much water is left in the lake, compared to the initial amount?
Show your working and write your answer as a percentage. **[4]**

F2 MATHEMATICS ANSWER SHEET

NAME: _____ **CLASS:** ____

MATHS TEACHER: _____

QUESTION 7.1.6

QUESTION 7.2.1

Percentage Intervals	Frequency	Midpoint	Freq. X Midpnt.
30 – 39%	2	34,5	69
40 – 49%	4	44,5	178
50 – 59%			
60 – 69%			
70 – 79%			
80 – 100%			

TOTAL FREQUENCY = _____ **TOTAL PERCENTAGES =** _____