WYNBERG BOYS' HIGH SCHOOL
GRADE 8-Mathematics Paper 1
Examiner: Miss Zeeman; Moderator: Mr Eddy

9 June 2017

Marks: 135
Time: 2 Hours

GENERAL INSTRUCTIONS

1. Answer all questions.
2. Calculators are not permitted.
3. Show ALL working; solutions will not necessarily be awarded any marks if no working is shown.
4. Write your name and your Maths teacher's monogram at the top of your answer script.
5. **6 Extra marks have been assigned for the layout of your algebraic work.**

Question 1

1.1) Rewrite the expression and insert a double vertical line after each term of the following expression: (3)

$$10b + 7 \times c \div (k + 2) - \frac{16 - t}{s \div 4} + 3[d + 2(j - 5)] - 6^2$$

1.2) How many terms are there in the following expression? (1)

$$(3 + 6k) \times (k - 2) \div (16k + 1)$$

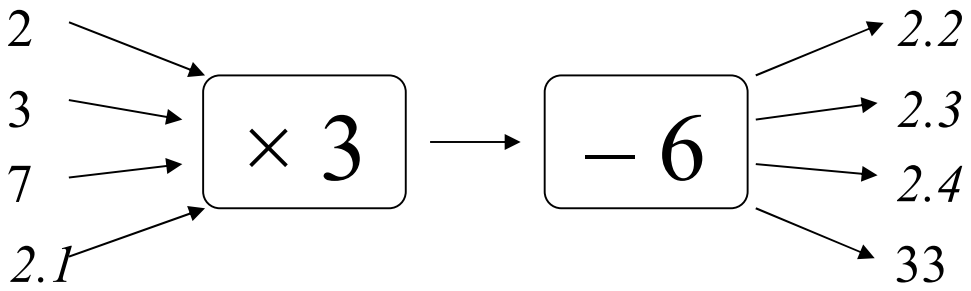
1.3) What is the third term of the following expression? (2)

$$\frac{3}{w - 2} - 7b - 6 \times a \ + 2$$

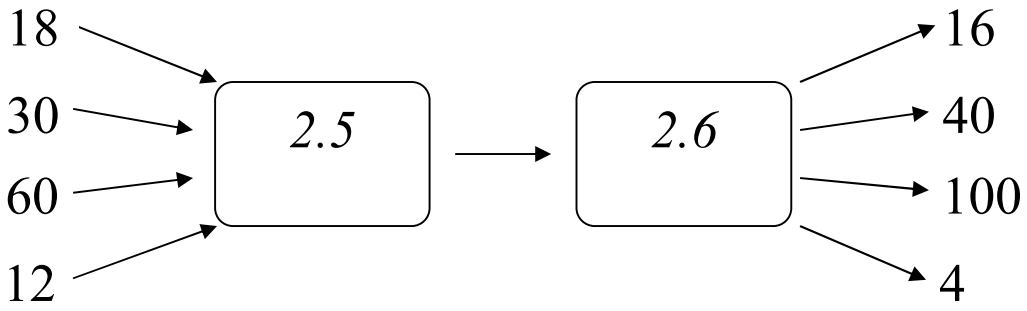
Question 2

Complete the following flow diagrams:

(2.1 – 2.6)



(8)



(4)

Question 3

Simplify:

3.1) $6-3+2$ (1)

3.2) $17-(6+2)$ (2)

3.3) $100-(80-(60-20)$ (3)

3.4) $12\div 3+7\times 6\div (5\times 2-8)$ (4)

3.5) $\frac{20\div(3+2)}{5-2\times 2}+7(2+4)$ (4)

Question 4

Simplify where possible:

4.1) $15b - b$ (1)

4.2) $3e - 3$ (1)

4.3) $7m + 3 + 8m$ (2)

4.4) $4pk - 2kp + 5kj + 2pk$ (2)

4.5) $\frac{24t-36}{6}$ (2)

4.6) $5(g + 4) + 4(2g - 3)$ (4)

4.7) $8 \times 5 + 20p \div 2 + (2 + 3) \times (4 - 2p)$ (5)

Question 5

Solve the following equations:

5.1) $3p - 7 = 8$ (2)

5.2) $9t + 6 = 18$ (2)

5.3) $3h + 30 = 7(h + 3)$ (3)

5.4) $\frac{30-2m}{4} = 7$ (3)

5.5) $\frac{p}{5} + p = 12$ (3)

5.6) $6(m - 2) + 4(2m - 1) = 2m - 11$ (4)

5.7) $3(x + 5) = 2x + 15 + x$ (3)

Question 6

6.1) Complete the following table:
(6.1.1 – 6.1.5)

m	5	6	0
n	2	7	6
$3m - 2n$	6.1.1	6.1.2	
$\frac{mn}{2}$	6.1.3	6.1.4	6.1.5

(5)

6.2) If $a = 6, b = 3$ and $c = 0$ find the value of

6.2.1) $a - b$ (1)

6.2.2) $a \times b + c \div a + 4b$ (4)

6.2.3) $\frac{a}{c}$ (2)

6.3) Find the value of x if $u = 2, v = 3u + 1, w = 4 + v$ and $x = u + w - 4$ (3)

Question 7

7.1) In the following table there is a relationship between the top row of numbers and the bottom row.

Study the pattern and then complete the table, by filling in the missing values.

15	3	7	12	1	4	23	n
⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩
17	5	9	14	7.1.1)	7.1.2)	7.1.3)	7.1.4)

(5)

7.2) In the following table there is a relationship between the top row of numbers and the bottom row.

Study the pattern and then complete the table, by filling in the missing values.

7	12	5	16	8	13	27	n
⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩
13	23	9	31	7.2.1)	7.2.2)	7.2.3)	7.2.4)

(5)

7.3) Consider the following figures, created using matches.

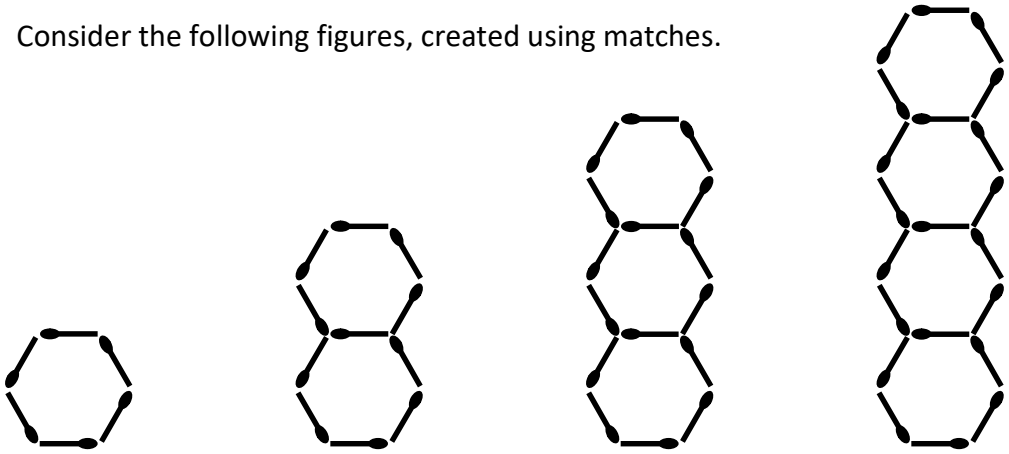


Figure 1 **Figure 2** **Figure 3** **Figure 4**

As you can see, in **Figure 1** there are 6 matches, in **Figure 2** there are 11 matches and in **Figure 3** there are 16 matches.

7.3.1) Complete the following table, assuming that this pattern is continued.

Figure Number (*n*)	1	2	3	**4**	**6**
Number of Matches (M)	6	11	16	a)	b)

(2)

7.3.2) Determine a formula which links the Figure Number (*n*), with the Number of Matches (M).

Write your formula in the form M = (2)

7.4) Consider the following flow diagram.

7.4.1) Write down the formula for this flow diagram which links A to B.
In other words, write your answer in the form B = ...

B = (1)

7.4.2) Now write down the formula in the form A = …

A = (2)

Question 8

Simplify:

8.1) $a \times b$ (1)

8.2) $2b \times 3b$ (2)

8.3) $4a^2 \times a^3$ (2)

8.4) $\frac{c^5}{c^3}$ (1)

8.5) $18p^6r^3 \div 6p^3r^2$ (3)

8.6) $(2m^3)^2$ (2)

8.7) $5r^2s + 3s^2r + 4s^2r + 2r^2s$ (2)

8.8) $(6m)^2 - \frac{2m \times 12m^5}{3m^4}$ (5)

8.9) $\frac{6a^9}{3a^6}$ (3)

8.10) $3(f^2 - 6f^3 + 8f^7)$ (3)

Question 9

Complete the following only once you have finished everything else

Simplify:

9.1)

$$15-5\times(13-5\times2)+\left[17-\left\{17-\left(17-(17-12)\right)\right\}\right]-\frac{\frac{13-4}{2+2\div2}+6\times2}{7-\frac{10}{7-\frac{10}{3+\frac{4}{2}}}}+2\times3(4-2\times2)+4!$$

(2)

Solve:

9.2) $3(m+5)+\frac{2m+6}{2}+5(3m+2m)+15m-12\div3+\frac{20m-12m}{4m}=60$ (2)