STANMORE SECONDARY SCHOOL

NOVEMBER EXAMINATION 2019

MEMO

DEPARTMENT OF MATHEMATICS

GRADE 8 MATHEMATICS

Moderated 12/10/2019

Time: 1½ hrs. Marks: 60

Examiner: Mr. R. Ramawthar Moderator: Mr. K.H.MOODLEY

NAME: _____ GRADE: 8 _____

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INSTRUCTIONS TO CANDIDATES

1. Answer all questions.
2. Number your answers correctly.
3. Write neatly and legibly.

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QUESTION ONE

Circle the letter of the correct answer.

1.1 If *a* and *b* are whole numbers, which one of the following statement is always true?

a) $a + a = a^2$ b) $a + b = ab$

c) $b^2 + b^2 = b^4$ d) $a + b = b + a$ (1)

1.2 Complete: $(12 \div 2) + (6 \times 3) - 3 =$

a) 105 b) 27 c) 21 d) 33 (1)

1.3 The value of $\sqrt[3]{216} =$

a) 108 b) 6 c) - 6 d) 72 (1)

1.4 0,16 X 0,4 =

a) 0,064 b) 0,64 c) 0,0064 d) 6,4 (1)

1.5 $(5x)^3 =$

a) $125x^3$ b) $5x^3$ c) $15x^3$ d) $8x^3$ (1)

1.6 $2^3 \times 3^2 =$

a) 54 b) 10 c) 36 d) 72 (1)

1.7 The lowest common multiple of 9 and 6 is:-

a) 3 b) 18 c) 36 d) 54 (1)

1.8 Between parallel lines, co-interior angles are:-

a) complementary b) supplementary c) equal d) adjacent (1)

1.9 The angle 181° is .....

a) an acute angle b) an obtuse angle c) a reflex d) a right angle (1)

1.10 The rule for the pattern: 2 ; 6 ; 12 ; 20 .....

a) $2n + 4$ b) $n^2 + n$ c) $n^2 + n + 1$ d) $n^2 - n$ (1)

[10]

[10]

QUESTION TWO

2.1 The price of petrol is set to increase by 5% next month. If the current fuel price is R9,00 per litre, what will the new petrol price be next month? **(3)**

$\frac{5}{100} \times \frac{R9,00}{1}$ ✓

$= 45c$ ✓

New Petrol Price = R9,45. ✓✓

2.2 Mr Jones buys 48 jackets at R145 each and sells them at R299 each. Calculate the profit he made after selling 48 jackets. **(2)**

R299 − R145 = R154 ✓

PROFIT = R154 × 48

= R7392 ✓

2.3 Calculate the amount that will be in the bank after 4 years if R2500 is invested at 13 % per annum simple interest. **(3)**

$S.I = \frac{p \times n \times r}{100}$

$= \frac{R2500 \times 4 \times 13}{100}$

$= R1300$ ✓

Amount = R2500 + R1300 ✓

= R3800 ✓✓

2.4 Three friends Ayanda, Jessica and Sharon share R1162 in the ratio of 3 : 4 : 7. How much will each one get? **(5)**

3 + 4 + 7 = 14. ✓✓

one part = R1162 ÷ 14 = R83. ✓✓

Ayanda = 3 × R83 = R249 ✓

Jessica = 4 × R83 = R332 ✓

Sharon = 7 × R83 = R581 ✓

$A = P(1+i \cdot n)$

$= 2500(1+0,13.4)$

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QUESTION THREE

Calculate without using a calculator (show calculation steps).

3.1 $-5 - (-3) + (-4 - 6) =$ (2)

$-5+3-10$ ✓

$= -12$ ✓✓

3.2 $3\frac{2}{3} - \frac{7}{12}$ (write answer as mixed numbers) (2)

$\frac{11}{3} - \frac{7}{12}$

$= \frac{44-7}{12}$ ✓✓

$= \frac{37}{12} = 3\frac{1}{12}$ ✓✓

3.3 $1\frac{2}{3} \times \frac{5}{6}$ (2)

$\frac{5}{3} \times \frac{5}{6}$ ✓✓

$= \frac{25}{18}$ ✓✓ $= 1\frac{7}{18}$

3.4 $\frac{2}{5} \div \frac{1}{2}$ (2)

$\frac{2}{5} \times \frac{2}{1}$ ✓✓

$= \frac{4}{5}$ ✓✓

QUESTION FOUR

4,1 Consider the expression: $-8 + 4x^3 - x + 5x^2$

4.1.1 Write the expression in descending powers of x

$4x^3 + 5x^2 - x - 8$ ✓✓ (1)

4.1.2 What is the constant term in the expression?

-8 ✓ (1)

4.1.3 What is the coefficient of x?

-1 ✓✓ (1)

4.1.4 How many terms are in the expression?

4 ✓✓ (1)

4.1.5 What is the degree of the polynomial?

3rd degree. ✓✓ (1)

4.2 Calculate the value of the expression:

$4x^2 + 5x - 3$ if $x = -1$ (3)

$4(-1)^2 + 5(-1) - 3$ ✓✓

$= 4 - 5 - 3$

$= 4 - 8$ ✓✓

$= -4$ ✓✓

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4.3 Simplify the expression:

4.3.1 $4x^2 - 7x + 1 - 3x^2 + 8x - 2$

$x^2 + 1x - 1$ (3)

4.3.2 $-5x(2x - 3)$

$= -10x^2 + 15x$ (2)

4.3.3 $\sqrt{169a^2} + \sqrt[3]{64a^3}$ (3)

$= 13a + 4a$

$= 17a$

4.3.4 $\frac{10x^3 - 4x^2 + 8x}{2x}$ (3)

$= \frac{10x^3}{2x} - \frac{4x^2}{2x} + \frac{8x}{2x}$

$= 5x^2 - 2x + 4$

QUESTION FIVE

5.1 Solve for x:-

5.1.1 $7x - 30 = 4x - 6$ (3)

$\Rightarrow 7x - 4x = -6 + 30$

$\Rightarrow 3x = 24$

$x = 8$

5.1.2 $\frac{x}{2} - 3 = 7$ (2)

$\Rightarrow \frac{x}{2} = \frac{10}{1}$

$\Rightarrow x = 2 \times 10$

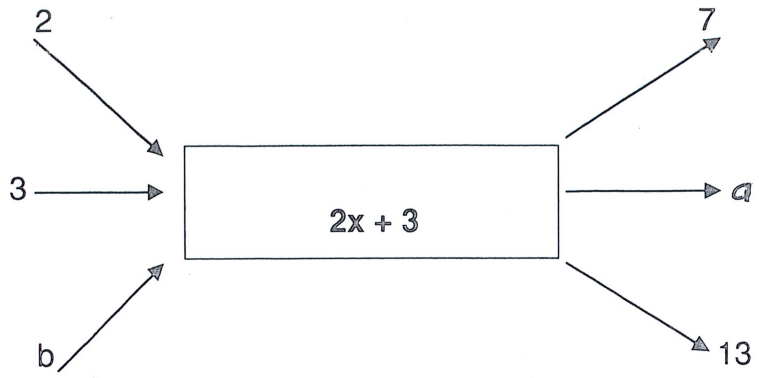
$= 20$

5.1.3 $x^3 = 64$ (2)

$\Rightarrow x^3 = 4^3$

$\Rightarrow x = 4$

5.2 Use the flow diagram below to answer the questions that follow:-



5.2.1 Calculate the value of a: **(1)**

5.2.2 Calculate the value of b: **(2)**

5.2.1. $2x + 3 = a$

$2(3) + 3 = a$

$6 + 3 = a$

$a = 9$ ✓

5.2.2. $2x + 3 = 13$

$2b + 3 = 13$ ✓

$2b = 10$

$b = 5$ ✓✓

QUESTION SIX

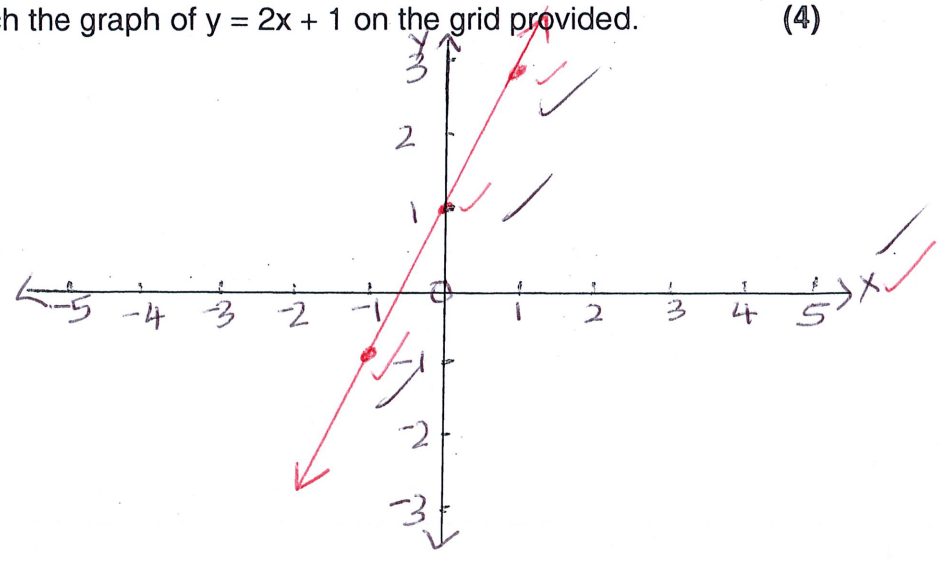
6.1 Given $y = 2x + 1$

6.1.1 Complete the table below:- **(3)**

X	– 1	0	1
y	-1	1	3

✓✓✓✓

6.1.2 Sketch the graph of $y = 2x + 1$ on the grid provided. **(4)**



✓✓✓✓

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6.1.3 Is the graph increasing or decreasing?

increasing ✓ ✓ (1)

6.2 If A (–3 ; 5) is reflected on the X-axis, write down the co-ordinates of A (2)

A' (3; 5) ✓ ✓ ✓

6.3 Write down the co-ordinates of T if T (– 2 ; 3) is translated 4 units to the left and 5 units down.

T' (-6 ; -2) ✓ ✓ ✓ ✓

(2)

QUESTION SEVEN

7.1 The Mathematics test mark of a group of Grade 8 learners are given below.

23; 48; 52; 30; 29; 44; 48; 39; 55; 40; 30; 45; 46; 37; 41

7.1.1 Determine the median mark.

Med = 41 ✓ ✓ ✓ (2)

7.1.2 Write down the range.

r = 32 ✓ ✓ ✓ (1)

7.1.3 What is the modal mark 30; 48 ✓ ✓ (1)

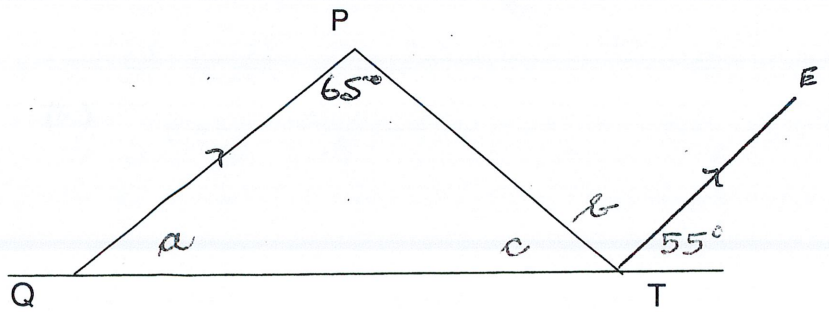
7.1.4 Calculate the mean of the marks. (3)

Mean = $\frac{607}{15}$ ✓ ✓ ✓

= 40,46. ✓ ✓

QUESTION EIGHT

8.1 In the diagram below PQ // TE



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Calculate with reasons:-

8.1.1 a

$a = 55^\circ$ (corres. ∠).

(2)

8.1.2 b

$b = 65^\circ$ (alt. ∠'s).

~~$c = 18^\circ$~~

(2)

8.1.3 c

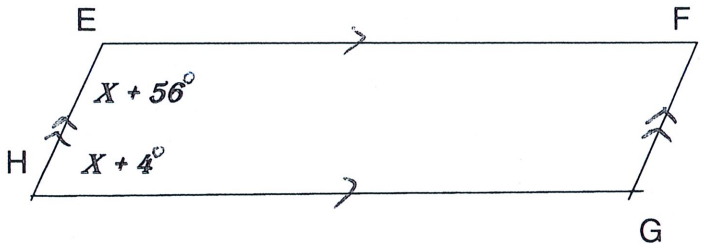
$c = 180^\circ - (55^\circ + 65^\circ)$ (sum of ∠'s of Δ) or (alt. ∠)

$= 180 - 120^\circ$

$= 60^\circ$

(2)

8.2 In the figure below *EDGH* is a parallelogram with *EF // FG*. $\hat{FEH} = X + 56^\circ$ and $\hat{EHG} = X + 4^\circ$



Calculate giving reasons :

8.2.1 the value of X

$x + 56^\circ + x + 4^\circ = 180^\circ$ (co-int ∠s).

$2x + 60^\circ = 180^\circ$

$2x = 120^\circ$

$x = 60^\circ$.

(4)

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8.2.2 the size of $\hat{FEH}$

$\hat{FEH} = x + 56^\circ$

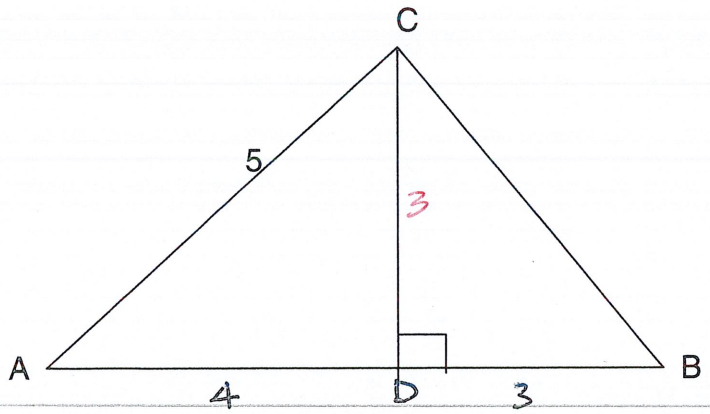
$= 60^\circ + 56^\circ$ ✓✓

$= 116^\circ$ ✓✓ (2)

QUESTION NINE

9.1 In the diagram below:

AC = 5 units ; AD = 4 units ; DB = 3 units. CD ⊥ AB



9.1.1 Find the length of CD. (2)

$CD^2 = AC^2 - AD^2$

$= 5^2 - 4^2$ ✓

$= 25 - 16$ ✓

$= 9$

$CD = \sqrt{9}$

$= 3$ ✓✓

9.1.2 Find the size of B. (2)

$\hat{B} = \frac{180^\circ - 90^\circ}{2}$ (sum Δ). ✓✓

$= \frac{90^\circ}{2}$

$= 45^\circ$ ✓✓

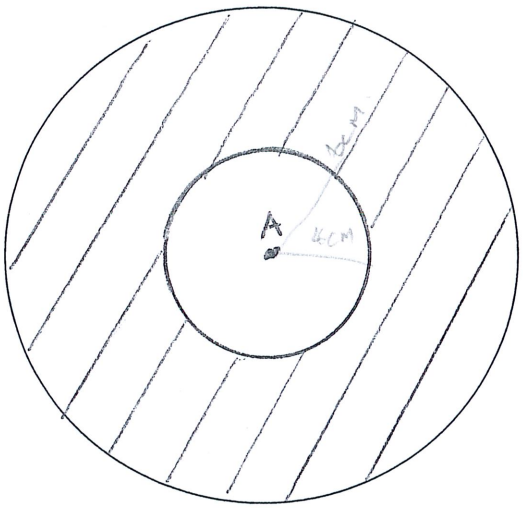
9.1.3 Find the area of △ABC (2)

Area $= \frac{1}{2} b \times h$

$= \frac{1}{2}(7)(3)$ ✓✓

$= 10,5$ sq. units. ✓✓

9.2 The 2 circles below have a common centre A. The radius of the big circle is 6 cm and the radius Of the smaller circle is 4 cm. Determine the area of the shaded region. ~~(4)~~ (3)



N.B $\pi = 3,14$

Area of large circle $= \pi r_1^2$

$= 3,14 \times (6cm)^2$

$= 113,04 cm^2$ ✓ ✓

Area of small circle $= \pi r_1^2$

$= 3,14 \times (4cm)^2$

$= 50,24 cm^2$ ✓ ✓

Area of Shaded Region $= 113,04 cm^2 - 50,24 cm^2$

$= 62,8 cm^2$ ✓ ✓

THE END!

[3]