BUKIT SION MIDDLE SCHOOL

Where the abundance in life flows……..

SEMESTER 1 EXAMINATION

Subject	**: MATHEMATICS**	**Grade**	**: 7 - ……**
		Duration	**: 120 minutes**
Day/date	**: 13 DECEMBER 2016**	**Name**	**……**

GENERAL INTRUCTIONS:

1. **Read carefully** the instructions for each section.
2. Answer **all** questions.
3. Use **blue** or **black pen.**
4. **CALCULATORS ARE NOT ALLOWED.**
5. Marks may be deducted if necessary working is not shown clearly.
6. The number of marks is given in brackets [] in each section and/or at the end of the question.
7. **DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.**

For Teacher's Use	
Section A	**/ 30**
Section B	**/ 50**
Section C	**/ 20**
TOTAL	**/ 100**

SECTION A: MULTIPLE CHOICE (30 MARKS)

Choose the letter of the correct answer.
WRITE THE CAPITAL LETTER ON THE SPACE PROVIDED ON THE RIGHT.

1. Which of the following is equal to $5(8 - x)$? ( )

(A) $5x - 40$ (C) $40 - 5x$

(B) $x - 40$ (D) $5 - 8x$

2. Which of the following values satisfies the inequality $y + 4 > 10$? ( )

(A) -4 (C) 6

(B) 100 (D) -6

3. Which algebraic expression represents 15 less than x divided by 9? ( )

(A) $\frac{x}{9} - 15$ (C) $15 - \frac{x}{9}$

(B) $9x - 15$ (D) $15 - 9x$

4. If 16 is 4 more than $4x$, find the value of $5x - 1$. ( )

(A) 14 (C) 3

(B) 12 (D) 5

5. When $5x + 4y$ is subtracted from $5x - 4y$, the difference is: ( )

(A) 0 (C) $10x$

(B) $8y$ (D) $-8y$

6. The expression $\frac{2n}{5} + \frac{3n}{2}$ is equivalent to: ( )

(A) $\frac{5n}{7}$ (C) $\frac{19n}{10}$

(B) $\frac{6n^2}{10}$ (D) $\frac{7n}{10}$

7. Simplify the expression $2(3w - 7) + 2w$ ( )

(A) $6w - 7$ (C) $-14 + 8w$

(B) $8w - 7$ (D) $14 + 8w$

8. The greatest common factor of $3m^2n + 12mn^2$ is: ( )

(A) $3n$ (C) $3m$

(B) $3mn$ (D) $3mn^2$

9. The sum of $(4x^3 + 6x^2 + 2x - 3)$ and $(3x^3 + 3x^2 - 5x - 5)$ is: ( )

(A) $7x^3 + 3x^2 - 3x - 8$
(C) $7x^3 + 3x^2 + 7x + 2$
(B) $7x^3 + 9x^2 - 3x - 8$
(D) $7x^6 + 9x^4 - 3x^2 - 8$

10. The simplified form of $5x - (-2x) - x$ is: ( )

(A) $2x$
(C) $4x$
(B) $6x$
(D) $8x$

11. If $a = 2$, $b = 3$ and $c = 1$, which of the following is incorrect? ( )

(A) $2a + 3b + c = 15$
(C) $a + 2b + 3c = 11$
(B) $3a + 3b + 2c = 17$
(D) $a + b + c = 6$

12. Which verbal expression is represented by $\frac{1}{2}(n - 3)$? ( )

(A) one-half n decreased by 3
(B) one-half n subtracted from 3
(C) the difference of one-half n and 3
(D) one-half the difference of n and 3

13. If $3ax + b = c$, then x equals: ( )

(A) $c - b + 3a$
(C) $\frac{c-b}{3a}$
(B) $c + b - 3a$
(D) $\frac{b-c}{3a}$

For Numbers 14 and 15.

Mario is thinking of **4 consecutive odd integers**.

14. If the first integer is $x - 2$, which of the following represents the 4th integer? ( )

(A) $x + 2$
(C) $x + 6$
(B) $x + 4$
(D) $x + 8$

15. If he represents the third odd integer as $x + 3$, what is the **sum** of the four integers? ( )

(A) $4x + 8$
(C) $4x + 10$
(B) $4x + 12$
(D) $4x + 6$

SECTION B: MECHANICAL SOLVING (50 MARKS)

Answer all questions and show your complete working.

1. Find the value of $3a - 5b$ when $a = -4$ and $b = -2$.

Answer: ..... [2]

2. Given that $V = \frac{1}{3}Ah$,

(a) Find V if $A = 15$ and $h = 7$.

Answer: ..... [1]

(b) Make h the subject of the formula.

Answer: ..... [2]

3. Expand and simplify.

(a) $4(2x + 3) + 5(x - 7)$

Answer: ..... [2]

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

Answer: ..... [2]

4. Simplify.

(a) $6uw^3 \times 4uw^6$

Answer: ..... [1]

(b) $12x^{12} \div 3x^3$

Answer: ..... [1]

5. Factorise completely.

(a) $9x^2 - 6x$

Answer: ..... [1]

(b) $4p^2q - 6pq^2$

Answer: ..... [1]

(c) $yp + yt + 2xp + 2xt$

Answer: ..... [2]

(d) $6w + 3wy - 4x - 2xy$

Answer: ..... [2]

(e) $7(h + k)^2 - 21(h + k)$

Answer: ..... [3]

6. Write as a single fraction in its simplest form.

(a) $\frac{x+2}{3} - \frac{2x-5}{3}$

Answer: …… [2]

(b) $\frac{x-4}{6} + \frac{3x-2}{5} - 2x$

Answer: …… [3]

7. Solve the following equations.

(a) $\frac{x-8}{2} = 11$.

Answer: …… [2]

(b) $3(x + 4) = 2(4x - 1)$

Answer: …… [2]

(c) $3(x+1)-5x=12-(6x-7)$

Answer: ..... [3]

(d) $\frac{21-x}{x+3}=4$

Answer: ..... [2]

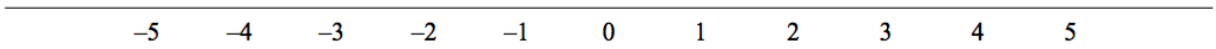
(e) $\frac{-(3x-1)}{3}-\frac{2(x-8)}{5}=\frac{x+8}{5}-1$

Answer: ..... [3]

8. (a) Solve the inequality $5m + 23 < 17 - m$.

Answer: …… [2]

(b) Construct the graph that represents all the solutions of the inequality in (a). [1]



9. Find the **integer values** of t which satisfy the inequalities.

$4t + 7 < 39$ and $7t - 2 \geq 19$

Answer: …… [3]

10. Make $\boldsymbol{x}$ the subject the formula.

(a) $y = px^2z$

Answer: …… [2]

(b) $A = \pi rx + \pi r^2$

Answer: …… [2]

(c) $B - x = \frac{xr}{t}$

Answer: …… [3]

SECTION C: PROBLEM SOLVING (20 MARKS)

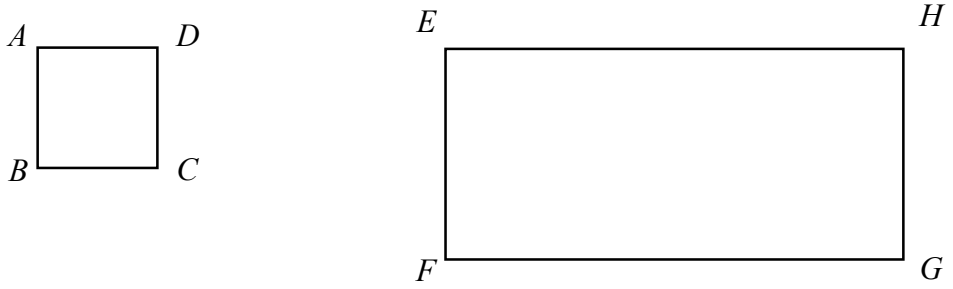
Answer all questions and show your complete working.

1. Jamil, Kiera and Luther collect badges. Kiera has 12 badges more than Jamil.
   Luther has 3 times as many badges as Kiera. Altogether they have 123 badges.

   Form an equation and solve it to find the number of badges that Jamil, Kiera and Luther have.

Answer: …… [5]

2.



(a) *ABCD* is a square with a side of $(x - 4)$ cm.
Find the perimeter of the square.

Answer: …… [1]

(b) *EFGH* is a rectangle that has a length 10 centimeters less than three times its width.
The length of width is x cm.

(i) Express the length of the rectangle in terms of x.

Answer: …… [1]

(ii) If the length of the rectangle is equal to the perimeter of the square in (a), find the dimensions of rectangle *EFGH*.

Answer: …… [3]

3. On a tour, a company rents some cars, trucks and motorcycles.
The rental cost is shown below.

Vehicle	Rental Cost
Car	$200
Truck	$500
Motorcycle	$100

The number of trucks rented is 2 more than twice the number of motorcycles.

The number of cars is 2 less than 5 times the number of motorcycles.

If the company paid $6 900 in total for the rent of the vehicles,

(a) find the number of motorcycles rented by the company;

Answer: …… [4]

(b) find the total number of vehicles rented.

Answer: …… [1]

5. CHOOSE AND ANSWER ONLY ONE.

EITHER

Julie has three children whose ages are **consecutive even** integers.
Find the ages of Julie's three sons if three times the middle son's age is 14 more than the sum of the ages of the first and the third sons.

OR

Presently, Ben is 2/3 as old as Kris. Ten years from now, the sum of their ages is 40.
How old are they now?

Answer: …… [5]