DAGRI PAST PAPERS

Sir Arthur Lewis Community College

Division of Agriculture

EXAMINATION SESSION	:	December 2017 ALTERNATE Examination
LECTURER	:	Ms. Krissa Johnny
COURSE TITLE	:	Agriculture Mathematics
COURSE CODE	:	AGM 105
DATE	:	1st February, 2018
DURATION	:	2 ½ hours

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INSTRUCTIONS:

The exam consists of **TWO (2) Sections**. You are required to answer **ALL** questions in both sections in the spaces provided. SHOW ALL NECESSARY WORKING.

All writing must be done in black or blue ink.

Only non-programmable calculators are permitted.

SECTION A	:	25 MARKS
SECTION B	:	65 MARKS
TOTAL	:	**90 MARKS**

Section A

Instructions: Shade the letter which corresponds to the best answer.

1. The value of $40 \div 10\frac{1}{2}$ is:

   (A) $\frac{21}{80}$ (B) $3\frac{17}{21}$ (C) $10\frac{1}{2}$ (D) 420

2. The product of five times p and seven times q is:

   (A) $5p + 7q$ (B) $35(p + q)$ (C) $35pq$ (D) $12pq$

3. Given $x = 2$ *and* $y = 4$, then x^3y is:

   (A) 8 (B) 24 (C) 32 (D) 100

4. The scores of 10 boys in a test were:

   3, 8, 2, 7, 5, 3, 6, 6, 9, 1

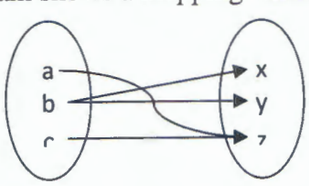
   The median score is:

   (A) 3 (B) 5 (C) 5 ½ (D) 6

5. The value of $\frac{3}{8} + \frac{2}{3} \times \frac{1}{4}$ is:

   (A) $\frac{13}{24}$ (B) $\frac{25}{96}$ (C) $\frac{2}{7}$ (D) $\frac{1}{4}$

6. The arrow diagram shows a mapping which is:



   (A) one-to-one (B) one-to-many (C) many-to-many (D) many-to-one

7. If $3x + 2 = 11$, then x is:

   (A) $2\frac{1}{5}$ (B) 3 (C) $4\frac{1}{3}$ (D) 6

8. The mass in kilograms of seven bunches of bananas was:

   12, 12, 14, 15, 16, 18 and 19

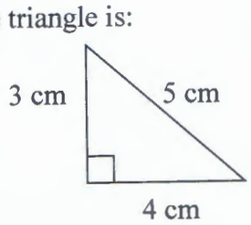
   The interquartile range of the masses is:

   (A) 2 (B) 4 (C) 6 (D) 7

9. The relation *double and subtract five* can be written as:

   (A) $x \to 2(x - 5)$ (B) $x \to 2x - 5$ (C) $x \to \frac{1}{2}(x + 5)$ (D) $x \to \frac{1}{2}x + 5$

10. The area of the triangle is:



    (A) 6 cm^2 (B) 10 cm^2 (C) 12 cm^2 (D) 60 cm^2

11. In a pie chart an angle of 60^0 represents \$150. What does an angle of 150^0 represent?

    (A) \$60 (B) \$150 (C) \$325 (D) \$375

12. The complete solution of the simultaneous equations

$$2x + y = 8$$
$$x + y = 5$$

is:

(A) $x = 3; y = 2$ (B) $x = 5; y = 2$ (C) $x = 2; y = -3$ (D) $x = 4; y = 0$

13. Given $e + f = 8$, then $e + f + g$ is equal to:

(A) $8 + g$ (B) 9 (C) 12 (D) $8g$

14. The mean of 7 numbers is 13. What will be the new mean if the number 5 is added to these numbers?

(A) $11\frac{3}{8}$ (B) 12 (C) $13\frac{5}{7}$ (D) 18

15. The expression $\frac{a}{b} + \frac{b}{c}$ is the same as:

(A) $\frac{ac+b^2}{bc}$ (B) $\frac{a+b}{b+c}$ (C) $\frac{ac+b}{bc}$ (D) $\frac{ac+bc}{bc}$

16. In the equation, $a(x + y) = ax + ay$, the property best illustrated is:

(A) Associative (B) Commutative (C) Distributive (D) Identity

17. The graph of the relation $y = 2 + x - x^2$ has the shape of:

(A) a straight line (B) an exponential curve
(C) a quadratic curve (D) circle

18. The area of a rectangle which has one side of length 3 m and the perimeter of 20 m is:

(A) 10 m^2 (B) 21 m^2 (C) 30 m^2 (D) 60 m^2

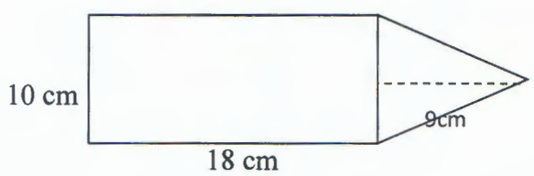
19. When simplified, $6x - 3y - 4x + 3y$ is:

(A) $10x$ (B) $2x$ (C) $2x - 6y$ (D) $10x + 6y$

20. $5a^2b \times 3a^3b^2 =$

(A) $8a^5b^3$ (B) $8a^3b^2$ (C) $15a^5b^3$ (D) $15a^5b^2$

21.



The figure above, not drawn to scale, consists of a triangle of height 9cm, resting on a rectangle of dimensions 18cm by 10cm.
The total area of the compound figure is:

(A) 37 cm^2 (B) 74 cm^2 (C) 76.9 cm^2 (D) 225 cm^2

22. Simplified, $6(4x - y) - 3(5x - 2y) =$

(A) $9x$ (B) $9x - 12y$ (C) $-9x + 12y$ (D) $-9x - 12y$

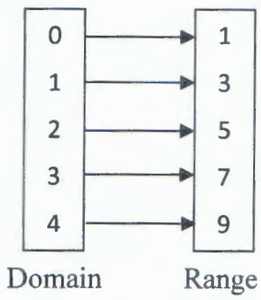
23. When factorized, $x^2 - 2x - 15 =$

(A) $(x - 5)(x - 3)$ (B) $(x - 5)(x + 3)$ (C) $(x + 5)(x - 3)$ (D) $(x + 5)(x + 3)$

24. 2^{-5} is equivalent to:

(A) 32 (B) 64 (C) $\frac{1}{32}$ (D) $\frac{1}{64}$

25.



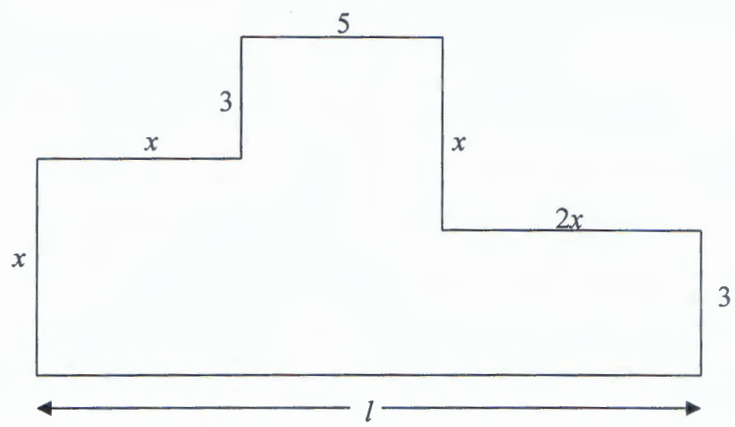
The diagram above represents the mapping:

(A) $x \rightarrow 2x - 1$ (B) $x \rightarrow 2x - 3$ (C) $x \rightarrow 2x + 3$ (D) $x \rightarrow 2x + 1$

Section B

Instructions: Answer ALL questions in this section and show ALL working.

1. The diagram below shows the plan of the floor of a farm shed. All measures shown on the diagram are to the nearest metre.



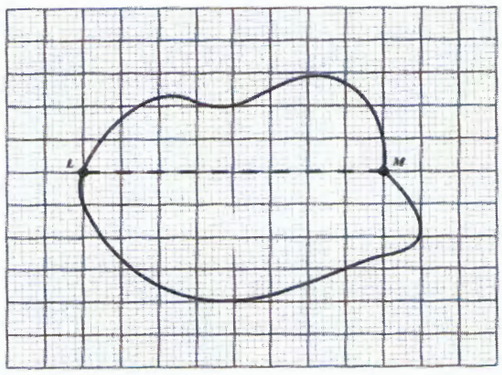
(a) State in terms of x, the length l, of the floor. (2 marks)

(b) The perimeter of the floor is 56 metres.

(i) Determine the value of x. (4 marks)

(ii) Calculate the area of the floor. (3 marks)

(c) The diagram below shows the map of a plot of land drawn on a grid of 1cm squares.



(i) State, in cm, the length of LM as shown in the diagram. (1 mark)

(ii) Estimate, by counting squares, the area of the plot of land. (1 mark)

2. (a) Given that $a = 4, b = 2$ *and* $c = -1$, find the value of:

(i) $a - b + c$ (2 marks)

(ii) $2a^b$ (2 marks)

(b) Factorize completely:

(i) $m^2 - 4n^2$ (2 marks)

(ii) $2ax + 3ay - 2bx - 3by$ (3 marks)

(c) Expand and simplify the following:

$(2k - 3)(k - 2)$ (3 marks)

(d) Solve for x, where x is a real number
$2(x-6)+3x \leq 8$ (4 marks)

3. The table below shows corresponding values for x and y for the function $y = x^2 - 2x - 3$, for integer values of x from -2 to 4.

x	-2	-1	0	1	2	3	4
y	5		-3	-4		0	5

(a) Complete the table above for missing values of y. (2 marks)

(b) **Using a scale of 2 cm to represent 1 unit on the x-axis, and 1 cm to represent 1 unit on the y-axis,** plot the points whose x and y values are recorded in your table, and draw a smooth curve through the points. (4 marks)

(c) Using your graph, estimate the value of y when $x = 3.5$. Show on your graph how the value was obtained. (2 marks)

(d) Without further calculations,

(i) write the equation of the axis of symmetry of the graph (1 mark)

(ii) estimate the minimum value of the function y (1 mark)

(iii) state the values of the solutions of the equation: $x^2 - 2x - 3$ (2 marks)

4. (a) In a beauty contest, the scores awarded by eight judges were:

5.9 6.7 6.8 6.5 6.7 8.2 6.1 6.3

(i) Using the eight scores, determine:
(a) the mean (2 marks)

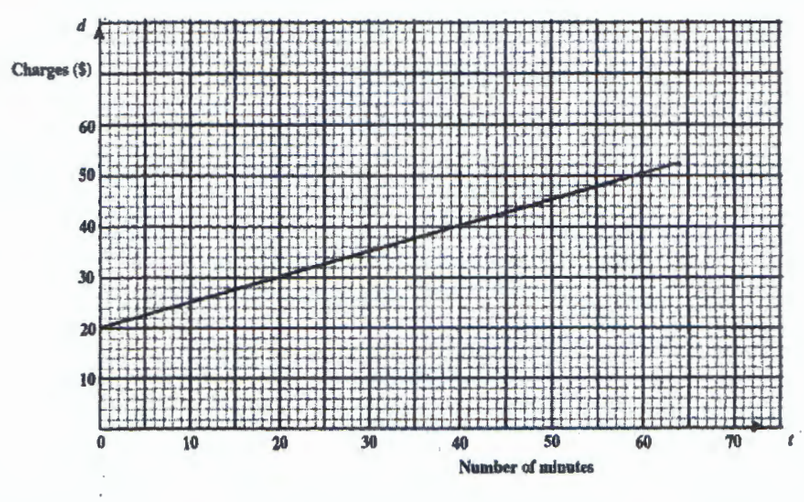
(b) the median (2 marks)

(c) the mode (1 mark)

(ii) Only six scores are to be used. Which two scores may be omitted to leave the value of the **median** the same? (1 mark)

(b) The amount a plumber charges for services depends on the time taken to complete the repairs plus a fixed charge.

The graph below shows the charges in dollars (d) for repairs in terms of the number of minutes (t) taken to complete the repairs.



(i) What was the charge for a plumbing job which took 20 minutes? (1 mark)

(ii) How many minutes were spent completing repairs that cost:

(a) $38.00 (1 mark)

(b) $20.00 (1 mark)

(iii) What was the amount of the fixed charge? (1 mark)

5. Solve the following equations:

(a) $7^{3x} = 28$ (4 marks)

(b) $log_2(5x + 7) = 5$ (5 marks)

(c) $e^{5x-1} = 20$ (7 marks)

End of Exam!