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CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD
ORDINARY LEVEL EXAMINATION

SUBJECT TITLE	SUBJECT CODE	PAPER NUMBER
MATHEMATICS	0570	2
	EXAMINATION DATE: JUNE 2017	

Two and a half hours

Enter the information required in the boxes above.
This paper is arranged in two sections, A and B. Answer ALL questions in Sections A and B.

Section A: Answer ALL the questions in the spaces provided. The mark allocation for each question is indicated.

Section B: All questions in Section B carry equal marks.

You are reminded of the necessity for good English and orderly presentation in your answers.
In calculations, you are advised to show all the steps in your working, giving your answer at each stage.

Calculators are allowed.

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4-/0570/2/A/Q

SECTION A

ANSWER ALL 15 QUESTIONS IN THIS SECTION

1. In a concrete mixture, cement, sand and gravel are mixed in the proportion 1:2:3. **(6 mark**

(a) Find the fraction of sand used in the mixture.

2. (a) The scale of a map is 5 cm to 1 km. Express this as a ratio in the form 1: n **(5 marks)**

5Km

1Km = 100,000

(b) The scale of a plan is 1:32. Find the actual length and breadth of a room which measures 25 cm by 20 cm on the plan.

length in

actual le

3. Given that p and q are two statements. Draw the truth table of the statement $(p \wedge q) \Rightarrow (p \vee q)$ **(4 marks)**

p	q	$p \wedge q$	$p \vee q$	$(p \wedge q) \Rightarrow (p \vee q)$

4. (a) Find the Cartesian product $A \times B$ of the sets $A = \{x, y, z\}$ and $B = \{a, b\}$ **(6 marks)**

$A \times B = \{(x,a), (x,b), (y,a), (y,b), (z,a), (z,b)\}$

(b) A function $f: x \mapsto \frac{2x+3}{3}$ is defined on the set of real numbers. Find the element which is mapped onto itself.

5. The exterior angles of a pentagon are given by x, $x + 20^0$, $3x - 50^0$, $2x$, and $x - 10^0$. Calculate the value of x. **(5 marks)**

6. Figure 1 shows a type of prism. **(6 marks)**

(a) State its special name

Rectangular prism

(b) State its number of edges

12 edges

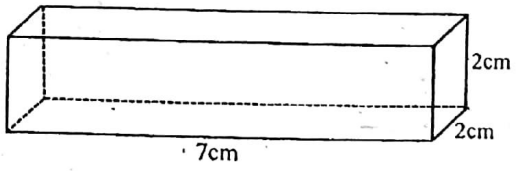


Fig. 1

(c) Find its base area

$A = l \times w = 7 \times 2 = 14 cm^2$

(d) Find the volume of the prism.

Volume $= l \times w \times h$

$7 \times 2 \times 2 = 28 cm^3$

7. A cone has a height of 5 cm and a volume of 62.8 cm^3. Find the volume of a similar cone whose height is 8 cm. Give your answer to one decimal place. **(5 marks)**

8. Figure 2 is a (v – t) graph where the distance covered is the area under the graph. Determine the distance covered in 9 hours. **(5 marks)**

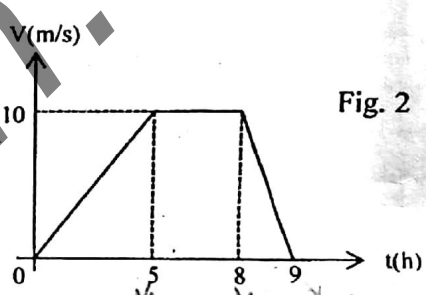


Fig. 2

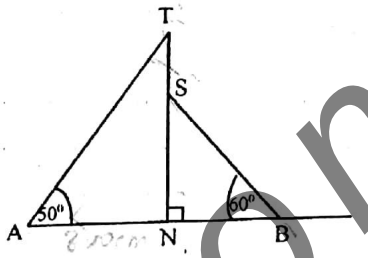
9. Find the solution set for the inequation $5 < 4x + 1 \leq 17$ and represent the solution on a number line. **(5 marks)**

10. An observer on top of a cliff 50 m high sees a ship at a bearing of 120^0 and later on observes it coming towards the cliff at a bearing of 135^0. Calculate the distance travelled by the ship within these observations, to one decimal place. **(6 marks)**

11. In order to plant a pole NT, a builder placed two supporting bars AT and BS against the pole making angles of 50^0 and 60^0 respectively with the floor. Given that the distance AN = 300 cm. **(6 marks)**

Find the length of

(a) the pole, NT



(b) the bar BS given that ST = 50 cm.

12. The points A and B have position vectors $3i + 2j$ and $-i + 4j$ respectively. Given that the point D has position vector $11i - 2j$ and is such that $\overrightarrow{OD} = m\overrightarrow{OA} + n\overrightarrow{OB}$ **(6 marks)**

Calculate the values of m and n

13. Given two matrices A and B defined by $A = \begin{pmatrix} 1 & x-y \\ 4 & 5 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 0 \\ x-1 & 5 \end{pmatrix}$ are such that A = B. Find the values of x and y. **(5 marks)**

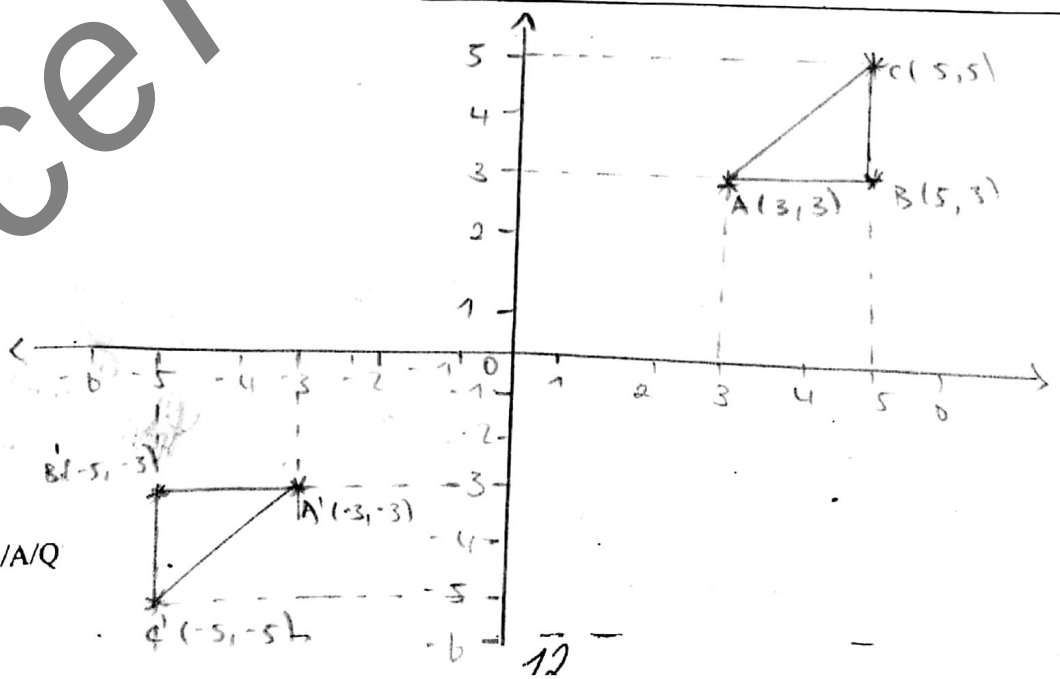
14. Triangle ABC with coordinates A (3, 3), B (5, 3) and C (5, 5) is rotated through 180^0 about the origin O. Determine the coordinates of the image of triangle ABC.

(6 mark

15. The table below shows how a housewife spends her monthly income.

Item	Food	Rent	Savings	Others
Amount (FCFA)	40000	20000	15000	25000

By drawing a circle of radius 4 cm, represent the above information on a pie chart. (6 mark



SECTION B

ANSWER ALL FOUR QUESTIONS IN THIS SECTION.EACH QUESTION CARRIES 15 MARKS

1. (i) A student's pocket allowance is her profit from buying and selling 3 packets of sweets every week of 5 school days.
Given that she buys each packet of 45 sweets for 700 FCFA and sells a sweet for 25 FCFA, calculate:
   (a) Her selling price per packet
   (b) Her profit per packet
   (c) The student's weekly profit
   (d) Her average daily pocket allowance

   (ii) A man bought a bottle of champagne (C) and two bottles of wine (W) at 8 000 FCFA, while another man bought two bottles of champagne and three bottles of wine at 14,000FCFA from the same shop.
   (a) Write down equations relating champagne and wine
   hence
   (b) Calculate the cost of each bottle of champagne and each bottle of wine.

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2. (i)

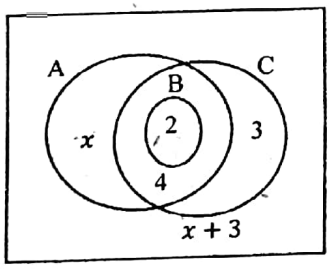

Fig: 1

Figure 1 is a Venn diagram indicating the number of elements in each region.
Given that $n(E) = 22$.

Find
   (a) $n(A \cap C)$
   (b) $n(A \cap B)$
   (c) The value of x
   (d) $n(C')$
   (e) Given that $A \cap C = D$, state the relationship between the sets D and C

(ii) Given the functions f and g defined as

$$f : x \mapsto \frac{3}{x-2}; x \neq 2$$

$$g : x \mapsto 5 - 2x, x \in R,$$

Find
   (a) $g(-2)$
   (b) f^{-1} in a similar manner
   (c) $fg(x)$

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3. (i) On the same axes and using a scale of 2cm to 1 unit on the x-axis and 1cm to 2 units on the y-axis, draw the graphs of $f(x) = 2x^2 - 6x - 5$ for $-2 \le x \le 5$ and $y = x + 3$.
From your graph, determine the value(s) of x for which
$2x^2 - 6x - 5 = x + 3$

(ii)
(a) Construct an equilateral triangle ABC of side 8cm.
(b) Construct the incircle of triangle ABC
(c) Measure the radius of the incircle.

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4. (i) Linda is designing shorts for nursery school kids. She needs to know how long to make the legs. She measures the waist-to-knee length of 100 nursery school kids. The results are shown in this table

Waist- to- knee length (in cm)	Frequency
$32 < l < 34$	3
$34 < l < 36$	16
$36 < l < 38$	47
$38 < l < 40$	25
$40 < l < 42$	5
$42 < l < 44$	4

(a) Copy and complete this cumulative frequency table

Waist- to- knee length (in cm)	Cumulative Frequency
$32 < l < 34$	
$34 < l < 36$	
$36 < l < 38$	
$38 < l < 40$	
$40 < l < 42$	
$42 < l < 44$	

(b) Draw a cumulative frequency curve for this data.
(c) Use your graph to estimate the median waist- to- knee length.
Linda decides to make shorts for waist- to -knee length in the range 35cm to 39cm.
(d) estimate the percentage of her sample that the shorts will fit.

(ii)(a) Given that $\overrightarrow{OP} = 2\underline{i} + \underline{j}$ and $\overrightarrow{OQ} = 5\underline{i} - 3\underline{j}$, find $|\overrightarrow{PQ}|$.
(b) Figure 2, shows a vector diagram, such that $\overrightarrow{OA} = \underline{a}$, $\overrightarrow{OB} = \underline{b}$ and the ratio AX:XB = 1:3
Express $\overrightarrow{AB}$ and $\overrightarrow{XB}$ in terms of $\underline{a}$ and $\underline{b}$

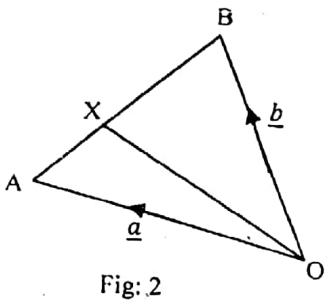

Fig: 2