FORM TP 2026-099

TEST CODE 01234032

MAY–JUNE 2026

# CARIBBEAN EXAMINATIONS COUNCIL

## CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

## MATHEMATICS

### Paper 032 – General Proficiency

*1 hour*

**READ THE FOLLOWING INSTRUCTIONS CAREFULLY.**

1. This paper consists of TWO questions. Answer BOTH questions.
2. Write your answers in the spaces provided in this booklet.
3. Numerical answers that are non-exact should be given correct to 3 significant figures or 1 decimal place for angles in degrees unless a different level of accuracy is specified in the question.
4. Do NOT write in the margins.
5. All working MUST be clearly shown.
6. **A list of formulae is provided on page 4 of this booklet.**
7. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
8. **If you use the extra page(s), you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**
9. **Diagrams in this booklet are NOT drawn to scale, unless otherwise stated.**

**Required Examination Materials**

Electronic calculator
Geometry set

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.**

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## LIST OF FORMULAE

Volume of a prism: $V = Ah$ where $A$ is the area of the cross-section and $h$ is the perpendicular length.

Volume of a cylinder: $V = \pi r^2 h$ where $r$ is the radius of the base and $h$ is the perpendicular height.

Volume of a right pyramid: $V = \frac{1}{3}Ah$ where $A$ is the area of the base and $h$ is the perpendicular height.

Circumference: $C = 2\pi r$ where $r$ is the radius of the circle.

Arc length: $S = \frac{\theta}{360} \times 2\pi r$ where $\theta$ is the angle subtended by the arc, measured in degrees.

Area of a circle: $A = \pi r^2$ where $r$ is the radius of the circle.

Area of a sector: $A = \frac{\theta}{360} \times \pi r^2$ where $\theta$ is the angle of the sector, measured in degrees.

Area of a trapezium: $A = \frac{1}{2}(a + b)\,h$ where $a$ and $b$ are the lengths of the parallel sides and $h$ is the perpendicular distance between the parallel sides.

Roots of quadratic equations: If $ax^2 + bx + c = 0$,

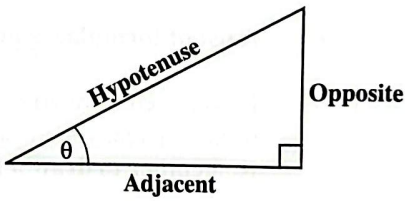
then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Trigonometric ratios:

$\sin\theta = \frac{\text{length of opposite side}}{\text{length of hypotenuse}}$

$\cos\theta = \frac{\text{length of adjacent side}}{\text{length of hypotenuse}}$

$\tan\theta = \frac{\text{length of opposite side}}{\text{length of adjacent side}}$

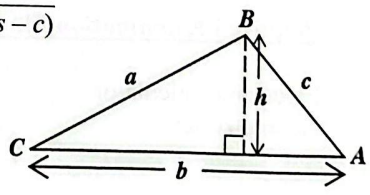



Area of a triangle: Area of $\Delta = \frac{1}{2}bh$ where $b$ is the length of the base and $h$ is the perpendicular height.

Area of $\Delta ABC = \frac{1}{2}ab\sin C$

Area of $\Delta ABC = \sqrt{s(s-a)(s-b)(s-c)}$

where $s = \frac{a+b+c}{2}$




Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

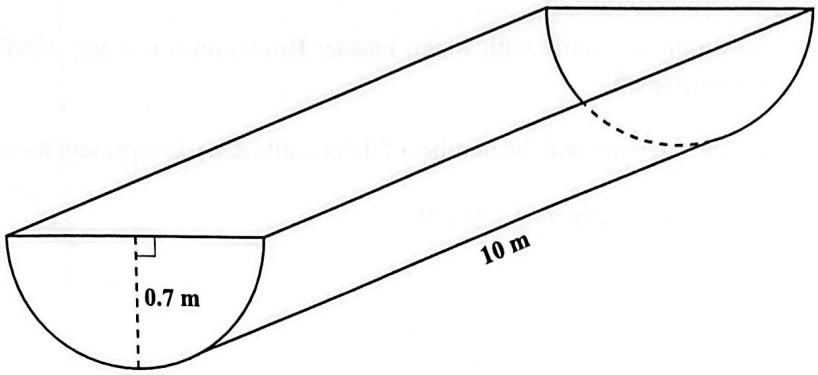
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1. The diagram below shows a horizontal, semicylindrical-shaped trough with a uniform semicircular cross-section, which Farmer Brown wants to use to feed his cows. The radius of the semicircle is 0.7 m and the length of the trough is 10 m.

(Use $\pi = \frac{22}{7}$.)




(a) Show that the capacity of the trough is 7 700 cubic metres.

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**(2 marks)**



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(b) Farmer Brown is setting up a cattle farm comprising cows for milk production (dairy cattle) and cows for beef production (beef cattle), and needs advice on the number of EACH type of cattle he MUST buy to maximize production.

The average daily water consumption is 70 litres and 35 litres for dairy cattle and beef cattle respectively.

To supply his cattle with water, Farmer Brown must use only ONE trough, as shown in (a) **on page 5**.

Using $x$ to represent the number of dairy cattle and $y$ to represent the number of beef cattle,

(i) show that $2x + y \leq 220$.

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**(2 marks)**

Farmer Brown can have no more than 160 cattle.

(ii) Write an inequality in $x$ and $y$ to represent this constraint.

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**(1 mark)**

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Further, there **must** be AT LEAST 40 dairy cattle and the number of beef cattle must be GREATER than 60 but NOT exceed 3 times the number of dairy cattle.

(iii) In addition to the inequalities $x \geq 40$ and $y > 60$, write the third inequality to represent the constraints above.

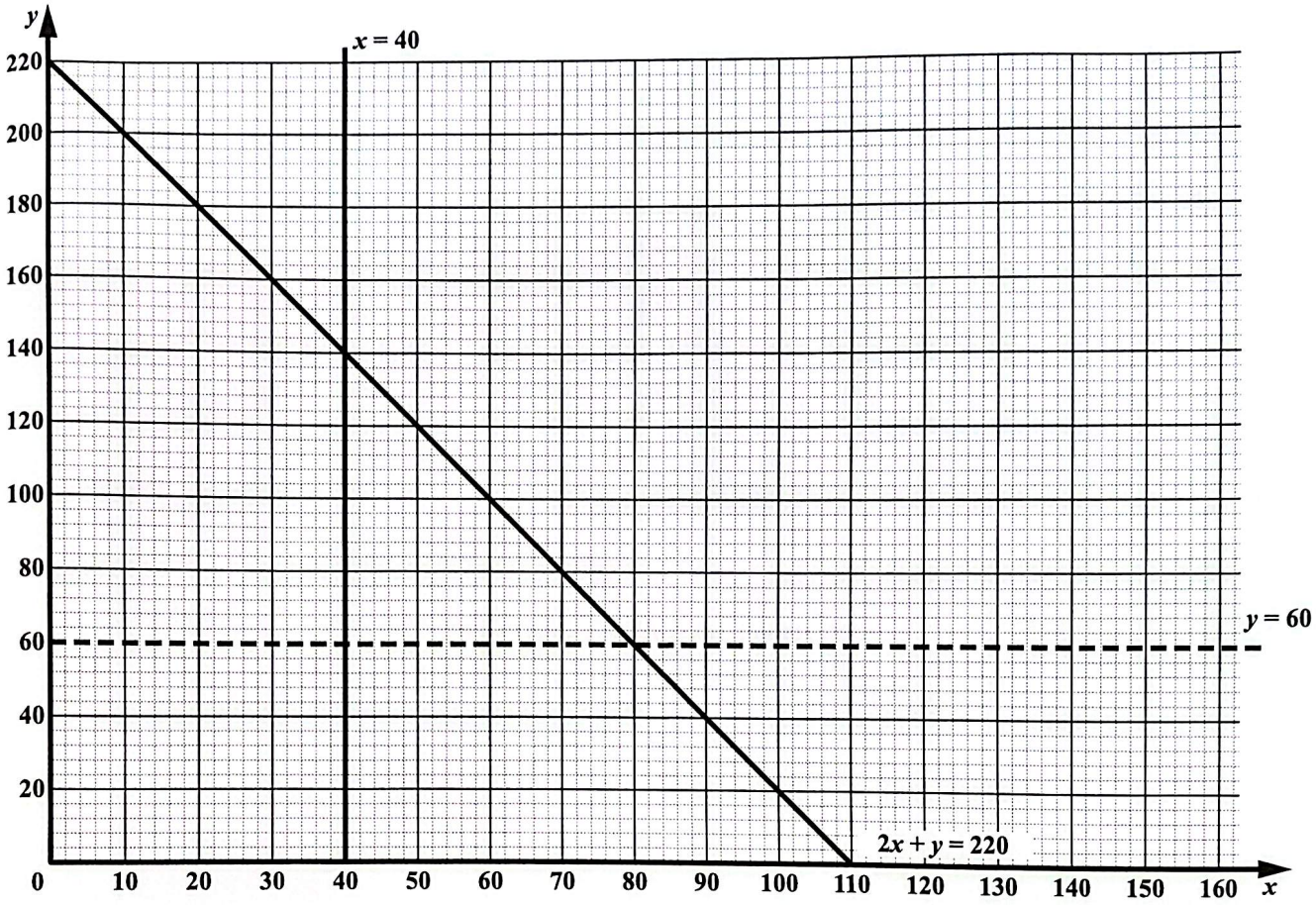
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**(1 mark)**



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(iv) On the graph below, the lines associated with 3 of the inequalities are shown. The lines associated with 2 of the inequalities are missing.




a) On the graph, construct the lines associated with the inequalities you wrote in (b) (ii) and (iii) **on page 6**. **(2 marks)**

b) Shade, and label as *R*, the common region for all 5 inequalities represented on the graph. **(1 mark)**

(v) Based on the graph, suggest ONE of the possible combinations of the two types of cattle that Farmer Brown can use to set up his farm.

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**(1 mark)**

**Total 10 marks**

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**2.** The Triple S Cable Company is tracking the number of daily service desk calls it receives, in order to improve operational efficiency. At the end of each month, the data is collected, graphed and compared with previous months, to identify trends in fault reports and to develop improvement plans for the following month.

The following data set shows the number of calls received daily during the month of November.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 3 | 6 | 22 | 21 | 15 | 11 | 22 | 49 | 19 |
| 21 | 11 | 11 | 21 | 13 | 11 | 32 | 35 | 16 | 36 |
| 9 | 3 | 41 | 45 | 22 | 15 | 21 | 22 | 10 | 32 |

You are required to answer the following questions which will provide details for the November report.

(a) (i) Complete the tally and frequency columns in the table below to represent the given information.

| **Daily Number of Calls Received** | **Tally** | **Frequency (*f*)** |
|---|---|---|
| 1–10 | 𝍸 | 5 |
| 11–20 | ..... | ..... |
| 21–30 | ..... | ..... |
| 31–40 | 𝍸 | 4 |
| 41–50 | 𝍸 | 3 |

**(2 marks)**



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(ii) The table below shows the midpoints for the classes defined in (a) (i) **on page 9**.

| Daily Number of Calls Received | Midpoint ($x$) | Frequency ($f$) | Frequency × Midpoint ($fx$) |
|---|---|---|---|
| 1–10 | 5.5 | 5 | 27.5 |
| 11–20 | 15.5 | ..... | ..... |
| 21–30 | 25.5 | ..... | ..... |
| 31–40 | 35.5 | 4 | 142 |
| 41–50 | 45.5 | 3 | 136.5 |

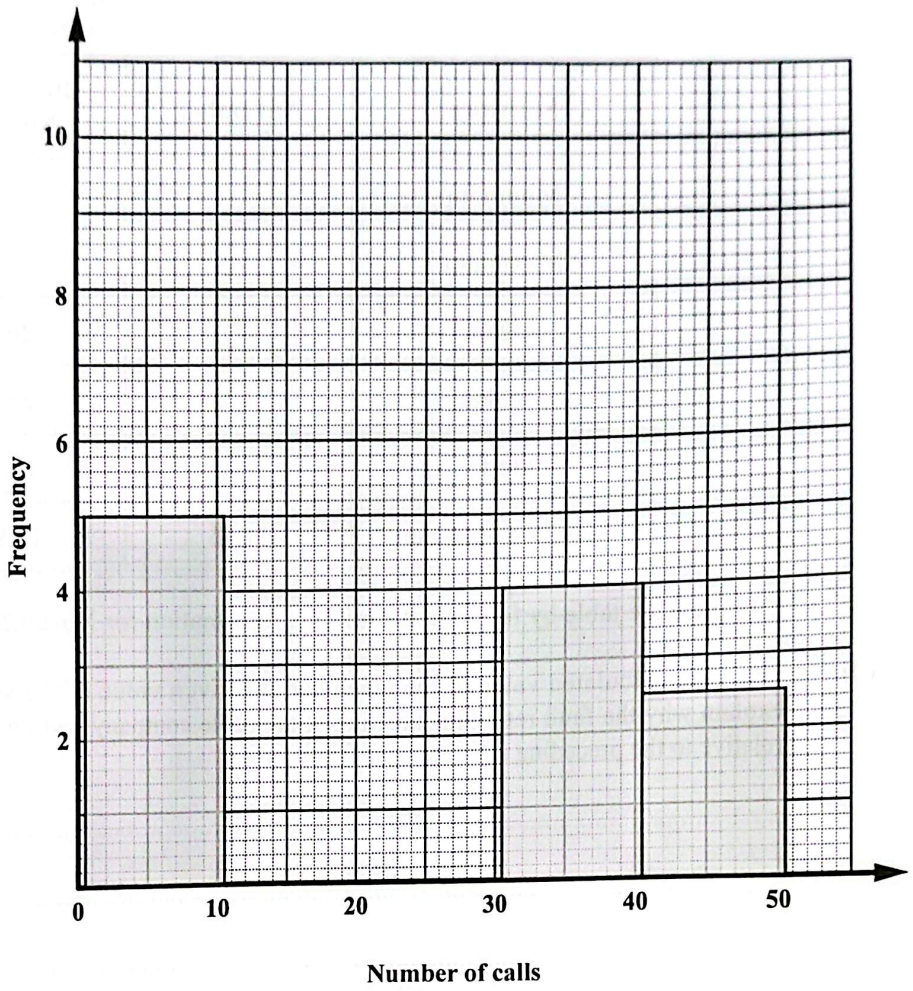
Complete the table above and use the information to estimate the average number of calls received per day over the 30 days.

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**(2 marks)**

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(b) Complete the histogram below to graphically represent the data given **on page 9**.




**(2 marks)**



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(c) The table below shows the standard deviation for the number of daily calls received for the month of November and the average monthly statistics for the months preceding it.

| Statistics | November | Preceding Months |
|---|---|---|
| Minimum | | 14 |
| Maximum | | 57 |
| Mean | | 26.5 |
| Median | | 25.5 |
| Mode | | 15 |
| Standard deviation | 11.85 | 16.93 |

Complete the table by filling in the missing information for November. **(3 marks)**

(d) Use your calculated value of the mean and the given value of the standard deviation to explain why the fault reporting situation at the cable company had improved in November, relative to the preceding months.

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**(1 mark)**

**Total 10 marks**

**END OF TEST**

**IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.**



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