

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®  
EXAMINATION

“\*”Barcode Area”\*”  
Front Page Bar Code

04 JANUARY 2019 (p.m.)

FILL IN ALL THE INFORMATION REQUESTED CLEARLY IN CAPITAL LETTERS.

TEST CODE 

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 0 | 3 | 2 |
|---|---|---|---|---|---|---|---|

SUBJECT MATHEMATICS – Paper 032

PROFICIENCY GENERAL

REGISTRATION NUMBER 

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|

SCHOOL/CENTRE NUMBER  

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

NAME OF SCHOOL/CENTRE  

|  |
|--|
|  |
|--|

CANDIDATE’S FULL NAME (FIRST, MIDDLE, LAST)  

|  |
|--|
|  |
|--|

DATE OF BIRTH 

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| D | D | M | M | Y | Y | Y | Y |
|---|---|---|---|---|---|---|---|

SIGNATURE \_\_\_\_\_

“\*”Barcode Area”\*”  
Current Bar Code

“\*”Barcode Area”\*”  
Sequential Bar Code

**DO NOT  
WRITE ON  
THIS PAGE**



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 ALL questions.
2. Write your answers in the spaces provided in this booklet.
3. Do NOT write in the margins.
4. All working MUST be clearly shown.
5. **A list of formulae is provided on page 4 of this booklet.**
6. 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.**
7. **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.**

**Required Examination Materials**

Electronic calculator  
Geometry set

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

Copyright © 2018 Caribbean Examinations Council  
All rights reserved.

01234032/JANUARY 2019

“\*”Barcode Area”  
Sequential Bar Code

## 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  $ax^2 + bx + c = 0$ ,

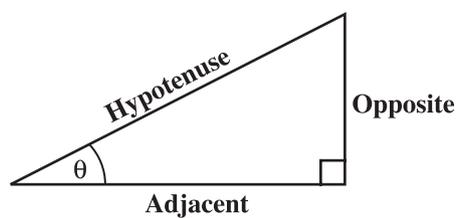
$$\text{then } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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.

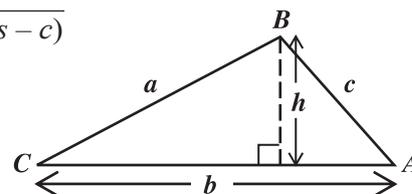
$$\text{Area of } \Delta ABC = \frac{1}{2} ab \sin C$$

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

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

Sine rule

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



Cosine rule

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

GO ON TO THE NEXT PAGE

1. (a) The information below represents the minimum temperatures, in °C, recorded in Country A for the first 20 days in a particular month.

21    23    25    22    24    25    23    26    23    24  
 25    26    23    25    23    25    24    25    25    25

- (i) Complete the frequency table below, using the information above.

| Temperature (°C) | Tally | Frequency |
|------------------|-------|-----------|
| 21               |       | 1         |
| 22               |       | 1         |
| 23               |       |           |
| 24               |       | 3         |
| 25               |       |           |
| 26               |       |           |

(2 marks)

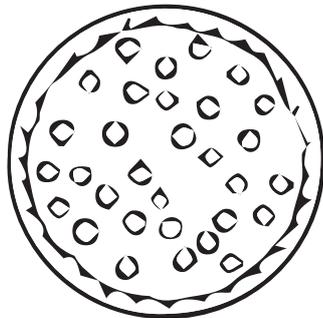
- (ii) Determine the median temperature.

.....  
(2 marks)

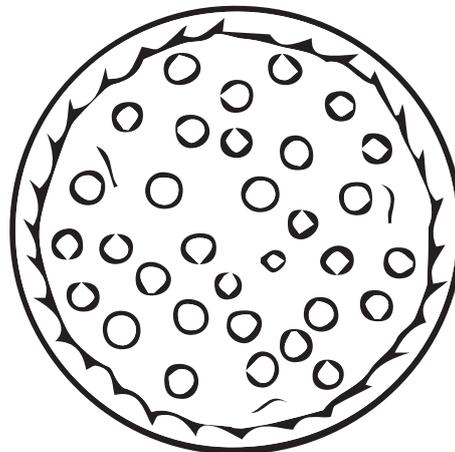
- (iii) Calculate the mean temperature for the twenty-day period.

.....  
(1 mark)

- (b) The diagrams below represent the cross-sections of two circular pizzas, *A* and *B*. The pizzas are similar but vary in size. Pizza *A* has a diameter of 15 cm and Pizza *B* has a diameter of 30 cm.



Pizza A



Pizza B

- (i) Determine, by calculation, if Pizza *B* is TWICE the size of Pizza *A*.

.....  
(3 marks)

DO NOT WRITE IN THIS AREA

- (ii) Pizza *B* is cut into 5 equal slices and is sold at \$6.95 per slice, while Pizza *A* (is sold as a whole) at \$9.95. Determine, with reason, which of the two options, (a slice of Pizza *B* or Pizza *A*), is the **better** buy for the customer.

---

(2 marks)

**Total 10 marks**

2. (a) In a football tournament, points are awarded as follows: 3 points for a win, 1 point for a draw and 0 points for a loss.

(i) Write a  $3 \times 1$  matrix,  $P$ , to represent this information.

.....  
(1 mark)

During the tournament, Team Alpha recorded 5 wins, 1 draw and 3 losses, while Team Beta recorded 3 wins, 4 draws and 2 losses.

(ii) Write a  $2 \times 3$  matrix,  $R$ , to represent this information.

.....  
(1 mark)

(iii) Calculate the matrix product  $RP$ .

.....  
(2 marks)

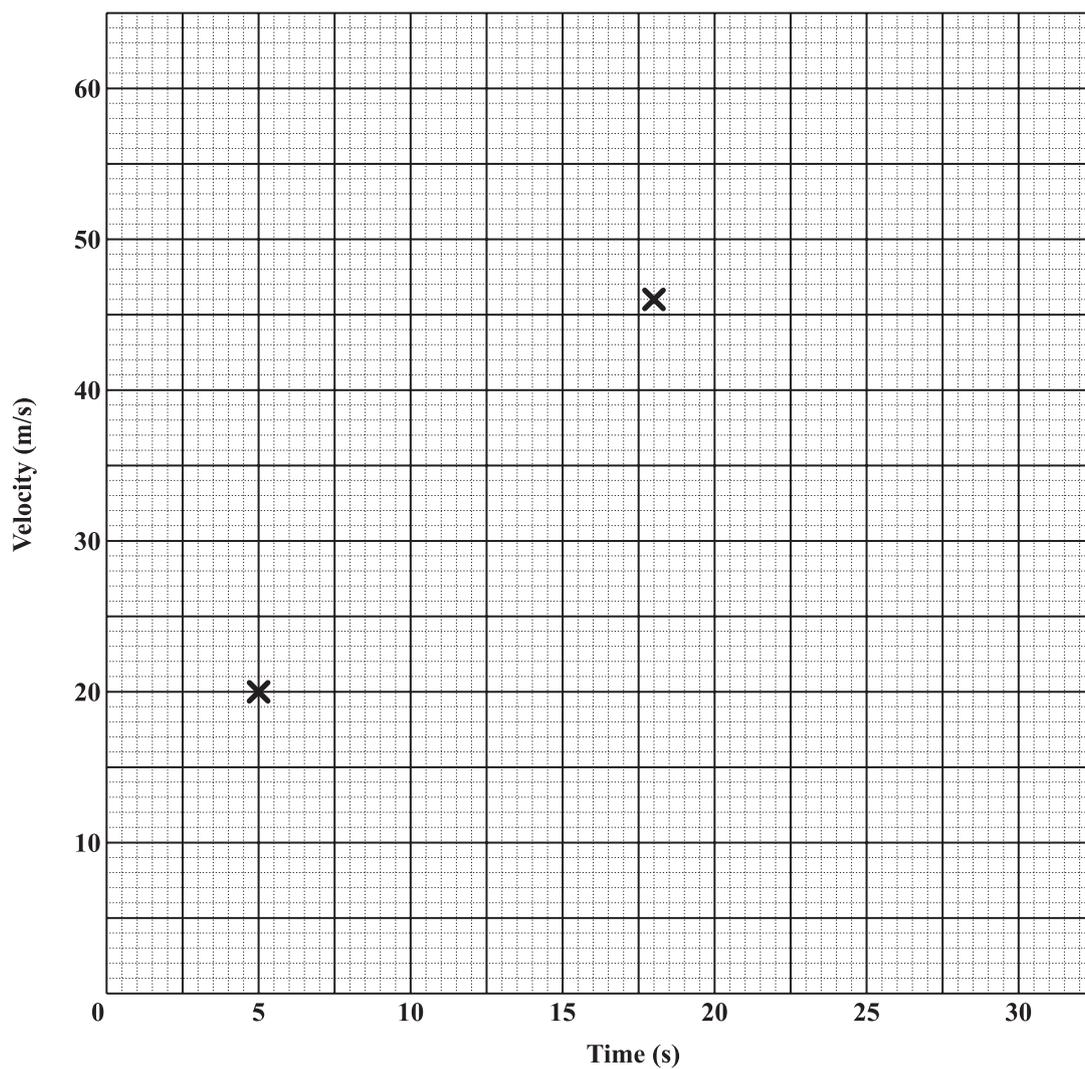
(iv) What does the matrix product  $RP$  represent?

.....  
(1 mark)

- (b) The values recorded in the table below represent the velocity of an object over a period of time.

|                     |    |    |    |    |
|---------------------|----|----|----|----|
| Velocity, $v$ (m/s) | 20 | 34 | 46 | 60 |
| Time, $t$ (s)       | 5  | 12 | 18 | 25 |

- (i) On the grid below, two points are plotted. Plot the remaining two points on the grid and draw a line of best fit through the points.



(2 marks)

GO ON TO THE NEXT PAGE

- (ii) Given that the **linear** motion of the object can be expressed in the form  $v = at + u$ , where  $a$  and  $u$  are constants, use your graph to determine the values of  $a$  and  $u$ .

.....  
(3 marks)

Total 10 marks

END OF TEST

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

01234032/JANUARY 2019

“\*”Barcode Area”  
Sequential Bar Code

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**EXTRA SPACE**

**If you use this extra page, you MUST write the question number clearly in the box provided.**

Question No.

*DO NOT WRITE IN THIS AREA*

**EXTRA SPACE**

**If you use this extra page, you MUST write the question number clearly in the box provided.**

Question No.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**EXTRA SPACE**

**If you use this extra page, you MUST write the question number clearly in the box provided.**

Question No.

*DO NOT WRITE IN THIS AREA*

**EXTRA SPACE**

**If you use this extra page, you MUST write the question number clearly in the box provided.**

Question No.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**DO NOT  
WRITE ON  
THIS PAGE**

## CANDIDATE'S RECEIPT

---

### INSTRUCTIONS TO CANDIDATE:

1. Fill in all the information requested clearly in capital letters.

TEST CODE: 

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 0 | 3 | 2 |
|---|---|---|---|---|---|---|---|

SUBJECT: MATHEMATICS – Paper 032

PROFICIENCY: GENERAL

REGISTRATION NUMBER: 

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|

FULL NAME: \_\_\_\_\_  
**(BLOCK LETTERS)**

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

2. Ensure that this slip is detached by the Supervisor or Invigilator and given to you when you hand in this booklet.
  3. Keep it in a safe place until you have received your results.
- 

### INSTRUCTION TO SUPERVISOR/INVIGILATOR:

Sign the declaration below, detach this slip and hand it to the candidate as his/her receipt for this booklet collected by you.

I hereby acknowledge receipt of the candidate's booklet for the examination stated above.

Signature: \_\_\_\_\_  
Supervisor/Invigilator

Date: \_\_\_\_\_