



TEST CODE **01234032/SPEC**

**FORM TP 01234032/SPEC**

**CARIBBEAN EXAMINATIONS COUNCIL  
CARIBBEAN SECONDARY EDUCATION CERTIFICATE®  
EXAMINATION**

**MATHEMATICS**

**SPECIMEN PAPER**

**Paper 032 – General Proficiency**

*2 hours 40 minutes*

**READ THE FOLLOWING INSTRUCTIONS CAREFULLY.**

1. This paper consists of TWO questions.
2. Answer ALL questions.
3. Write your answers in the booklet provided.
4. Do NOT write in the margins.
5. All working MUST be clearly shown.
6. **A list of formulae is provided on page 2 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.**

**Examination Materials Permitted**

Silent, non-programmable electronic calculator  
Mathematical instruments

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

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01234020/SPEC 2015

## LIST OF FORMULAE

|                              |   |
|------------------------------|---|
| Volume of a prism            | $V = Ah$ where $A$ is the area of a cross-section and $h$ is the perpendicular length.  |
| Volume of 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 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 $ax^2 + bx + c = 0$ ,  |

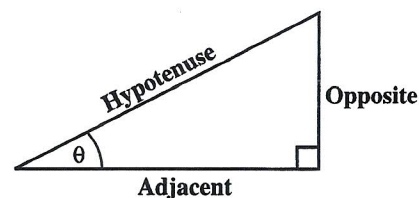
$$\text{then } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Trigonometric ratios

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

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

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



Area of triangle

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

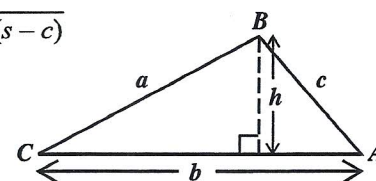
$$\text{Area of } \Delta ABC = \frac{1}{2} ab \sin C$$

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

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

Sine rule

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

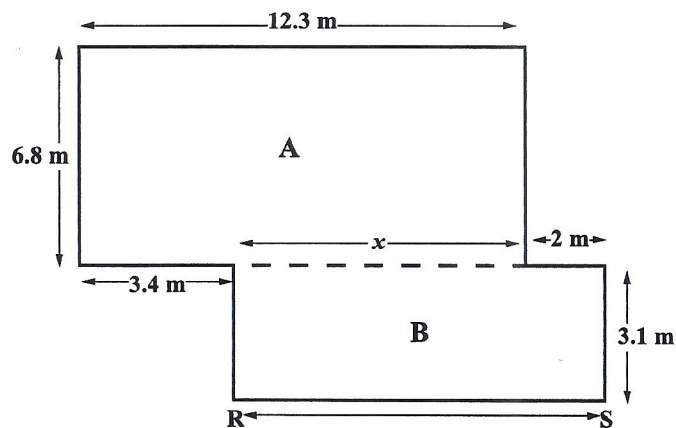


Cosine rule

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

GO ON TO THE NEXT PAGE

1. The diagram below, **not drawn to scale**, represents the plan of a floor. The broken line  $RS$  divides the floor into two rectangles, **A** and **B**.



- (a) (i) Calculate the value of  $x$ .

(1 mark)

- (ii) Hence, determine the length of  $RS$ .

(1 mark)

GO ON TO THE NEXT PAGE

- (b) Calculate the area of the entire floor.

**(4 marks)**

- (c) Section A of the floor is to be covered with flooring boards measuring 1 metre by 30 centimetres.

What is the MINIMUM number of flooring boards that would be needed to completely cover Section A?

**(4 marks)**

**Total 10 marks**

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2. A graph sheet is provided for this question.

A company manufactures gold and silver stars to be used as party decorations. The stars are placed in packets so that each packet contains  $x$  gold stars and  $y$  silver stars.

The table below shows some of the conditions for packaging the stars.

|     | Condition  | Inequality  |
|-----|--|-------------|
| (1) | Each packet must have at least 20 gold stars                     | $x \geq 20$ |
| (2) | Each packet must have at least 15 silver stars                   |             |
| (3) | The total number of stars in each packet must be no more than 60 |             |
| (4) |  | $x < 2y$    |

- (a) Complete the table above by
- writing the inequalities to represent conditions (2) and (3) **(2 marks)**
  - describing in words, the condition represented by the inequality  $x < 2y$ . **(2 marks)**
- (b) Complete the graph on page 5, to show the common region represented by ALL FOUR inequalities in the table above. **(3 marks)**
- (c) Three packets of stars (A, B, and C) were selected for inspection. Their contents are shown in the table below.

| Packet | No. of gold stars ( $x$ ) | No. of silver stars ( $y$ ) |
|--------|---------------------------|-----------------------------|
| A      | 25                        | 20                          |
| B      | 35                        | 15                          |
| C      | 30                        | 25                          |

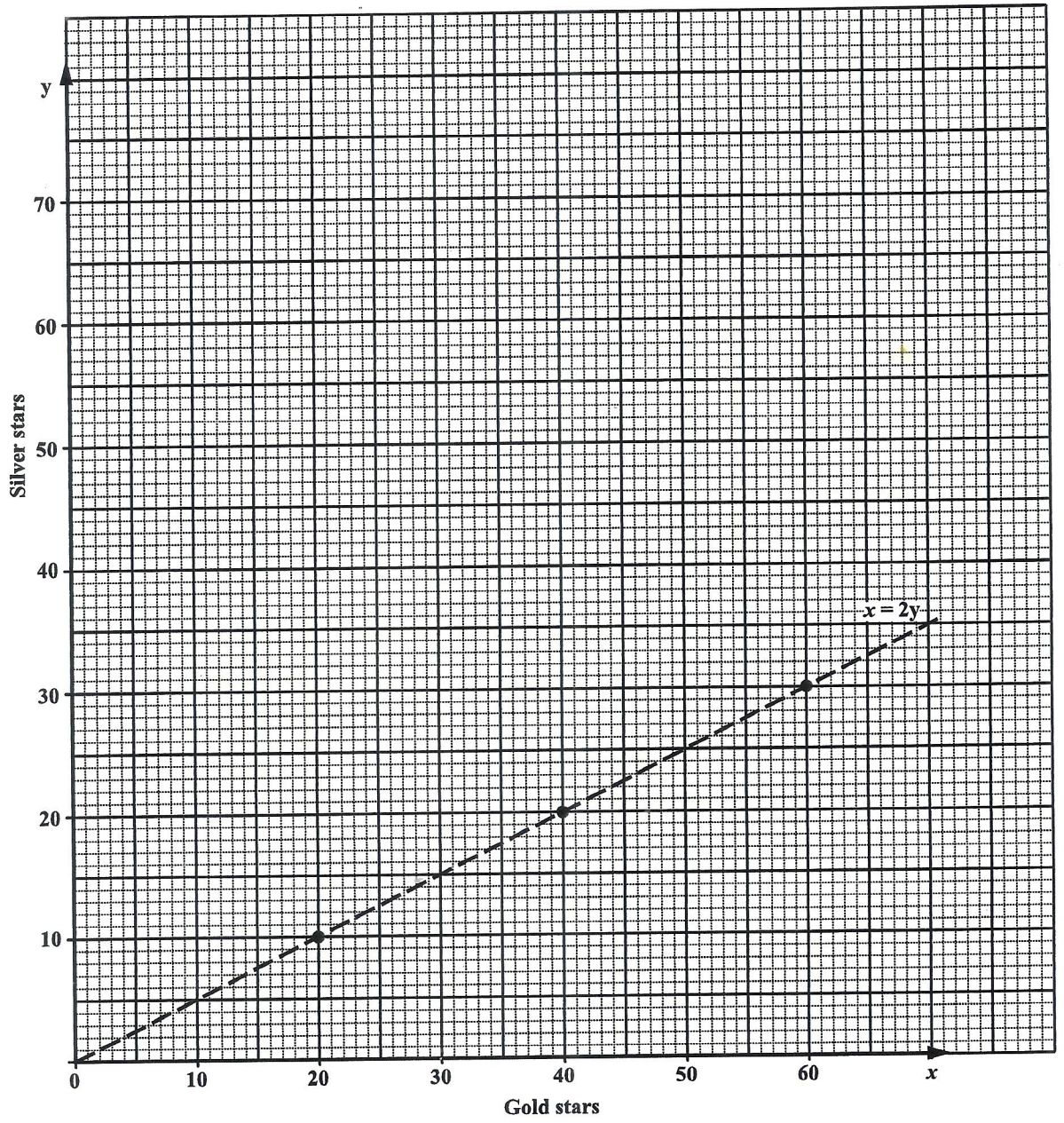
- Plot the points representing A, B and C on the graph drawn at (b). **(1 mark)**
- Hence, state which of the three packets satisfy ALL the conditions for packaging. Justify your response.

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**(2 marks)**

GO ON TO THE NEXT PAGE



Total 10 marks

END OF TEST

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



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C A R I B B E A N   E X A M I N A T I O N S   C O U N C I L

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MATHEMATICS  
PAPER 032 - GENERAL PROFICIENCY  
SPECIMEN  
MARK SCHEME

QUESTION: 1

|   | PROFILES |          |          | Total     |
|---|----------|----------|----------|-----------|
|   | K        | C        | R        |           |
| (a) (i) $x = (12.3 - 3.4)m = 8.9 \text{ m}$   |          | 1        |          |           |
| (ii) $RS = (8.9 + 2.0)m = 10.9 \text{ m}$   |          |          | 1        |           |
|   | -        | 1        | 1        | 2         |
| (b) Area of <b>A</b> :<br>$12.3 \text{ m} \times 6.8 \text{ m} = 83.64 \text{ m}^2$ |          | 1        |          |           |
| Area of <b>B</b> :<br>$10.9 \text{ m} \times 3.1 \text{ m} = 33.79 \text{ m}^2$     | 1        |          |          |           |
| TOTAL area = $117.43 \text{ m}^2$   | 1        |          | 1        |           |
| Correct method for finding area: C1<br>Either Area of A or Area of B correct: K1    |          |          |          |           |
| Adding to find the total area: R1<br>Correct total: K1                              |          |          |          |           |
|   | 2        | 1        | 1        | 4         |
| (c) Area of board $0.3 \text{ m}^2$ (seen or implied)                               |          | 1        |          |           |
| Number of boards = $\frac{83.64}{0.3}$ (Division:C1)                                | 1        | 1        |          |           |
| = 278.8 (Correct answer K1)   |          |          |          |           |
| Number of boards needed is 279  |          |          | 1        |           |
|   | 1        | 2        | 1        | 4         |
| <b>TOTAL</b>  | <b>3</b> | <b>4</b> | <b>3</b> | <b>10</b> |



## MATHEMATICS

PAPER 032 - GENERAL PROFICIENCY

SPECIMEN

MARK SCHEME

QUESTION: 2

|  | PROFILES |          |          | Total     |
|--|----------|----------|----------|-----------|
|  | K        | C        | R        |           |
| (a) (i) [2] $y \geq 15$<br>[3] $x + y \leq 60$<br><br>(ii) The number of gold stars must be LESS than TWICE the number of silver stars.<br>- Less than (C1); Twice the number of silver(R1)              | 1        | 1        | 1        |           |
|  | <b>1</b> | <b>2</b> | <b>1</b> | <b>4</b>  |
| (b) <b>See graph on next page</b><br><br>Line $x = 20$ <b>OR</b> line $y = 15$<br><br>Line $x + y = 60$<br><br>Correct region seen or implied  | 1        |          |          |           |
|  | 1        | 1        |          |           |
|  | <b>2</b> | <b>1</b> | <b>-</b> | <b>3</b>  |
| (c) (i) Plotting any two points correctly<br><br>(ii) Packets A and C satisfy the conditions but Packet B does not satisfy condition [4]<br><br>- Response must be supported by points seen on the graph |          | 1        |          |           |
|  |          |          | 1<br>1   |           |
|  | <b>-</b> | <b>1</b> | <b>2</b> | <b>3</b>  |
| <b>TOTAL</b>   | <b>3</b> | <b>4</b> | <b>3</b> | <b>10</b> |

## MATHEMATICS

PAPER 032 - GENERAL PROFICIENCY

SPECIMEN

MARK SCHEME

