

CARIBBEAN EXAMINATIONS COUNCIL
SECONDARY EDUCATION CERTIFICATE
EXAMINATION
MATHEMATICS

Paper 01 – General Proficiency

90 minutes

05 JANUARY 2010 (p.m.)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

- This test consists of 60 items. You will have 90 minutes to answer them.
- In addition to this test booklet, you should have an answer sheet.
- A list of formulae is provided on page 2 of this booklet.
- Each item in this test has four suggested answers, lettered (A), (B), (C), (D). Read each item you are about to answer, and decide which choice is best.
- On your answer sheet, find the number which corresponds to your item and shade the space having the same letter as the answer you have chosen. Look at the sample item below.

Sample Item

$2a + 6a =$

- (A) $8a$
- (B) $8a^2$
- (C) $12a$
- (D) $12a^2$

Sample Answer

- (A)
- (B)
- (C)
- (D)

The best answer to this item is "8a", so answer space (A) has been shaded.

- If you want to change your answer, erase it completely before you fill in your new choice.
- When you are told to begin, turn the page and work as quickly and as carefully as you can. If you cannot answer an item, omit it and go on to the next one. You can return later to the item omitted. Your score will be the total number of correct answers.
- You may do any rough work in the booklet.
- Calculators and mathematical tables are NOT allowed for this paper.

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

- The number 0.0346 written in standard form is
 - (A) 3.46×10^{-2}
 - (B) 3.46×10^{-1}
 - (C) 3.46×10
 - (D) 3.46×10^2
- The value of 0.386×0.06 is
 - (A) 0.02316
 - (B) 0.2316
 - (C) 2.316
 - (D) 23.16
- The number 3.14063 written to 3 decimal places is
 - (A) 3.140
 - (B) 3.141
 - (C) 3.146
 - (D) 3.150
- If 60% of a number is 90, what is the number?
 - (A) 30
 - (B) 54
 - (C) 150
 - (D) 180
- What number when added to $1\frac{1}{3}$ gives 2?
 - (A) $\frac{1}{3}$
 - (B) $\frac{2}{3}$
 - (C) $1\frac{2}{3}$
 - (D) $3\frac{1}{3}$
- John, Peter and Mary shared a sum of money in the ratio 2 : 4 : 9. John and Peter together received \$360. How much money was shared altogether?
 - (A) \$480
 - (B) \$540
 - (C) \$600
 - (D) \$900
- The value of the digit 2 in 425.3 is
 - (A) 2 tens
 - (B) 2 ones
 - (C) 2 tenths
 - (D) 2 hundreds
- 25×130 is the same as
 - (A) $(25 \times 100) + 30$
 - (B) $(25 + 30) \times 100$
 - (C) $(25 \times 30) + (25 \times 100)$
 - (D) $(100 \times 30) + (100 \times 25)$
- The largest prime number that is less than 100 is
 - (A) 91
 - (B) 93
 - (C) 97
 - (D) 99
- What is the LEAST number of plums that can be shared equally among either 6, 9 or 12 children?
 - (A) 27
 - (B) 36
 - (C) 54
 - (D) 72

11. Of a class of 32 students, 17 study Music and 20 study Art. What is the LEAST number of students who study BOTH Music and Art?
- (A) 3
(B) 5
(C) 12
(D) 15

12. Which of the following sets is equivalent to $\{a, b, c, d\}$?
- (A) $\{4\}$
(B) $\{a, b, c\}$
(C) $\{p, q, r, s\}$
(D) $\{1, 2, 3, 4, 5\}$

Item 13 refers to the following information.

13. $P = \{\text{prime numbers}\}$
 $Q = \{\text{odd numbers}\}$
 $R = \{\text{even numbers}\}$

Which of the following sets is empty?

- (A) $Q \cap R$
(B) $P \cap R$
(C) $P \cap Q$
(D) $P \cup Q$
14. If $U = \{1, 3, 5, 6, 8\}$ and $A = \{3, 6\}$, then the number of elements in A' is
- (A) 2
(B) 3
(C) 4
(D) 8

15. $3\frac{1}{4}\%$ of \$500 is
- (A) \$ 1.62
(B) \$15.52
(C) \$16.00
(D) \$16.25
16. A dress which costs \$180 is being sold at a discount of 10%. The discount is
- (A) \$ 1.80
(B) \$ 10.00
(C) \$ 18.00
(D) \$170.00
17. If \$7000 is borrowed at the rate of 5% per annum for 3 years, the simple interest is
- (A) \$ 105
(B) \$ 210
(C) \$ 370
(D) \$1050
18. The exchange rate for one United States dollar (US\$1.00) is two dollars and seventy cents in Eastern Caribbean currency (EC\$2.70). What is the value of US\$4.50 in EC currency?
- (A) \$ 1.67
(B) \$6.00
(C) \$7.20
(D) \$12.15

19. How much does a customer pay for an article marked at \$50.00 if a sales tax of 6% is charged?
- (A) \$44.00
(B) \$47.00
(C) \$53.00
(D) \$56.00

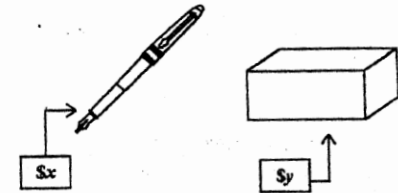
20. A salesman sells a car for \$11 000. If he is paid a commission of 4.5% for the first \$10 000 and 7.5% on the remainder, then the commission he receives is
- (A) \$.495
(B) \$ 525
(C) \$ 825
(D) \$1 320

21. A company employs 12 gardeners at \$26 per day, and 8 clerks at \$17 per day. What is the mean daily wage of the 20 employees?
- (A) \$20.00
(B) \$21.50
(C) \$22.40
(D) \$31.50

22. If the simple interest on \$800 for 3 years is \$54, what is the rate of interest per annum?
- (A) $\frac{4}{9}\%$
(B) $2\frac{1}{4}\%$
(C) 5%
(D) 44%

23. $2a^3 + (2a)^3 =$
- (A) $10a^3$
(B) $10a^6$
(C) $16a^3$
(D) $16a^6$

Item 24 refers to the information below.



24. The total cost of 3 pens and 2 boxes is
- (A) $5xy$
(B) $5(x+y)$
(C) $2x+3y$
(D) $3x+2y$
25. Given that $2x+3 \geq 9$, the range of values of x is
- (A) $x \geq 3$
(B) $x > 3$
(C) $x \geq 6$
(D) $x > 6$
26. If $a * b = \frac{b}{a} - 1$, then $7 * 28 =$
- (A) $-\frac{3}{4}$
(B) $\frac{1}{4}$
(C) 3
(D) 4

27. Althea saves \$ x each month; but in June she saved \$4 more than twice her usual amount. In June Althea saved

- (A) \$ $4x$
- (B) \$ $6x$
- (C) \$($x+4$)
- (D) \$($2x+4$)

28. $5(x+y) - 3(x-y) =$

- (A) $2x$
- (B) $2x+2y$
- (C) $2x+8y$
- (D) $8x+8y$

29. If x is an integer which satisfies the inequalities $4 < x - 2 < 8$, then the SMALLEST possible value of x is

- (A) 7
- (B) 6
- (C) 5
- (D) 4

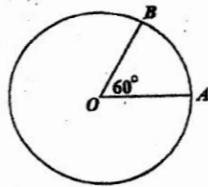
30. Think of a number. Subtract 8 from it. Multiply the difference by 3. The result is 21. What is the original number?

- (A) 1
- (B) 3
- (C) 10
- (D) 15

31. For all a and b , $3a(a+2b) - b(2a-3b) =$

- (A) $3a^2 + 4ab + 3b^2$
- (B) $3a^2 - ab + 3b^2$
- (C) $3a^2 + 4ab - 3b^2$
- (D) $3a^2 + 8ab - 3b^2$

Item 32 refers to the circle below, with centre O.



32. The circumference of the circle is 20 cm. The length of the minor arc AB , in centimetres, is

- (A) $\frac{1}{60} \times 20$
- (B) $\frac{60}{360} \times 20$
- (C) $\left(\frac{360-60}{360}\right) \times 20$
- (D) 60×20

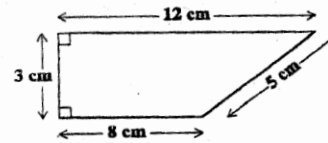
33. If it took a speed-boat 9 hours to travel a distance of 1080 km, what was its average speed?

- (A) 12 km/h
- (B) 102 km/h
- (C) 120 km/h
- (D) 1200 km/h

34. The volume of a cube whose edge is 6 cm long is

- (A) 18 cm^3
- (B) 36 cm^3
- (C) 72 cm^3
- (D) 216 cm^3

Item 35 refers to the trapezium below.



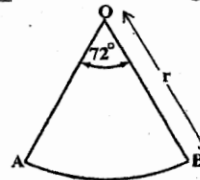
35. The area of the trapezium is

- (A) 24 cm^2
- (B) 28 cm^2
- (C) 30 cm^2
- (D) 36 cm^2

36. The distance around the edge of a circular pond is 88 m. The radius, in metres is

- (A) 176π
- (B) 88π
- (C) $\frac{88}{\pi}$
- (D) $\frac{88}{2\pi}$

Item 37 refers to the following diagram.



AOB is a sector of a circle such that angle $AOB = 72^\circ$ and OB is r units long. The area of AOB is

- (A) $\frac{1}{5}\pi r^2$
- (B) $\frac{2}{5}\pi r^2$
- (C) $\frac{1}{5}\pi r$
- (D) $\frac{2}{5}\pi r$

38. A man leaves home at 22:15 hrs and reaches his destination, in the same time zone, at 04:00 hrs on the following day. How many hours did the journey take?

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

39. The area of a rectangle is 53.6 cm^2 . If the length is multiplied by 4 and the width is divided by 2, the area would then be

- (A) 107.2 cm^2
- (B) 53.6 cm^2
- (C) 26.8 cm^2
- (D) 13.4 cm^2

40. The median of the numbers 1, 1, 5, 5, 6, 7, 7, 7, 8 is

- (A) 5.4
- (B) 6
- (C) 6.5
- (D) 7

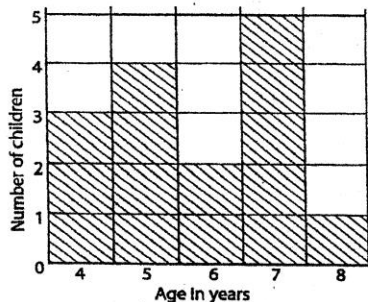
Item 41 refers to the table below which shows the frequency of scores obtained by students in a test.

Scores	2	3	5	6	8	10
Students	7	4	6	3	5	2

41. The range of scores is

- (A) 2
- (B) 7
- (C) 8
- (D) 10

Item 42 refers to the bar chart below which shows the ages of children who took part in a survey.



42. How many children took part in the survey?

- (A) 5
- (B) 15
- (C) 75
- (D) 87

43. If the mean of the four numbers 4, 8, x and 12 is 10, then x is

- (A) 4
- (B) 10
- (C) 12
- (D) 16

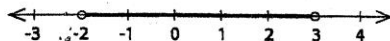
44. A bag contains 2 red, 4 yellow and 6 blue balls. The probability of drawing a blue ball at random from the bag is

- (A) $\frac{1}{6}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{2}$
- (D) $\frac{6}{11}$

45. A bag contains 60 marbles of different colours. The probability of choosing a red marble is $\frac{5}{12}$. How many red marbles does the bag contain?

- (A) 25
- (B) 17
- (C) 12
- (D) 5

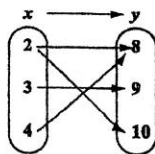
Item 46 refers to the diagram below.



46. The graph of the inequality in the diagram above is defined by

- (A) $-2 < x \leq 3$
- (B) $-2 \leq x < 3$
- (C) $-2 \leq x \leq 3$
- (D) $-2 < x < 3$

Item 47 refers to the arrow diagram below.



47. The arrow diagram above describes the relation

- (A) x is a factor of y
- (B) x is less than y
- (C) x is a multiple of y
- (D) x is greater than y

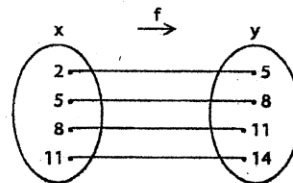
48. If $h(x) = \frac{3x-2}{5}$, then $h(-6) =$

- (A) -4
- (B) $-\frac{16}{5}$
- (C) $\frac{16}{5}$
- (D) 4

49. Which of the following points lies on the line $y = 2x - 3$?

- (A) (2, 3)
- (B) (-2, -1)
- (C) (4, 1)
- (D) (0, -3)

Item 50 refers to the arrow diagram below, which shows a function.



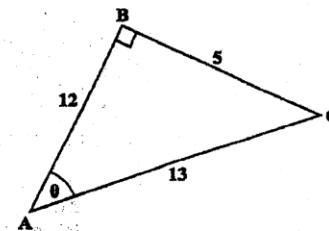
50. Which of the following BEST describes the function?

- (A) $f(x) = x + 3$
- (B) $f(x) = y + 3$
- (C) $x = y + 3$
- (D) $y = x$

51. The range of $f : x \rightarrow x^3$ for the domain $\{-2, -1, 0, 1, 2\}$ is

- (A) $\{0, 1, 8\}$
- (B) $\{-2, -1, 0, 1, 2\}$
- (C) $\{-6, -3, 0, 3, 6\}$
- (D) $\{-8, -1, 0, 1, 8\}$

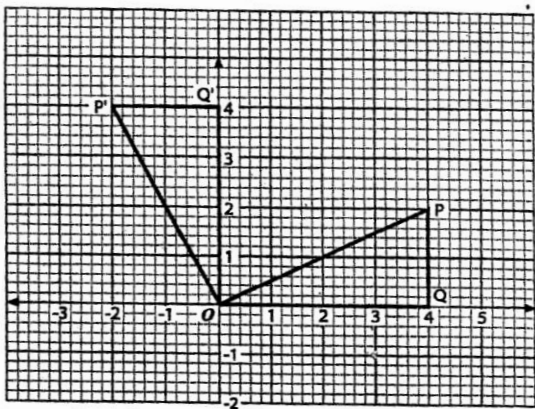
Item 52 refers to the right-angled triangle below.



52. In the right-angled triangle, $\tan \theta$ is

- (A) $\frac{5}{13}$
- (B) $\frac{5}{12}$
- (C) $\frac{12}{5}$
- (D) $\frac{13}{5}$

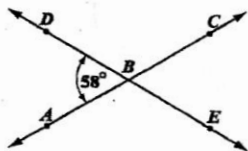
Item 53 refers to the diagram below.



53. In the figure above, ΔOPQ is mapped onto $\Delta OP'Q'$. What type of transformation has taken place?

- (A) Reflection
- (B) Enlargement
- (C) Translation
- (D) Rotation

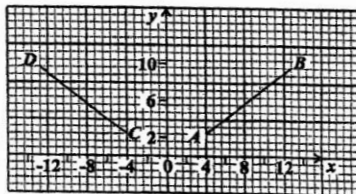
Item 54 refers to the diagram below.



54. The measure of angle ABE is

- (A) 58°
- (B) 122°
- (C) 142°
- (D) 302°

55.

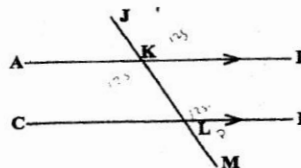


In the figure above, the line CD is the image of AB after

- (A) a rotation through 90° centre O
- (B) a reflection in the y -axis
- (C) a translation by vector $\begin{pmatrix} -4 \\ -8 \end{pmatrix}$
- (D) an enlargement of scale factor -1

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Item 56 refers to the diagram below.

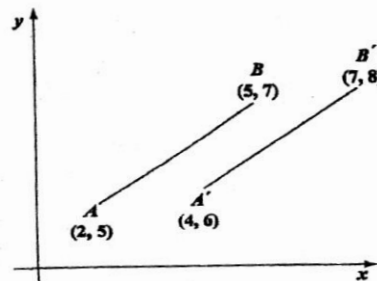


56. In the diagram above, AB is parallel to CD , and $\angle JKB = 125^\circ$.

The measure of angle MLD is

- (A) 125°
- (B) 90°
- (C) 75°
- (D) 55°

Item 57 refers to the diagram below.



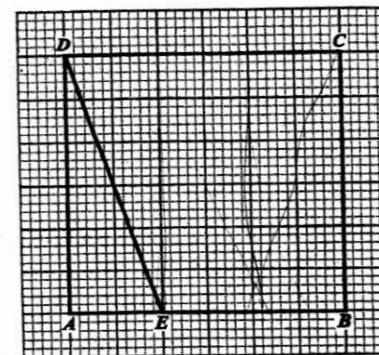
57. The translation by which AB is mapped onto $A'B'$ is represented by

- (A) $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$
- (B) $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$
- (C) $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$
- (D) $\begin{pmatrix} 5 \\ 3 \end{pmatrix}$

58. A plane is heading in a direction of 045° and changes course in a clockwise direction to 135° . The angle through which the plane turns is

- (A) 45°
- (B) 90°
- (C) 135°
- (D) 270°

Item 59 refers to the diagram below.



59. How many triangles congruent to ΔADE are needed to cover the rectangle $ABCD$ entirely?

- (A) 2
- (B) 4
- (C) 6
- (D) 8

60. In a triangle ABC , angle $A = x^\circ$ and angle $B = 2x^\circ$. What is the size of angle C ?

- (A) $(180 - 3x)^\circ$
- (B) 60°
- (C) 45°
- (D) $\left(\frac{180}{3x}\right)^\circ$

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