

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

SECONDARY EDUCATION CERTIFICATE
EXAMINATION

SPECIMEN
MULTIPLE CHOICE QUESTIONS
FOR

MATHEMATICS

READ THE FOLLOWING DIRECTIONS CAREFULLY

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.

Sample Item

$2a + 6a =$

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

Sample Answer



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

There are 30 items in this specimen paper. However, the Paper 01 test consists of 60 items. You will have 90 minutes to answer them.

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

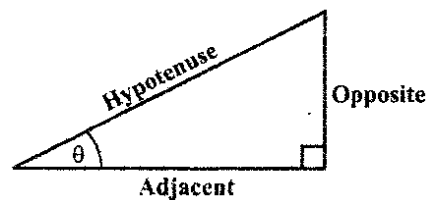
Circumference $C = 2\pi r$ where r is the radius of the circle.

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

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 $ax^2 + bx + c = 0$,
then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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

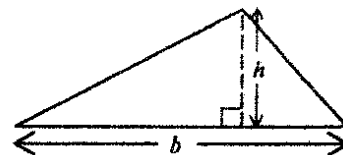


$\cos \theta = \frac{\text{adjacent side}}{\text{hypotenuse}}$

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

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

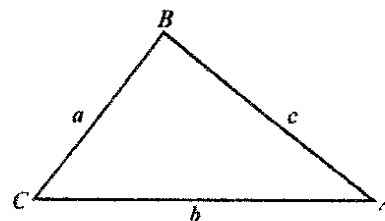
Area of $\Delta ABC = \frac{1}{2}ab \sin C$



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

1. The number 2 747 written to 3 significant figures is

- (A) 2740
- (B) 2750
- (C) 274
- (D) 275

2. The number 3 754 expressed to the nearest hundred is

- (A) 3700
- (B) 3750
- (C) 3800
- (D) 4000

3. 0.045×10^{-3} in scientific notation is

- (A) 4.5×10^{-6}
- (B) 4.5×10^{-5}
- (C) 4.5×10^{-4}
- (D) 4.5×10^{-1}

4. $(0.1 + 0.01)(0.1 - 0.01) =$

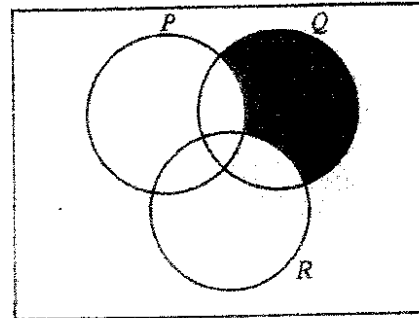
- (A) 0.0001
- (B) 0.001
- (C) 0.009
- (D) 0.0099

5. What is the value of $\frac{(5+2)^3}{5^2-2^2}$ in its simplest form?

- (A) $\frac{8}{21}$
- (B) $\frac{7}{3}$
- (C) $\frac{7}{2}$
- (D) $\frac{46}{3}$

6. Which of the following sets has an infinite number of members?

- (A) {factors of 20}
- (B) {multiples of 20}
- (C) {odd numbers between 10 and 20}
- (D) {prime numbers less than 20}



The shaded area in the Venn diagram above represents

- (A) $(P \cup Q)'$
- (B) $(Q \cup R)'$
- (C) $(P \cap Q)' \cup R$
- (D) $(P \cup R)' \cap Q$

8. How much simple interest is due on a loan of \$1 200 for two years if the annual rate of interest is $5\frac{1}{2}$ per cent?

- (A) \$120.00
- (B) \$132.00
- (C) \$264.00
- (D) \$330.00

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Item 9 refers to the chart shown below.

Rate on Fixed Deposits	
2008	7.8%
2009	7.5%

9. How much more interest would a fixed deposit of \$10 000 earn in 2008 than in 2009?

- (A) \$ 0.30
- (B) \$ 3.00
- (C) \$30.00
- (D) \$33.00

10. Consumption tax and customs duty are calculated as follows:

Consumption tax	20% of value
Custom's duty	50% of value

What is the total tax paid on an article which is valued at \$150.00?

- (A) \$ 45.00
- (B) \$ 90.00
- (C) \$105.00
- (D) \$120.00

11. The water authority charges \$10.00 per month for the meter rent, \$25.00 for the first 100 litres and \$1.00 for each additional 10 litres. What is the total bill for 250 litres used in one month?

- (A) \$25.00
- (B) \$35.00
- (C) \$40.00
- (D) \$50.00

12. Seven times the product of two numbers, a and b , may be written as

- (A) $7ab$
- (B) $7a + b$
- (C) $7a + 7b$
- (D) $49ab$

13. If $2(x - 1) - 3x = 6$, then $x =$

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

14. $3m^2n^3 \times 4mn^2 =$

- (A) $7m^3n^5$
- (B) $12m^3n^5$
- (C) $12m^2n^5$
- (D) $7m^2n^5$

15. $\frac{3x+1}{2} - \frac{x+1}{4} =$

- (A) $\frac{5x+1}{4}$
- (B) $\frac{5x+3}{4}$
- (C) $\frac{7x+3}{4}$
- (D) $\frac{7x+1}{4}$

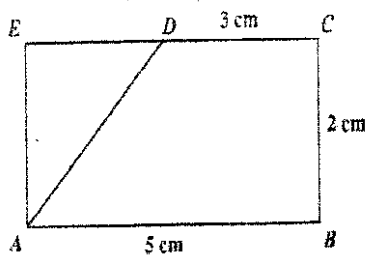
16. How many litres of water would a container whose volume is 36 cm^3 hold?

- (A) 0.036
- (B) 0.36
- (C) 36
- (D) 3600

17. The width of a block of wood with rectangular cross-section is x cm. Its height is $\frac{2}{3}$ its width and its length is 4 times its height. What is its volume in cm^3 ?

- (A) $\frac{8x}{9}$
- (B) $\frac{8x^2}{3}$
- (C) $\frac{16x^3}{9}$
- (D) $\frac{17x}{3}$

Item 18 refers to the following trapezium.



18. $ABCD$ is a trapezium and ADE is a triangle. Angles B , C and E are right angles.

The area of the trapezium $ABCD$ is

- (A) 8 cm^2
 - (B) 16 cm^2
 - (C) 30 cm^2
 - (D) 32 cm^2
19. A circular hole with diameter 6 cm is cut out of a circular piece of card with a diameter of 12 cm. The area of the remaining card, in cm^2 , is
- (A) 6π
 - (B) 27π
 - (C) 36π
 - (D) 108π

20. The mean of ten numbers is 58. If one of the numbers is 40, what is the mean of the other nine?

- (A) 18
- (B) 60
- (C) 162
- (D) 540

Items 21 - 22 refer to the table below which shows the distribution of the ages of 25 children in a choir.

Age	11	12	13	14	15	16
No. of children	6	3	5	4	4	3

21. What is the probability that a child chosen at random is AT LEAST 13 years old?

- (A) $\frac{4}{25}$
- (B) $\frac{9}{25}$
- (C) $\frac{14}{25}$
- (D) $\frac{16}{25}$

22. What is the mode of this distribution?

- (A) 4
- (B) 6
- (C) 11
- (D) 16

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23. The equation of the line which passes through the point $(0, 2)$ and has a gradient of $\frac{1}{3}$ is

- (A) $y = 3x$
- (B) $y = 3x + 2$
- (C) $y = \frac{1}{3}x$
- (D) $y = \frac{1}{3}x + 2$

24. If g is a function such that $g(x) = 2x + 1$, which of the following pairs satisfies the function?

- (A) $(-3, -5)$
- (B) $(-6, 11)$
- (C) $(5, 2)$
- (D) $(13, 6)$

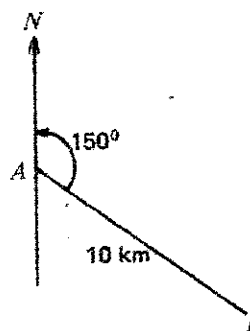
25. What is the gradient of a line which passes through the points $(-4, 3)$ and $(-2, 5)$?

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

26. The sizes of the interior angles of a polygon are x° , $2x^\circ$, 60° , $3x^\circ$ and 36° . What is the value of x ?

- (A) 14
- (B) 16
- (C) 44
- (D) 74

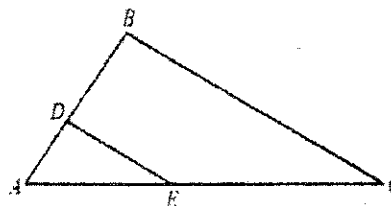
Item 27 refers to the diagram below.



27. A plane travels from point A on a bearing 150° to a point B 10 km from A . How far east of A is B ?

- (A) $10 \cos 30^\circ$
- (B) $10 \cos 60^\circ$
- (C) $10 \sin 60^\circ$
- (D) $10 \tan 30^\circ$

Item 28 refers to the diagram below.



28. Triangle ABC is an enlargement of triangle ADE such that

$$\frac{AD}{DB} = \frac{AE}{EC} = \frac{1}{2}$$

If the area $ABC = 36 \text{ cm}^2$

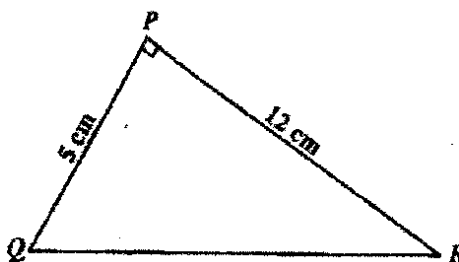
Then the area of $DECB$ in cm^2 is

- (A) 18
- (B) 24
- (C) 27
- (D) 32

29. The point $P(2, -3)$ is rotated about the origin through an angle of 90° in an anti-clockwise direction. What are the coordinates of the image P' ?

- (A) (3, 2)
- (B) (2, 3)
- (C) (-3, 2)
- (D) (3, -2)

Item 30 refers to the triangle PQR , in which angle $QPR = 90^\circ$, $PR = 12$ cm and $PQ = 5$ cm.



30. The length of QR , in cm, is

- (A) 7
- (B) 11
- (C) 13
- (D) 17

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