Practice Quiz 4

Instructions

Please answer **all 60 multiple-choice questions** in this quiz.

When you are finished, click **Submit**. Your results will appear immediately, along with the **correct answers** so you can review your work and learn from any mistakes.

Good luck!

* Indicates required question

Full Name *

Your answer

Name of School *

Your answer

1 point

1. What is the value of the digit 2 in the number 48.621?

(A) $\frac{2}{100}$

(B) $\frac{2}{10}$

(C) 2

(D) 200

- A
- B
- C
- D

1 point

2. What percentage of 50 is 10?

(A) 5%
(B) 20%
(C) 32%
(D) 150%

- A
- B
- C
- D

1 point

3. In standard notation, 0.02086 is written as

(A) 2.0806×10^{2}
(B) 20.806×10^{1}
(C) 2.0806×10^{-2}
(D) 0.20806×10^{3}

- A
- B
- C
- D

1 point

4. In a school, the ratio of the number of pupils to the number of teachers is 20:1. If the number of pupils is 840, how many teachers are there?

(A) 40
(B) 42
(C) 820
(D) 840

- A
- B
- C
- D

1 point

5. A bag of apples can be shared equally among either 6, 10 or 15 children. The MINIMUM number of apples that is likely to be in the bag is

(A) 30
(B) 31
(C) 60
(D) 90

- A
- B
- C
- D

1 point

6. If $4.3 \times 0.37 = 1.591$, then 43×0.37 is

(A) 1.591
(B) 15.91
(C) 159.1
(D) 1 591.0

- A
- B
- C
- D

1 point

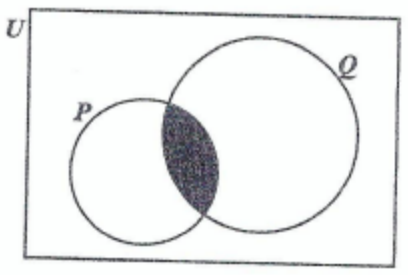
7. Which of the following sets is defined by $\{x \in Z : -2 \leq x \leq 4\}$?

(A) $\{1, 2, 3, 4\}$
(B) $\{0, 1, 2, 3, 4\}$
(C) $\{-1, 0, 1, 2, 3\}$
(D) $\{-2, -1, 0, 1, 2, 3, 4\}$

- A
- B
- C
- D

1 point

Item 8 refers to the following Venn diagram which shows 2 intersecting sets, P and Q. In the Venn diagram, $n(P) = 5$, $n(Q) = 9$ and $n(P \cup Q) = 10$.



8. The number of elements in the shaded region of the Venn diagram is

(A) 1
(B) 4
(C) 5
(D) 9

- A
- B
- C
- D

1 point

9. Which of the following pairs of sets is an example of disjoint sets?

(A) E = {even numbers} and F = {odd numbers}
(B) P = {multiples of 2} and Q = {multiples of 3}
(C) X = {whole numbers} and Y = {rational numbers}
(D) G = {multiples of five} and H = {multiples of ten}

- A
- B
- C
- D

1 point

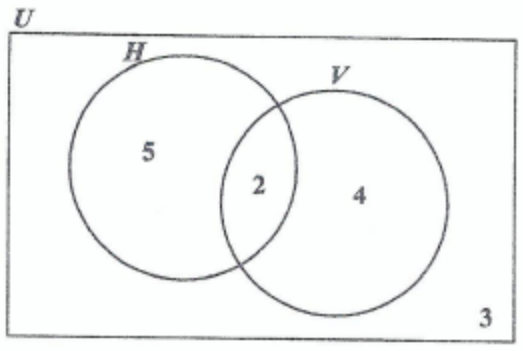
10. All students in a class play Scrabble or Checkers or both. If 36% of the students play Scrabble only and 16% of the students play both Scrabble and Checkers, what percentage of students play Checkers but NOT Scrabble?

(A) 12
(B) 48
(C) 52
(D) 64

- A
- B
- C
- D

1 point

Item 11 refers to the following Venn diagram which shows 2 intersecting sets. The number of students in each set is indicated.



11. In the Venn diagram

U = {students who play games}
H = {students who play hockey}
V = {students who play volleyball}.

How many students play EITHER hockey OR volleyball but not both?

(A) 6
(B) 7
(C) 9
(D) 11

- A
- B
- C
- D

1 point

12. The set of two-digit positive integers that are divisible by 7 is an example of

(A) an improper set
(B) an infinite set
(C) an empty set
(D) a finite set

- A
- B
- C
- D

1 point

13. For every $100 sales or part thereof, a salesman is paid $10.00 as commission. If his sales for a particular month were $1 020.00, how much commission was he paid?

(A) $ 10.20
(B) $ 20.20
(C) $102.00
(D) $110.00

- A
- B
- C
- D

1 point

14. The simple interest on $600 for t years at 5% per annum is $120. The value of t is

(A) $\$\frac{600 \times 5}{100 \times 120}$

(B) $\$\frac{100 \times 120}{600 \times 5}$

(C) $\$\frac{100 \times 5 \times 120}{600}$

(D) $\$\frac{600 \times 120 \times 5}{100}$

- A
- B
- C
- D

1 point

15. At a bank, EC$2.60 is equivalent to US$1.00. For every US$1.00 exchanged, EC$0.10 is deducted as an exchange tax. How many EC dollars will Leon receive if he exchanges US$1 000.00?

(A) $ 900.90
(B) $2 360.34
(C) $2 500.00
(D) $2 600.00

- A
- B
- C
- D

1 point

16. A calculator which is marked at $120 is sold for cash at a 30% discount. How much change would Susan receive if she pays for the calculator with a $100 bill?

(A) $16
(B) $20
(C) $28
(D) $36

- A
- B
- C
- D

1 point

17. A man pays 60 cents for every 200 m^3 of gas used, plus a fixed charge. If he pays $178.75 when he uses 55 000 m^3 of gas, how much is the fixed charge?

(A) $ 13.75
(B) $ 14.35
(C) $151.25
(D) $165.00

- A
- B
- C
- D

1 point

18. A plot of land presently valued at $12 000 appreciates in value at the rate of 2.5% per annum. What will be the value of the plot of land one year later?

(A) $10 700
(B) $11 700
(C) $11 970
(D) $12 300

- A
- B
- C
- D

1 point

19. A loan of $8 000 was paid back in 2 years in monthly payments of $400. The interest on the loan, as a percentage, was

(A) 5%
(B) $8\frac{1}{3}\%$
(C) $16\frac{2}{3}\%$
(D) 20%

- A
- B
- C
- D

1 point

20. An article bought for $125 was sold for $175. The profit as a percentage of the cost price was

(A) 28.6%
(B) 40%
(C) 50%
(D) 71.4%

- A
- B
- C
- D

1 point

21. The product of a number, $\frac{2p}{3}$ and its reciprocal may be written as

(A) $\frac{2p}{3} \times \frac{3}{p}$

(B) $\frac{2p}{3} \times -\frac{3p}{2}$

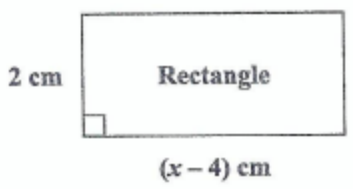
(C) $\frac{2p}{3} \times \frac{3}{2p}$

(D) $\frac{2p}{3} \times -\frac{3}{2p}$

- A
- B
- C
- D

1 point

Item 22 refers to the following diagram of a rectangle.



22. The area of the rectangle, in cm^2, is x^2. The equation that may be used to find the value of x is

(A) $x^2 = 2(x - 4)$
(B) $x^2 = (x - 2)(x - 4)$
(C) $x^2 = (x - 4)(x + 2)$
(D) $x^2 = 2(x - 4)(x - 2)$

- A
- B
- C
- D

1 point

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

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

- A
- B
- C
- D

1 point

24. If $3+\frac{x}{2}=1$, the value of x is

(A) -11
(B) -4
(C) $\frac{1}{4}$
(D) $\frac{1}{2}$

- A
- B
- C
- D

1 point

25. $5^{n+1}\times 5^{n+2}$ is the same as

(A) 5^{2n}
(B) 5^{2n+3}
(C) $5^{3(2n)}$
(D) 2×5^{2n}

- A
- B
- C
- D

1 point

26. If $a*b=a^2+b^2$, then the value of $(3*4)*2$ is

(A) 25^2+2^2
(B) 12^2+2^2
(C) $(3+4+2)^2$
(D) $(3^2+4^2)+2^2$

- A
- B
- C
- D

1 point

27. If $|A|=0$, then A is

(A) an inverse matrix
(B) a singular matrix
(C) an identity matrix
(D) a non-singular matrix

- A
- B
- C
- D

1 point

28. If $A=\begin{pmatrix} 1 & 2 & 5 & 4 \\ 6 & 1 & 3 & 7 \\ -2 & 3 & 2 & 9 \end{pmatrix}$, then the order of A is

(A) 2×3
(B) 3×2
(C) 3×4
(D) 4×3

- A
- B
- C
- D

1 point

29. If the vectors **p** and **q** are $\begin{bmatrix}3\\2\end{bmatrix}$ and $\begin{bmatrix}-1\\4\end{bmatrix}$ respectively, then $-\mathbf{p}-2\mathbf{q}$ is

(A) $\begin{bmatrix}-5\\10\end{bmatrix}$

(B) $\begin{bmatrix}5\\-6\end{bmatrix}$

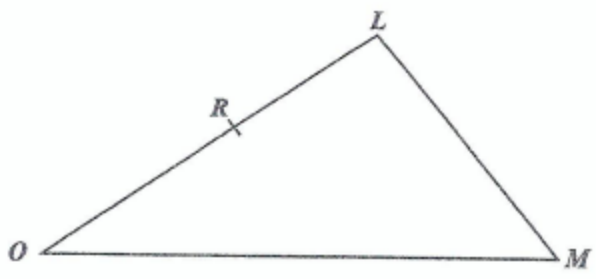
(C) $\begin{bmatrix}2\\-6\end{bmatrix}$

(D) $\begin{bmatrix}-1\\-10\end{bmatrix}$

- A
- B
- C
- D

1 point

Item **30** refers to the following diagram of triangle OLM, in which R is the midpoint of $\overrightarrow{OL}$. Further, $\overrightarrow{OR} = 3\mathbf{a} - 2\mathbf{b}$ and $\overrightarrow{OM} = 2\mathbf{a} + 3\mathbf{b}$.



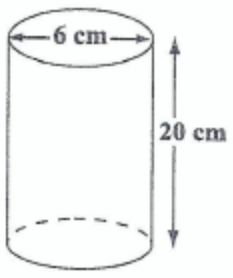
30. $\overrightarrow{LM}$ expressed in terms of **a** and **b** is

(A) $5\mathbf{b} - \mathbf{a}$
(B) $7\mathbf{b} - 4\mathbf{a}$
(C) $4\mathbf{a} + 7\mathbf{b}$
(D) $2(2\mathbf{a} + 3\mathbf{b})$

- A
- B
- C
- D

1 point

Item 31 refers to the following diagram which shows a cylinder with diameter 6 cm and height 20 cm.



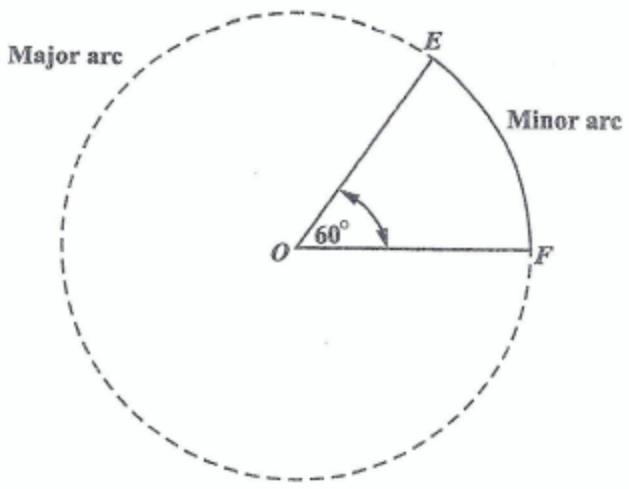
31. The volume of the cylinder, in cm^3, and in terms of π, is

(A) 60
(B) 120
(C) 180
(D) 720

- A
- B
- C
- D

1 point

Item 32 refers to the following diagram which shows a circle, centred at O, and with a sector and the major and minor arcs indicated.



32. If the area of the minor sector, EOF, is 103 cm^2, then the area of the circle, in cm^2, is

(A) 206
(B) 412
(C) 515
(D) 618

- A
- B
- C
- D

1 point

33. If it took a speedboat 9 hours to travel a distance of 1 080 km, what was its average speed, in kmh^{-1}?

(A) 12
(B) 102
(C) 120
(D) 1 200

- A
- B
- C
- D

1 point

34. The lengths of the sides of a triangle are x, $2x$ and $2x$ centimetres. If the perimeter is 20 centimetres, what is the value of x?

(A) 4
(B) 5
(C) 8
(D) 10

- A
- B
- C
- D

1 point

35. Fifty guests had 2 glasses of champagne each. Each glass held 150 millilitres. How many litres of champagne were used?

(A) 0.15
(B) 1.5
(C) 15
(D) 150

- A
- B
- C
- D

1 point

36. A square has the same perimeter as a rectangle with length 15 centimetres and width 11 centimetres. What is the area of the square, in cm^2?

(A) 26
(B) 52
(C) 165
(D) 169

- A
- B
- C
- D

1 point

37. The circumference of a circle is 154 cm.

Given that $\pi = \frac{22}{7}$, the radius of the circle, in centimetres, is

(A) 7
(B) 24.5
(C) 49
(D) 54

- A
- B
- C
- D

1 point

38. The distance around a lake is 8 km. On a map, this distance around the lake is represented by a length of 2 cm. The scale on the map is

(A) 1 : 40
(B) 1 : 2 000
(C) 1 : 200 000
(D) 1 : 400 000

- A
- B
- C
- D

39 1 point

Items 39 and 40 refer to the following table which shows the number of books that 58 students bought at a sale.

No. of Books Bought	3	4	5	6	7	8
No. of Students	9	9	13	11	9	7

39. The mode of the number of books bought is

(A) 5
(B) 7
(C) 9
(D) 13

40. The median number of books the students bought at the sale is

(A) 4
(B) 5
(C) 6
(D) 13

- A
- B
- C
- D

40 1 point

Items 39 and 40 refer to the following table which shows the number of books that 58 students bought at a sale.

No. of Books Bought	3	4	5	6	7	8
No. of Students	9	9	13	11	9	7

39. The mode of the number of books bought is

(A) 5
(B) 7
(C) 9
(D) 13

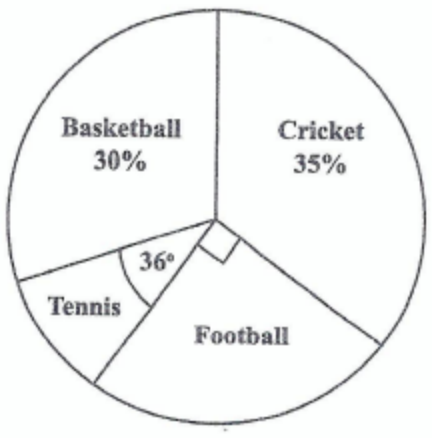
40. The median number of books the students bought at the sale is

(A) 4
(B) 5
(C) 6
(D) 13

- A
- B
- C
- D

1 point

Item **41** refers to the following pie chart which shows the popular games played by a group of students.



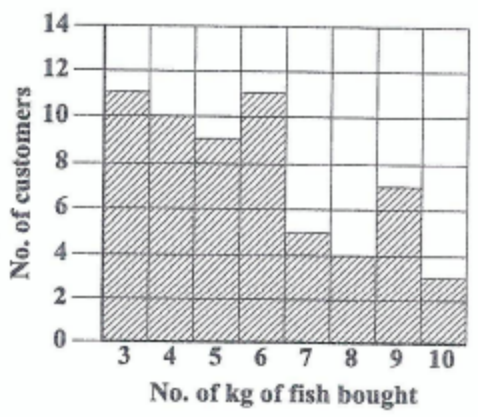
41. If 180 students played football, how many students are in the group?

(A) 300
(B) 360
(C) 720
(D) 900

- A
- B
- C
- D

1 point

Item **42** refers to the following chart which shows the amount of fish bought, in kg, by the first 60 customers at a fish market.



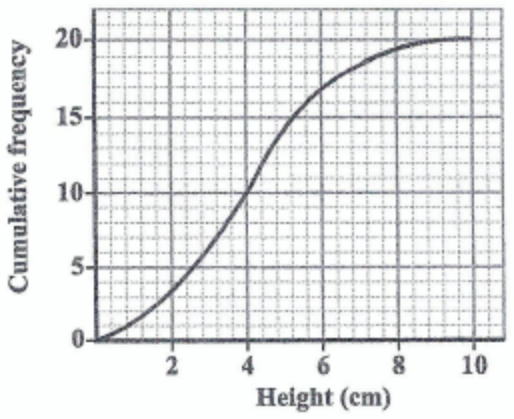
42. How many customers bought at LEAST 6 kg of fish?

(A) 18
(B) 19
(C) 30
(D) 34

- A
- B
- C
- D

1 point

Item 43 refers to the following diagram which shows the cumulative frequency curve of the heights of 20 plants.



43. The interquartile range of the set of measurements is

(A) 2.2 cm
(B) 2.6 cm
(C) 5.0 cm
(D) 5.2 cm

A
B
C
D

1 point

Item 44 refers to the following table which shows the results of a survey of 100 persons from 2 major ethnic groups, *P* and *R*. Respondents were interviewed about their attitude towards Mathematics.

Attitude Towards Mathematics	Ethnicity		Total
	P	*R*	
Positive	25	12	37
Neutral	11	9	20
Negative	24	19	43
Total	60	40	100

44. A respondent from ethnic group *P* is selected at random. What is the probability that he has a negative attitude towards Mathematics?

(A) $\frac{11}{100}$
(B) $\frac{6}{25}$
(C) $\frac{1}{4}$
(D) $\frac{2}{5}$

A
B
C
D

1 point

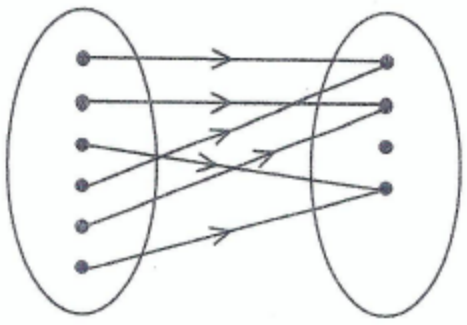
45. The point where a linear function crosses the horizontal axis is

(A) the y-intercept
(B) the x-intercept
(C) always positive
(D) always negative

- A
- B
- C
- D

1 point

Item 46 refers to the following mapping diagram.



46. The relationship that BEST describes the mapping in the diagram is

(A) one-to-one
(B) one-to-many
(C) many-to-one
(D) many-to-many

- A
- B
- C
- D

1 point

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

(A) -4

(B) $\frac{-16}{5}$

(C) $\frac{16}{5}$

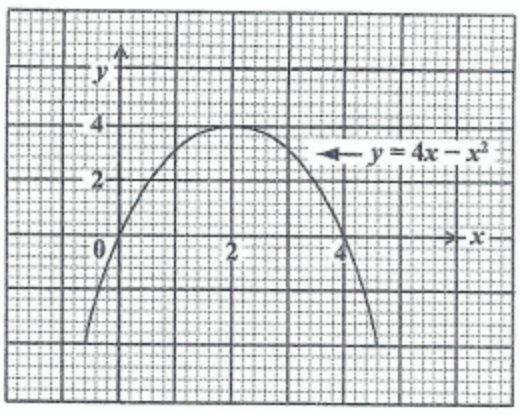
(D) 4

- A
- B
- C
- D

48

1 point

Items 48 and 49 refer to the following graph of a quadratic function.



48. The maximum point of $y = 4x - x^2$ is

(A) (0, 0)
(B) (0, 4)
(C) (4, 2)
(D) (2, 4)

- A
- B
- C
- D

1 point

49. The values of x at the points where $y = 4x - x^2$ intersects $y = 0$ are

(A) $x = 0$ and $x = 4$
(B) $x = 0$ and $x = 2$
(C) $x = 2$ and $x = 4$
(D) $x = 0$ and $x = -4$

- A
- B
- C
- D

1 point

50. Which of the following equations represents a straight line?

(A) $xy = 4$
(B) $y + 4 = x^2$
(C) $y + 3 = 2x$
(D) $y = x^2 + 2x - 5$

- A
- B
- C
- D

1 point

51. Which of the following sets is represented by the function f: $x \rightarrow x^2 + 3$ where $x \in \{0, 1, 2, 3\}$?

(A) $\{(0, 3), (1, 1), (2, 4), (3, 9)\}$
(B) $\{(0, 3), (1, 4), (2, 5), (3, 6)\}$
(C) $\{(0, 3), (1, 5), (2, 7), (3, 9)\}$
(D) $\{(0, 3), (1, 4), (2, 7), (3, 12)\}$

- A
- B
- C
- D

1 point

52. A line L is parallel to the line $2x - 5y - 8 = 0$.

What is the gradient of the line L?

(A) $-\frac{5}{2}$

(B) $\frac{-2}{5}$

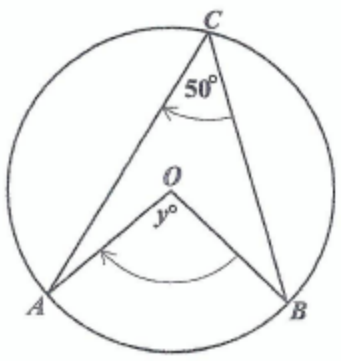
(C) $\frac{2}{5}$

(D) 2

- A
- B
- C
- D

1 point

Item **53** refers to the following diagram of a circle.



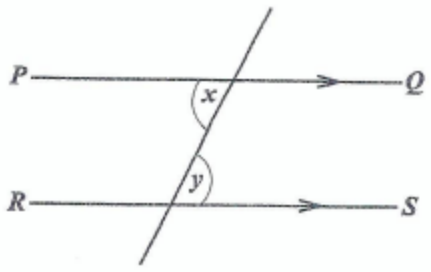
53. If O is the centre of the circle, then y° is

(A) 25°
(B) 80°
(C) 90°
(D) 100°

- A
- B
- C
- D

1 point

Item 54 refers to the following diagram.



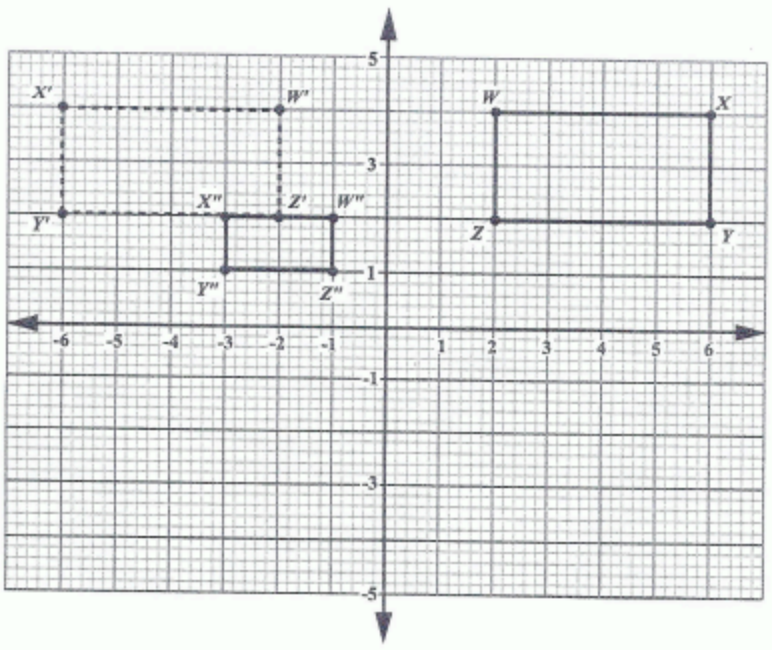
54. In the diagram, PQ and RS are parallel. Which of the following BEST describes the relation between x and y?

(A) $x = y$
(B) $x < y$
(C) $x + y = 90°$
(D) $x + y = 180°$

- A
- B
- C
- D

1 point

Item 55 refers to the following diagram which shows rectangle $WXYZ$ and its image $W'X'Y'Z'$ and $W''X''Y''Z''$ after it undergoes a composite/double transformation.



55. What sequence of transformations will map rectangle $WXYZ$ onto its image, rectangle $W''X''Y''Z''$?

(A) A translation of 8 units to the left, followed by an enlargement, centred at the origin with scale factor of $\frac{1}{2}$

(B) A reflection in the y-axis, followed by an enlargement, centred at the origin with scale factor of $\frac{1}{2}$

(C) A counterclockwise rotation of 90° about the origin, followed by an enlargement, centred at the origin with scale factor of $\frac{1}{2}$

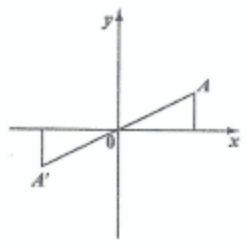
(D) An enlargement, centred at the origin with scale factor of $\frac{1}{2}$, followed by a counterclockwise rotation of 90° about the origin

- A
- B
- C
- D

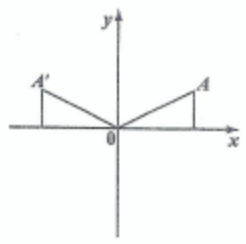
1 point

56. In each of the following diagrams, A' is the image of A. Which of the diagrams shows a reflection in the x-axis?

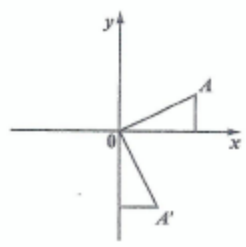
(A)



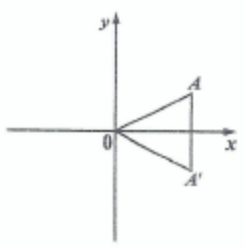
(B)



(C)



(D)



- A
- B
- C
- D

1 point

57. In triangle ABC, angle $A = x°$ and angle $B = 2x°$. What is the size of angle C?

(A) $(180 - 3x)°$

(B) $60°$

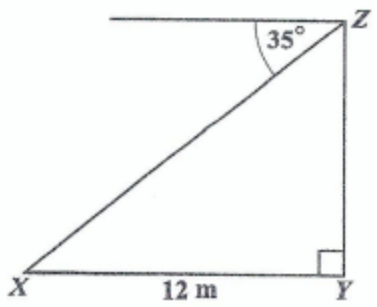
(C) $30°$

(D) $\left[\frac{180}{3x}\right]°$

- A
- B
- C
- D

1 point

Item 58 refers to the following diagram which shows the angle of depression of a point, X, from Z.



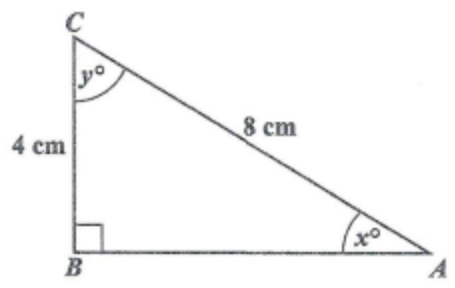
58. The angle of depression of the point X from Z is 35°. If X is 12 metres from Y, then the height YZ, in metres, is

(A) $12 \cos 35°$
(B) $12 \cos 55°$
(C) $12 \sin 55°$
(D) $12 \tan 35°$

- A
- B
- C
- D

1 point

Item 59 refers to the following diagram of a right-angled triangle, ABC.



59. In the right-angled triangle above, which trigonometric ratio is equal to $\frac{4}{8}$?

(A) $\sin x$
(B) $\tan y$
(C) $\cos x$
(D) $\tan x$

- A
- B
- C
- D

1 point

60. Under the translation $\begin{bmatrix} -2 \\ 3 \end{bmatrix}$, the image of $(-5, 3)$ is

(A) $(0, -3)$
(B) $(1, -2)$
(C) $(-7, 6)$
(D) $(3, 6)$

- A
- B
- C
- D

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