1. $(-3)^2 + (-2)^2$ is equal to

(A) −13
(B) −10
(C) 13
(D) 25

2. What percentage of 40 is 8?

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

3. When 0.45 is written as a common fraction, in its simplest form, the result is

(A) $\frac{9}{20}$
(B) $\frac{4}{5}$
(C) $\frac{9}{10}$
(D) $\frac{5}{4}$

4. If $235 \times 48.7 = 11\,444.5$, then $2.35 \times 4.87 =$

(A) 11.4445
(B) 114.445
(C) 1 144.45
(D) 11 444.4

5. A test was marked out of 80. A boy scored 60% of the marks on the test. How many marks did he score?

(A) 20
(B) 48
(C) 60
(D) 75

6. Dan sold 40 concert tickets in 5 days. Each day he sold 3 tickets MORE than the previous day. What is the ratio of the number of tickets sold on Day 3 to the number of tickets sold on Day 5?

(A) 1:7
(B) 4:7
(C) 7:4
(D) 5:11

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}

8. The set of positive integers that is divisible by 6 is an example of

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

9. If $n(U) = 25$, $n(A) = 14$, $n(B) = 15$ and $n(A \cup B) = 23$, then $n(A \cap B)$ is

(A) 2
(B) 4
(C) 6
(D) 9

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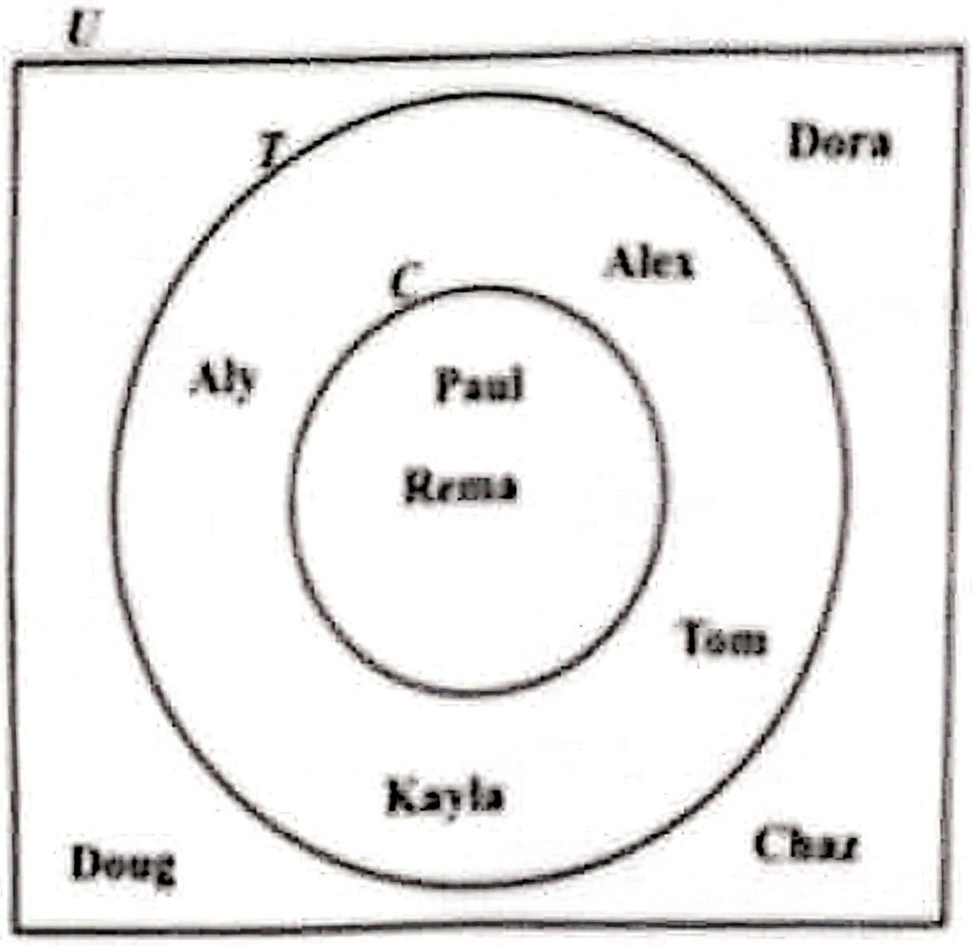
Items **10** and **11** refer to the following Venn diagram which shows the universal set (U), and two sets, T and C, that represent the students in a class who play tennis (T) and chess (C).



10. How many students play BOTH games?

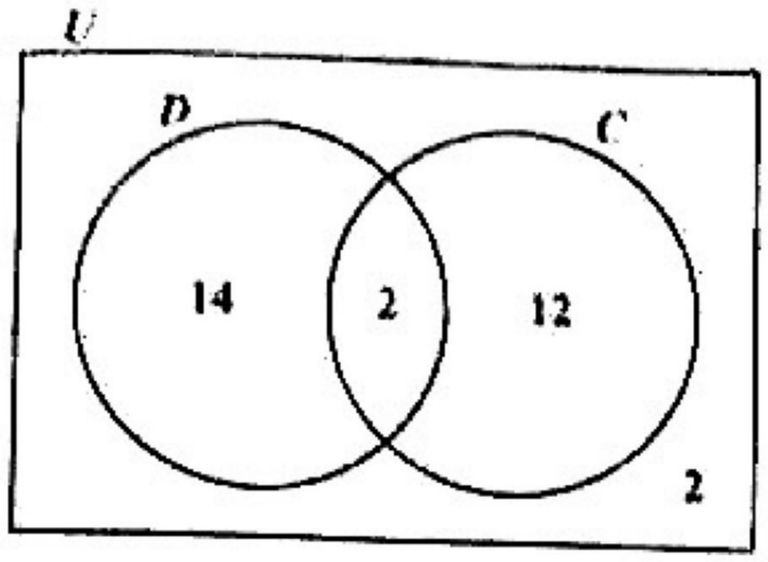
(A) 2
(B) 3
(C) 4
(D) 6

11. How many students play EXACTLY **one** game?

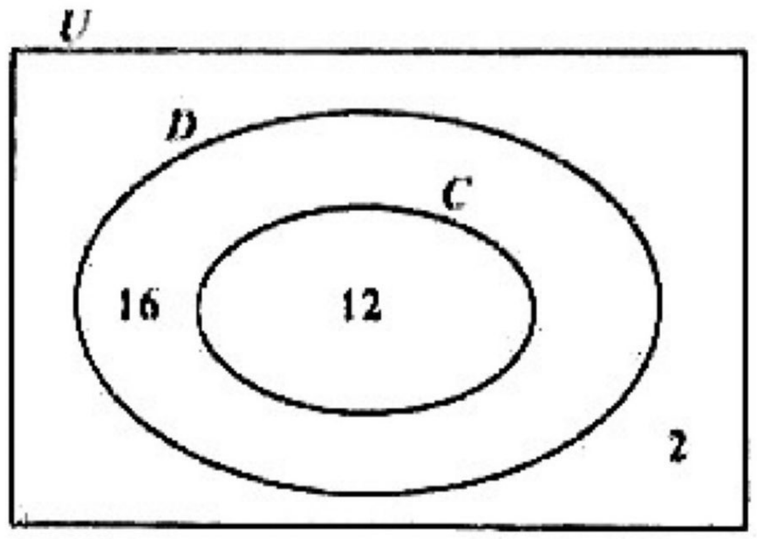
(A) 2
(B) 3
(C) 4
(D) 6

12. The 30 students in Teacher May's class have either a dog or a cat or none of the two. Sixteen students have a dog (D), 12 students have a cat (C) and the remainder have neither a cat nor a dog. Which of the following Venn diagrams correctly represents this information?

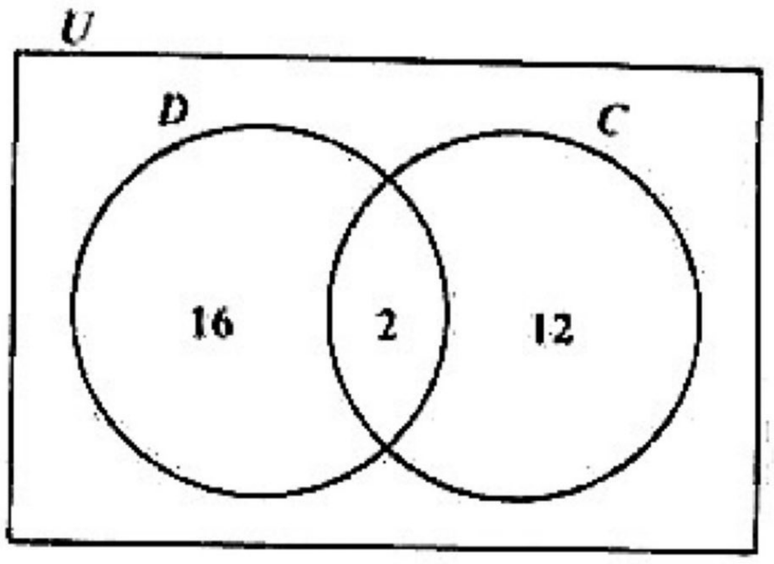
(A)



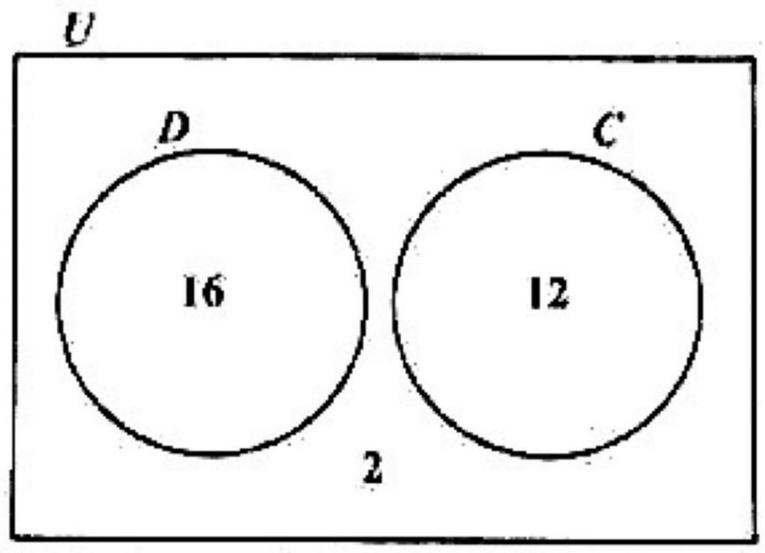
(B)



(C)



(D)



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13. 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 fee. How much 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

14. A dress which costs $1 800.00 is being sold at a discount of 10%. The amount of the discount is

(A) $ 18.00
(B) $ 100.00
(C) $ 180.00
(D) $1 620.00

15. If $7 000 is borrowed at the rate of 5% per annum for 3 years, the simple interest would be

(A) $ 105
(B) $ 210
(C) $ 370
(D) $1 050

16. An article bought for $125 was sold for $100. The loss as a percentage of the cost price was

(A) 20
(B) 25
(C) 75
(D) 80

2900

17. The cash price of a television set is $350. When bought on hire purchase, a deposit of $35 is required, followed by 12 monthly payments of $30 each. How much is saved by paying cash?

(A) $10
(B) $25
(C) $40
(D) $45

18. If the simple interest on $900 at 4% per annum for t years is $108, what is the value of t?

(A) 2
(B) 3
(C) 4
(D) 5

19. At the end of any year, a car is worth 5% less than what it was worth at the beginning of the year. If a car is worth $19 000 in December 2021, then its value in January 2021 was

(A) $19 990
(B) $20 000
(C) $20 050
(D) $24 000

20. A man's regular pay is $8 per hour up to 40 hours. Overtime is twice the payment for regular time. If he was paid $480, how many hours of overtime did he work?

(A) 10
(B) 12
(C) 20
(D) 30

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

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

22. $\frac{1}{2x} + \frac{1}{3x}$ is equal to

(A) $\frac{2}{5x^2}$
(B) $\frac{5}{6x}$
(C) $\frac{5}{6x^2}$
(D) $\frac{2}{5x}$

23. What is the value of $\frac{x^2 + 3y}{xy}$, if $x = 4$ and $y = 2$?

(A) $1\frac{3}{4}$
(B) $2\frac{1}{2}$
(C) $2\frac{3}{8}$
(D) $2\frac{3}{4}$

24. If $5(2x - 1) = 35$, then $x =$

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

25. John has x marbles and Max has twice as many marbles as John. Max gives John 5 of his marbles. How many marbles does John now have?

(A) $x - 5$
(B) $x + 5$
(C) $2x - 5$
(D) $2x + 5$

26. Given that $3 * 6 = 12$ and $2 * 5 = 9$, then $a * b$ may be defined as

(A) $4(b - a)$
(B) $a^2 - b$
(C) $6a - b$
(D) $2a + b$

27. 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

Item **28** refers to the following matrix, P.

$$\begin{bmatrix} 8 & 6 \\ 7 & 5 \end{bmatrix}$$

28. The determinant of P, $|P|$, is

(A) 2
(B) –2
(C) –13
(D) 26

Item **29** refers to the following vectors, **p** and **q**.

$$\mathbf{p} = \begin{bmatrix} 3 \\ 7 \end{bmatrix} \qquad \mathbf{q} = \begin{bmatrix} -2 \\ 5 \end{bmatrix}$$

29. The vector **p** – **q** is represented by

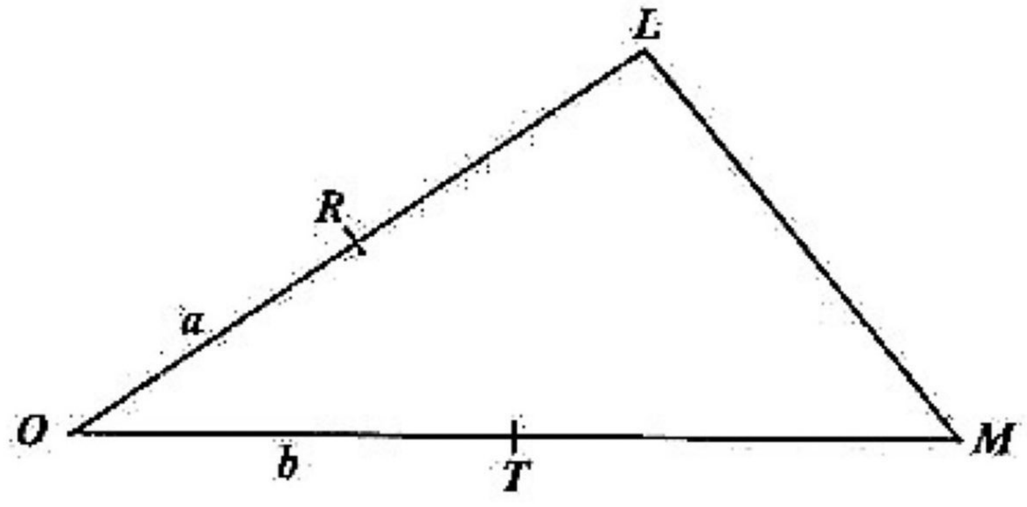
(A) $\begin{bmatrix} 1 \\ 12 \end{bmatrix}$

(B) $\begin{bmatrix} 5 \\ 12 \end{bmatrix}$

(C) $\begin{bmatrix} 5 \\ 2 \end{bmatrix}$

(D) $\begin{bmatrix} 1 \\ 5 \end{bmatrix}$

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



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

(A) $a + 2b$
(B) $2b - a$
(C) $2(b - a)$
(D) $2(a + b)$

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Given that 1 millimetre = $\frac{1}{1000}$ metres,

2 500 millimetres, in metres, is

(A) 0.25
(B) 2.5
(C) 25
(D) 250

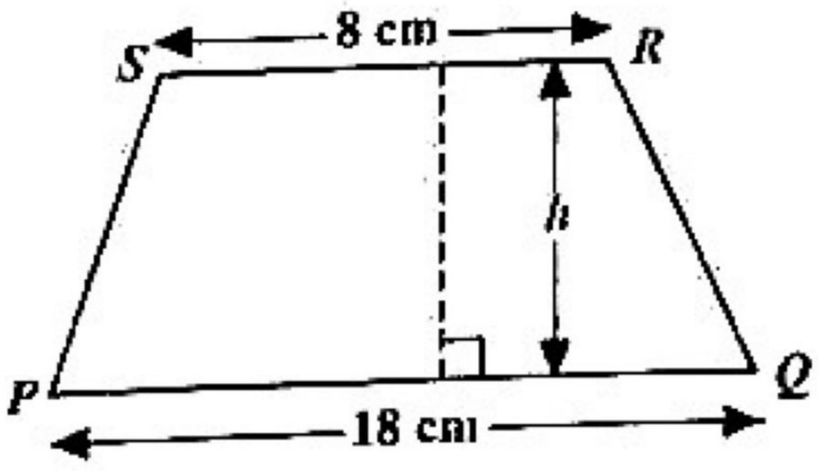
. The volume of a cube whose edge is 10 cm is

(A) 30 cm³
(B) 100 cm³
(C) 300 cm³
(D) 1 000 cm³

3. At a party, a number of guests were served 15 litres of champagne. Each guest had 2 glasses of champagne and each glass held 150 millilitres. Assuming no spillage, how many guests were at the party?

(A) 10
(B) 75
(C) 50
(D) 100

Item 34 refers to the following diagram of a trapezium, *PQRS*.



4. If the area of the trapezium, *PQRS*, is 65 cm², then the height, *h*, is

(A) 2.5 cm
(B) 3.5 cm
(C) 4.8 cm
(D) 5.0 cm

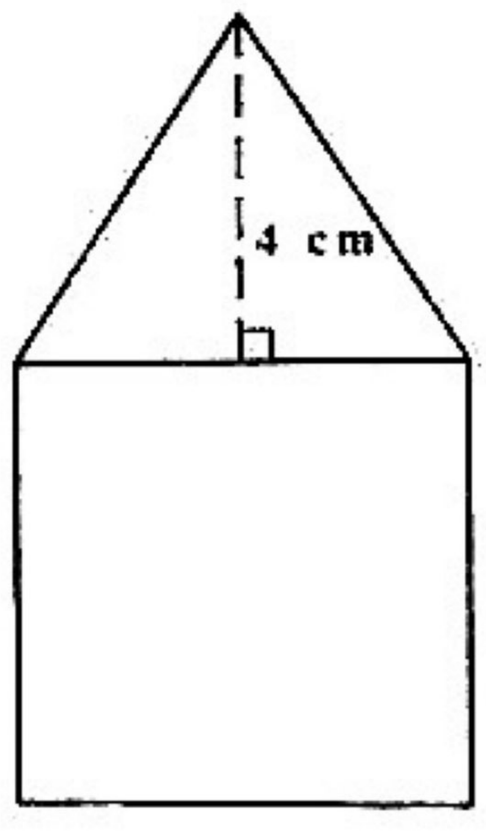
35. The perimeter of a square is 56 cm. What is its area, in cm²?

(A) 28
(B) 78
(C) 169
(D) 196

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

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

Item 37 refers to the following diagram which shows a compound shape that consists of a triangle of height 4 cm, resting on a square.



37. If the area of the triangle is 14 cm², what is the area of the compound shape?

(A) 30 cm²
(B) 63 cm²
(C) 65 cm²
(D) 95 cm²

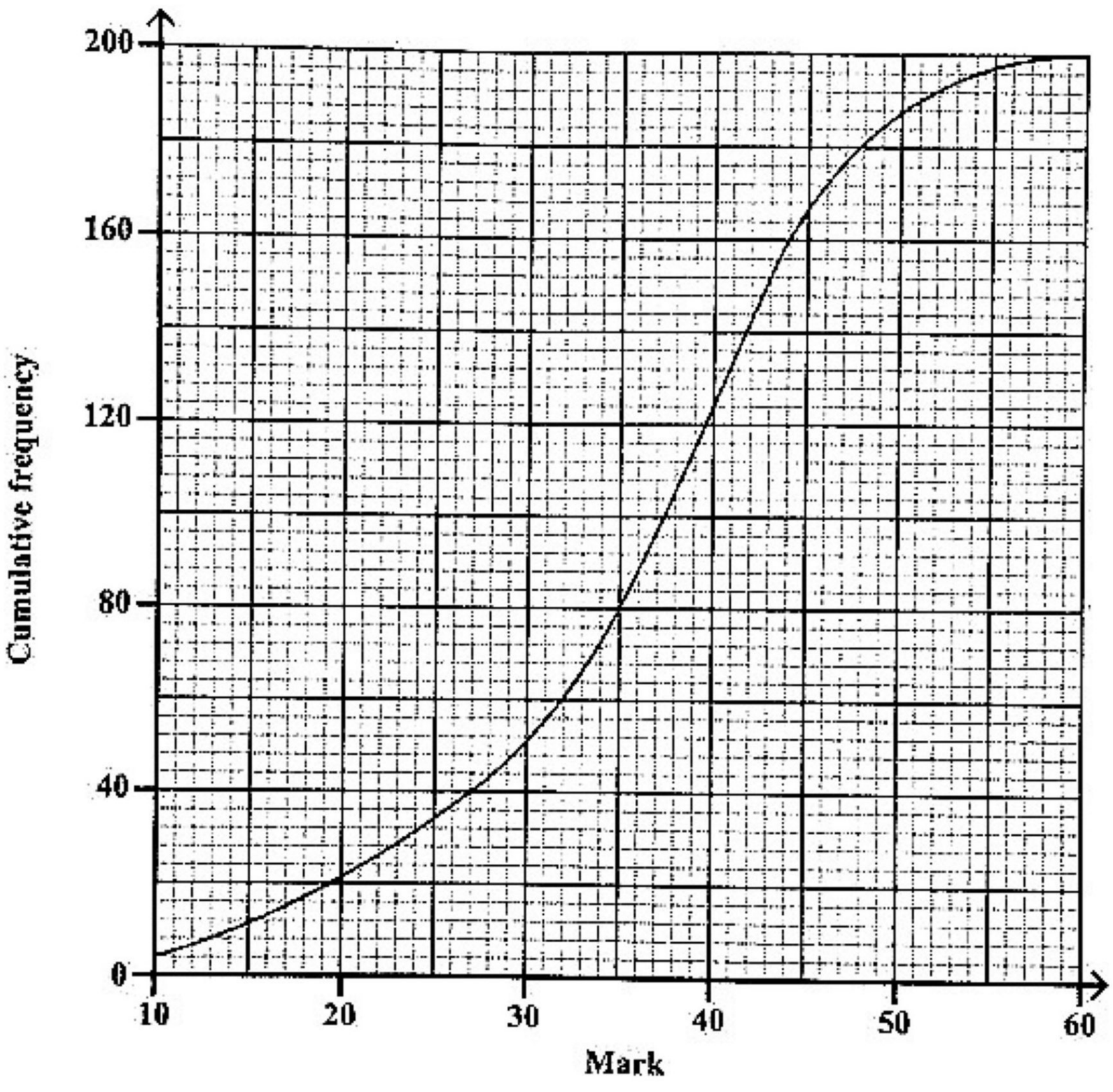
38. On leaving Trinidad, the time on a pilot's watch was 23:00 h. When he arrived at his destination in the same time zone on the next day, his watch showed 03:00 h. If the average speed of the aircraft for the entire journey was 625 km/h, then the distance covered by the aircraft was

(A) 2 500 km
(B) 10 000 km
(C) 12 500 km
(D) 16 250 km

39. Ms Clarke arranged the 15 test scores of her students in order of size and selected the 8th score for reporting purposes. Which of the following statistical measures did Ms Clarke obtain?

(A) Mean
(B) Mode
(C) Range
(D) Median

Items **40** and **41** refer to the following diagram which shows the cumulative frequency curve based on the marks of 200 students who took a driving test.



40. How many students scored AT MOST 45 marks?

(A) 34
(B) 40
(C) 166
(D) 170

41. The median mark scored by the 200 students is

(A) 30
(B) 37
(C) 48
(D) 100

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42. In a box, there are 8 red, 7 blue and 6 green marbles. One marble is picked up randomly. What is the probability that it is neither blue nor green?

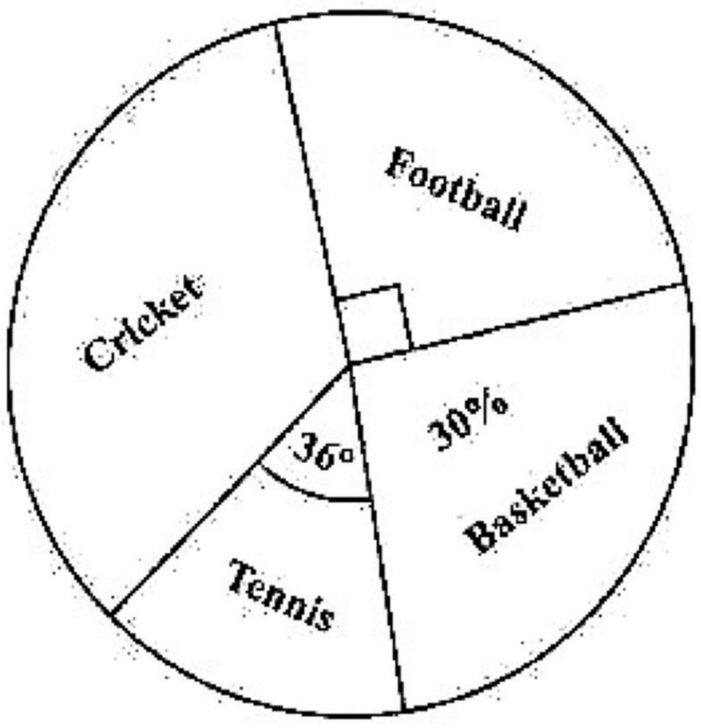
(A) $\frac{8}{21}$

(B) $\frac{3}{7}$

(C) $\frac{9}{22}$

(D) $\frac{2}{3}$

Item **43** refers to the following pie chart which shows the popular games played by 720 students.



43. How many students played cricket?

(A) 35
(B) 120
(C) 252
(D) 300

Item **44** refers to the following two-way table, which shows the ways in which 200 students in a group are transported to school on a particular day.

	Bus	Taxi	Walk	Total
Male	30	50	28	108
Female	44	16	32	92
Total	74	66	60	200

44. A student is picked at random from the group. What is the probability that the student is a male who travelled to school by taxi on that day?

(A) $\frac{1}{4}$

(B) $\frac{25}{54}$

(C) $\frac{25}{33}$

(D) $\frac{33}{50}$

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

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

46. The equation of the line that crosses the vertical axis at the point (0, 5) and that has a gradient of 4 is

(A) $y = 4x$
(B) $y = 5x$
(C) $y = 4x + 5$
(D) $y = 5x + 4$

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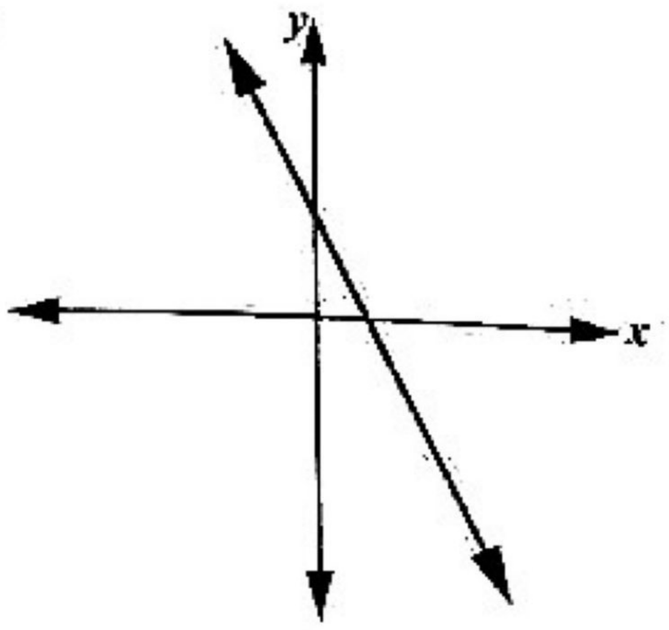
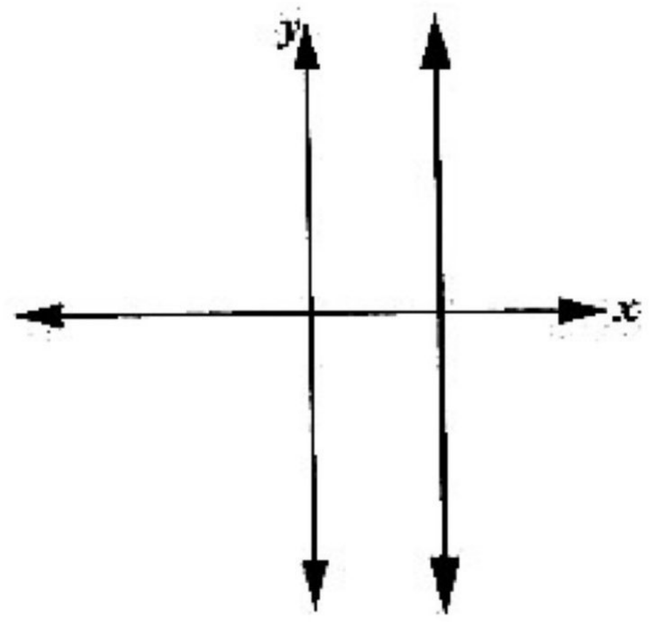
47. Which of the following graphs represents a linear function?

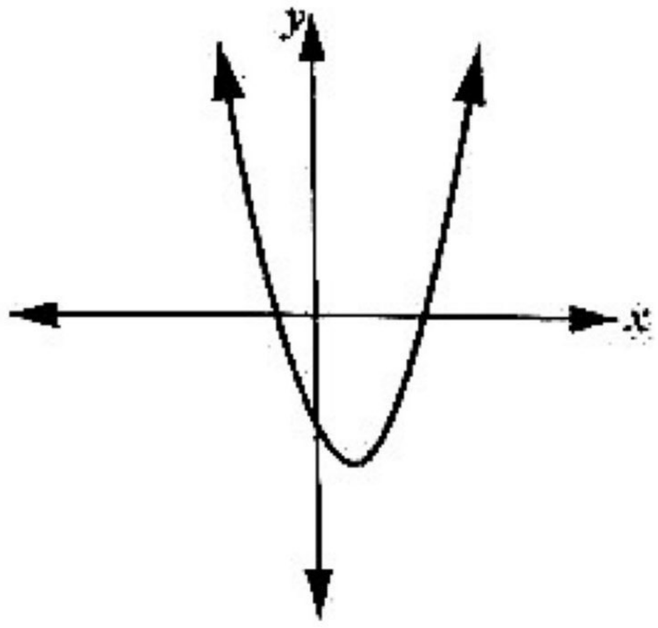
(A)



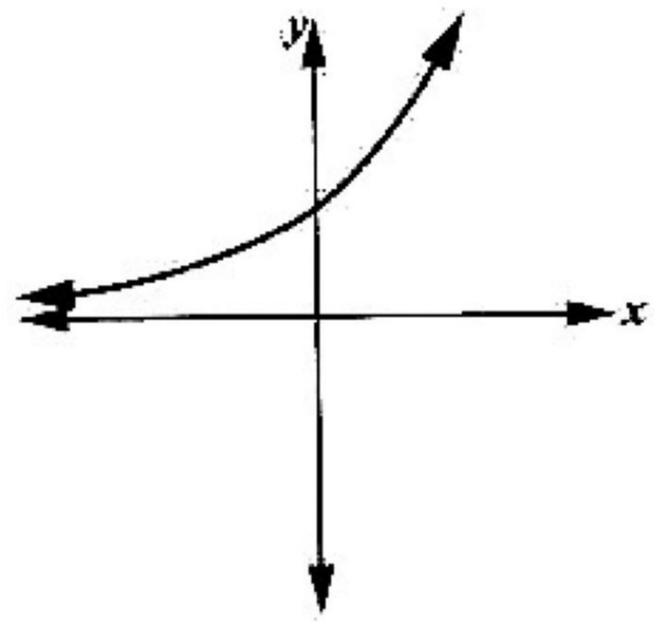
(B)



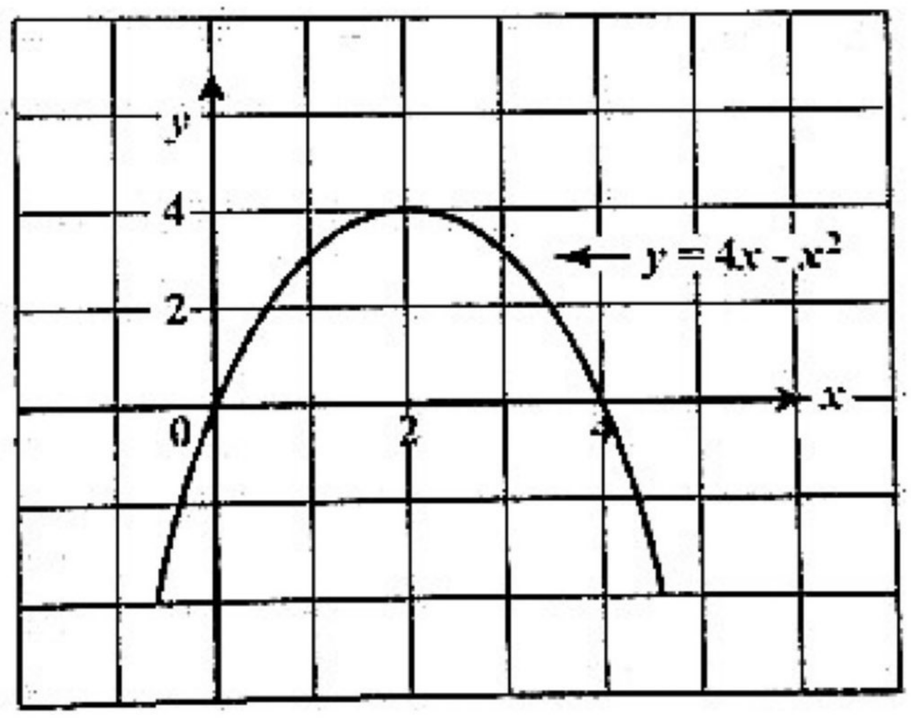
(C)



(D)



Item **48** refers to the following graph of a quadratic function.



48. The equation of the axis of symmetry for the function $y = 4x - x^2$ is

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

49. A line L is perpendicular to the line

$$y = \frac{3}{7}x - 9.$$

What is the gradient of the line L?

(A) $-\frac{7}{3}$

(B) $-\frac{9}{7}$

(C) $\frac{3}{7}$

(D) $\frac{7}{3}$

50. If $g(x) = \frac{7x-3}{5}$, then $g(-6) =$

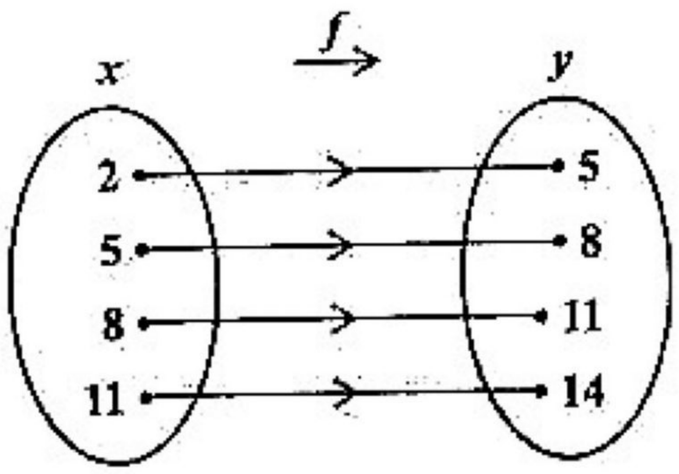
(A) -9

(B) $-\frac{39}{5}$

(C) $\frac{39}{5}$

(D) 9

Item **51** refers to the following arrow diagram which shows a function, f.



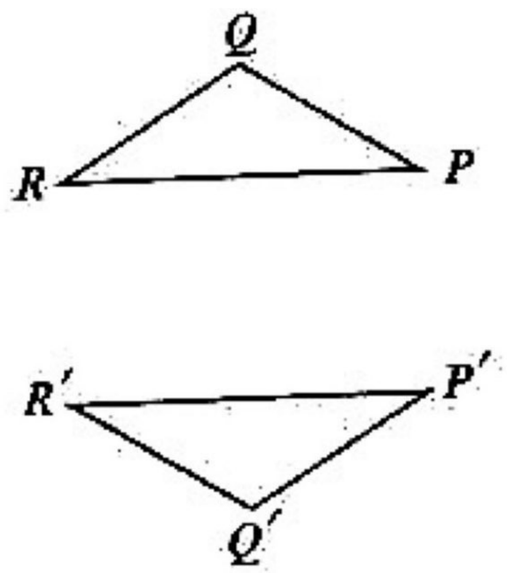
51. Which of the following equations BEST describes the function?

(A) $x + y = 3$
(B) $y = x + 3$
(C) $x = y + 3$
(D) $y = 2x + 1$

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

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

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



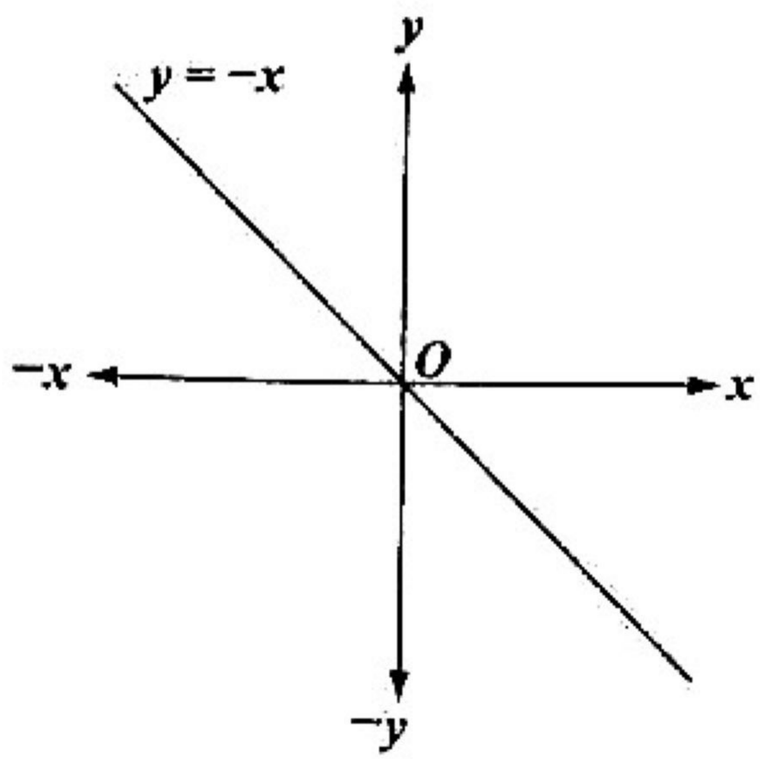
53. What transformation maps PQR onto $P'Q'R'$?

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

54. In which of the following polygons does the sum of the measures of the interior angles equal the sum of the measures of the exterior angles?

(A) Triangle
(B) Hexagon
(C) Pentagon
(D) Quadrilateral

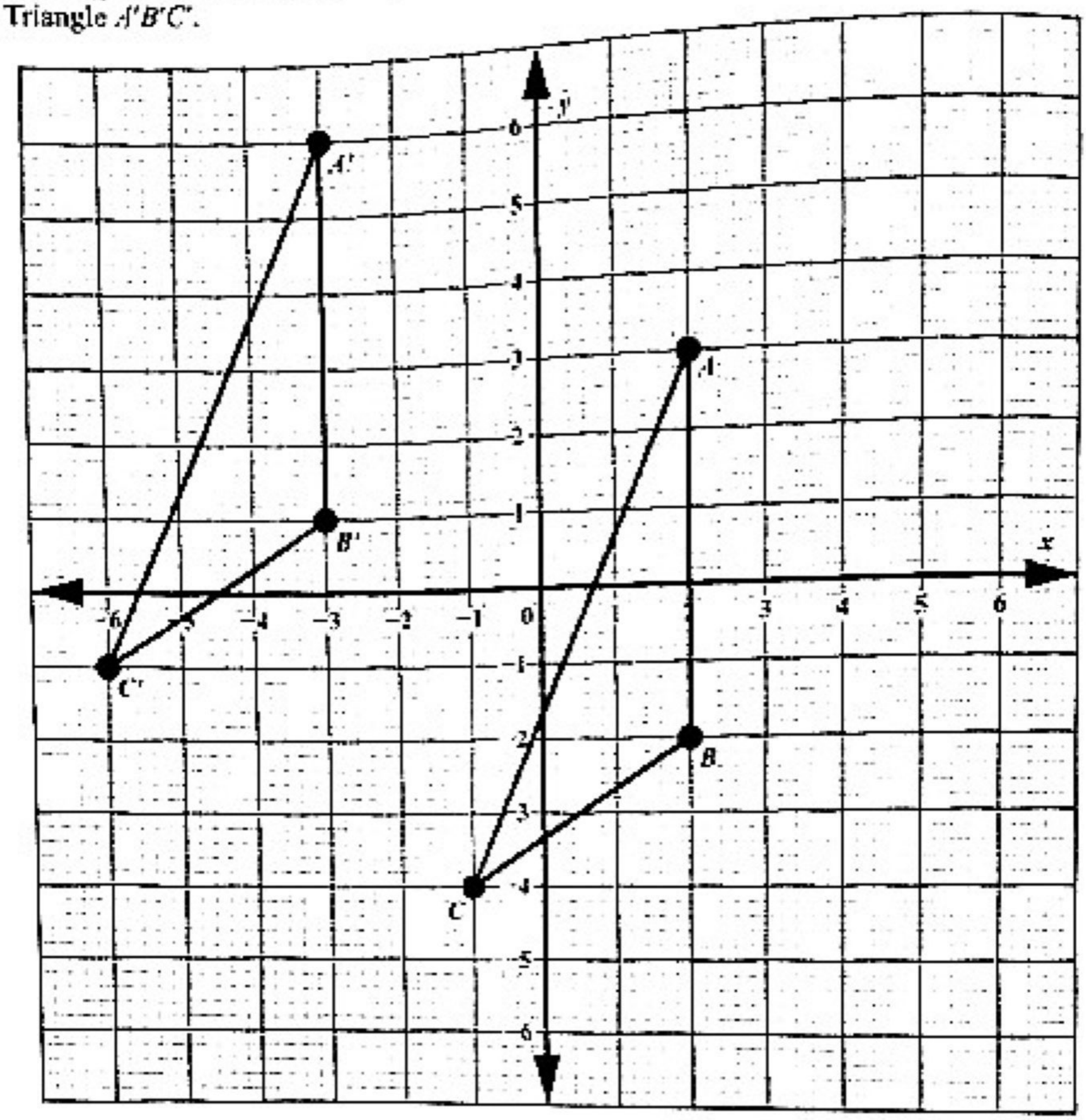
Item 55 refers to the following diagram which shows the straight line $y = -x$.



55. What is the image of the line $y = -x$ when it is rotated anticlockwise about O through an angle of 90°?

(A) $y = 0$
(B) $x = 0$
(C) $y = -x$
(D) $y = x$

Item 56 refers to the following diagram which shows the translation of Triangle ABC to Triangle $A'B'C'$.



56. In the diagram, the translation by which ABC is mapped onto $A'B'C'$ is represented by

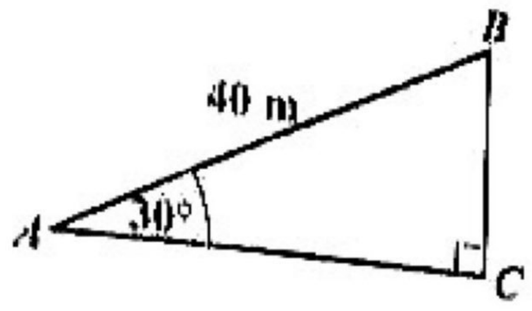
(A) $\begin{bmatrix} -5 \\ 3 \end{bmatrix}$

(B) $\begin{bmatrix} -5 \\ -3 \end{bmatrix}$

(C) $\begin{bmatrix} 5 \\ -3 \end{bmatrix}$

(D) $\begin{bmatrix} 5 \\ 3 \end{bmatrix}$

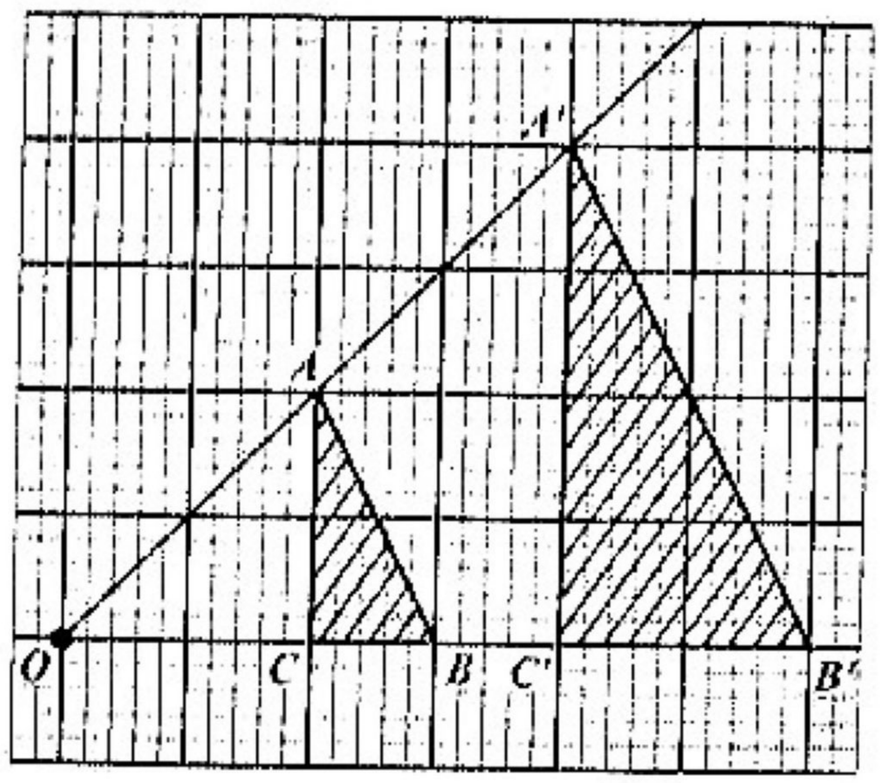
Item **57** refers to the following right-angled triangle, ABC.



57. In the triangle, angle $BAC = 30°$ and $AB = 40$ m. The length AC, in metres, is

(A) $40 \sin 60°$
(B) $40 \tan 30°$
(C) $40 \sin 30°$
(D) $40 \cos 60°$

Item **58** refers to the following diagram of an enlargement.



58. OAA', OBB' and OCC' are straight lines. $\Delta\ ABC$ is mapped onto $\Delta\ A'B'C'$ by an enlargement with centre O. What is the scale factor of the enlargement?

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

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59. A plane is flying in the 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°

60. If the angle, P, formed by the 2 equal sides in an isosceles triangle, PQR, is $P = x°$, what is the size of Angle Q or Angle R?

(A) 60°

(B) 45°

(C) $\left[\frac{180 - x°}{2}\right]$

(D) $(180° - 2x°)$

END OF TEST