AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

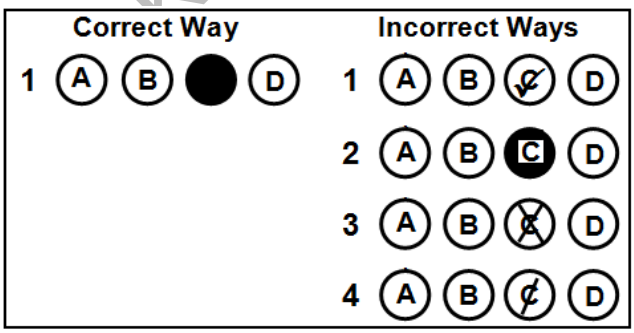
APRIL/ MAY 2017

General Mathematics Paper I

Time: 40 minutes Marks: 30

INSTRUCTIONS

1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. You may use a simple calculator if you wish.

1. For the equation $ax^2 + bx + c = 0$ where $a \neq 0$, the value of x is

A. $x = \dfrac{-b \pm \sqrt{4ac - b^2}}{2a}$

B. $x = \dfrac{b \pm \sqrt{4ac - b^2}}{2b}$

C. $x = \dfrac{b \pm \sqrt{b^2 - 4ac}}{2b}$

D. $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2. Which of the following expressions is a polynomial?

A. $x^2 + \dfrac{3}{2x^3} + \dfrac{5}{2}x^4 + 6$

B. $x^2 + \dfrac{3}{2}x^3 + \dfrac{5}{2}x^4 + (6)^{-1}$

C. $x^2 + \dfrac{3}{2x^3} + \dfrac{5}{2}x^{-4} + 6$

D. $x^2 + \dfrac{3}{2x^3} + \dfrac{5}{2}x^4 + (6)^{-1}$

3. The simplest form of $\dfrac{2xy^3}{4x^2y^2}$ is

A. $\dfrac{1}{2x}$

B. $\dfrac{x}{2y}$

C. $\dfrac{y}{2}$

D. $\dfrac{y}{2x}$

4. On dividing $2x^3 - 3x^2 + 4x - 5$ by $x - 1$, the remainder is

A. -14
B. -4
C. -2
D. -1

5. On complete factorisation of $7xy + 7x + 14xy,$ we get

A. $14x(y+1)$
B. $7x(3y+1)$
C. $7x(14y+1)$
D. $7(3xy+1)$

6. On complete factorisation of $3x + 6x^2 + 9x^3,$ we get

A. $3x(1+2x+3x^2)$
B. $3x(1+3x+6x^2)$
C. $3x(0+3x+6x^2)$
D. $3x(1+2x^2+3x^2)$

7. The least common multiple (L.C.M.) of $(x+a)(x+b)$ and $(2x+2a)(x+c)$ is

A. $(x+a)$
B. $2(x+a)$
C. $(x+a)(x+b)(x+c)$
D. $2(x+a)(x+b)(x+c)$

8. The product of two polynomials is $(x+1)^2(x^2-1)$. If the highest common factor (H.C.F.) is $x+1$, then the least common multiple (L.C.M.) will be

A. $(x+1)^2$
B. $(x+1)^3$
C. $(x+1)(x^2-1)$
D. $(x+1)(x-1)$

9. On simplification of $\dfrac{(a+b)^2}{(a+b)(a-b)(a+b)}$, we get

A. $\dfrac{1}{a+b}$
B. $\dfrac{1}{a-b}$
C. $\dfrac{a+b}{a-b}$
D. $\dfrac{1}{a^2-b^2}$

10. The value of x which satisfies the linear equation $2x - 4 = -2x$ is

A. -4
B. -1
C. 0
D. 1

11. The value of x which satisfies the linear equation $a\sqrt{x} + a = a$ is

A. $\{\ \}$
B. $\{0\}$
C. $\{4\}$
D. $\left\{\frac{1}{a^2}\right\}$

12. If $3x - 6 = 24$, then x is equal to

A. 6
B. 10
C. 15
D. 25

13. The solution set of $(x - ab)^2 = 0$ is

A. $\{ab\}$
B. $\{-ab\}$
C. $\{0, ab\}$
D. $\{\pm ab\}$

14. What should be added to $x^2 + 3x$ to make it a perfect square?

A. $\frac{1}{9}$
B. $\frac{3}{2}$
C. $\frac{9}{4}$
D. 1

15. $\begin{bmatrix}-1\\-1\end{bmatrix}\times\begin{bmatrix}1\\1\end{bmatrix}$ is

A. $\begin{bmatrix}-1\\-1\end{bmatrix}$
B. $\begin{bmatrix}-2\end{bmatrix}$
C. a rectangular matrix.
D. not possible.

16. The determinant of the matrix $\begin{bmatrix}0 & -2\\2 & 1\end{bmatrix}$ is

A. -4
B. -3
C. 4
D. 5

17. Which of the following is/ are examples of row matrix?

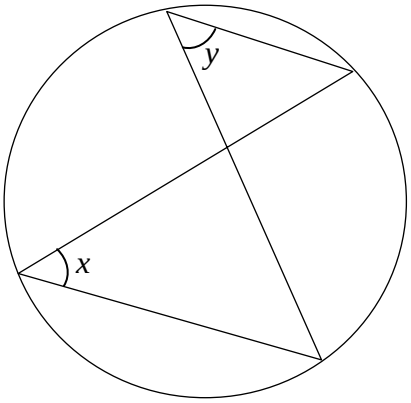
$X=\begin{bmatrix}1 & 2 & 3\end{bmatrix}, Y=\begin{bmatrix}1\\2\\3\end{bmatrix}$ and $Z=\begin{bmatrix}1+2 & 2+3 & 3+1\end{bmatrix}$

A. X only
B. Y only
C. X and Z
D. Y and Z

18. The determinant of $\begin{bmatrix}-a & b\\-a & -b\end{bmatrix}$ is

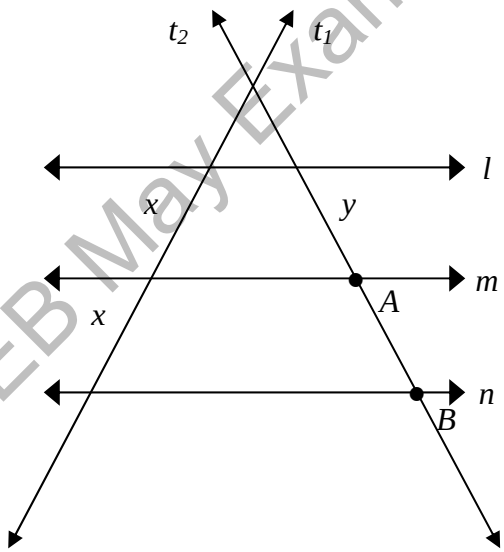
A. 0
B. $-2ab$
C. $2ab$
D. a^2-b^2

19. For the given diagram, which of the following options is TRUE?



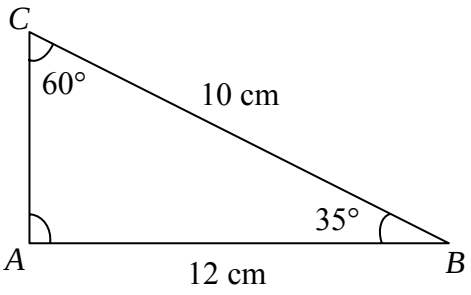
A. $y < x$
B. $y > x$
C. $y = x$
D. There is no relation between x and y.

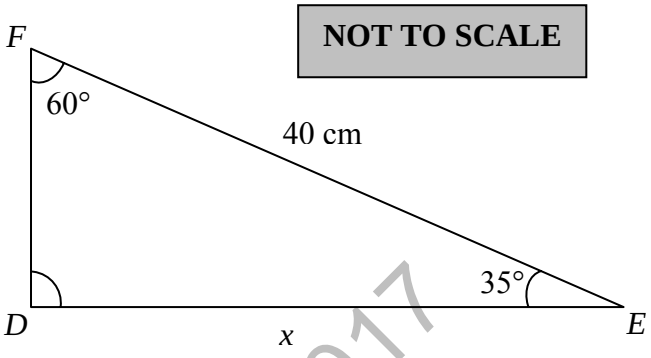
20. In the given diagram, l, m and n are three parallel lines and t_1 and t_2 are transversals intersecting these parallel lines. The value of $m\overline{AB}$ is



A. x
B. y
C. $2x$
D. $x + y$

21. In the given diagram, if triangle ABC is similar to triangle DEF, then value of x will be equal to

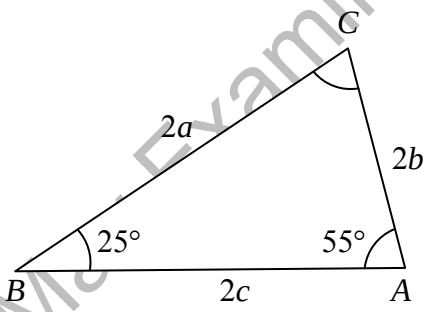


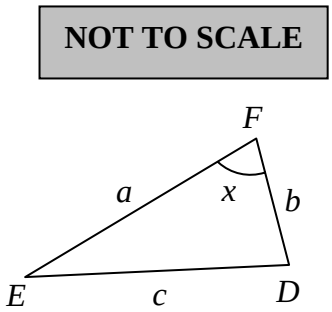


A. 10 cm
B. 12 cm
C. 42 cm
D. 48 cm

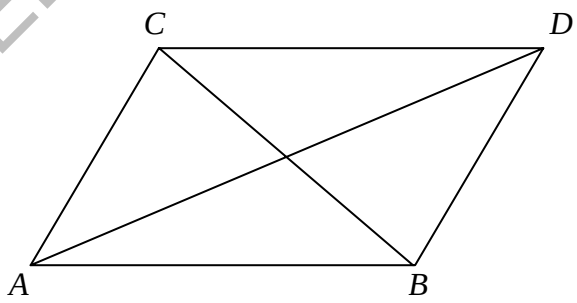
22. Consider the triangles ABC and DEF. In triangle DEF the value of x is equal to

A. 25°
B. 50°
C. 55°
D. 100°





23. In the given parallelogram $ABCD$, the two adjacent sides of a parallelogram are

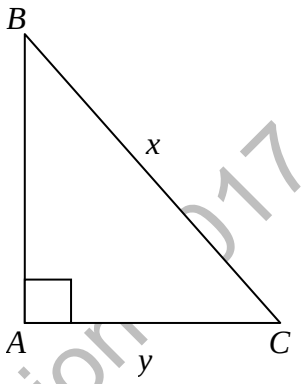


A. $\overline{AB}$ and $\overline{BD}$
B. $\overline{AB}$ and $\overline{CD}$
C. $\overline{AD}$ and $\overline{BC}$
D. $\overline{AC}$ and $\overline{BD}$

24. The area of the equilateral triangle whose each side measures $2a$ is

A. $4a^2$
B. $\sqrt{3}a$
C. $\sqrt{3}a^2$
D. $\sqrt{6}a^2$

25. In the given triangle ABC, $m\overline{AB}$ is equal to



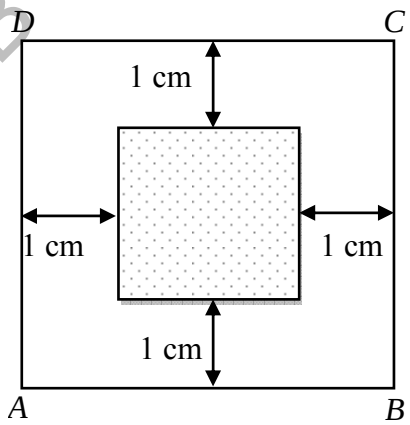
A. $x + y$
B. $x - y$
C. $\sqrt{x^2 + y^2}$
D. $\sqrt{x^2 - y^2}$

26. If the sides of an equilateral triangle ABC are of length 10 cm each, then the area of triangle ABC will be

(**Note:** Semi Perimeter (S)=15 cm)

A. 30 cm
B. $5\sqrt{15}$ cm
C. $25\sqrt{3}$ cm
D. 75 cm

27. In the given diagram, the area of the small square is 16 cm^2. The area of the larger square $ABCD$ is

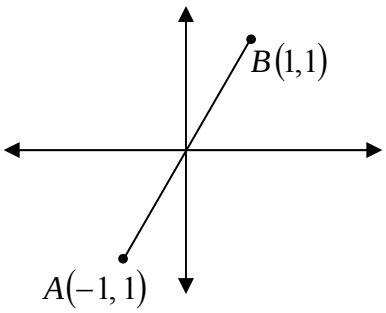


NOT TO SCALE

A. 20 cm^2
B. 24 cm^2
C. 25 cm^2
D. 36 cm^2

28. In the given diagram, the distance between point A and point B is

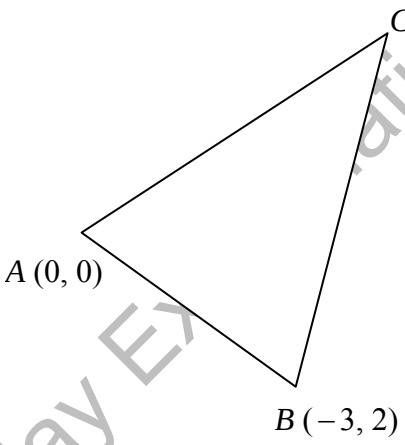
A. 2
B. $2\sqrt{2}$
C. 4
D. 8



NOT TO SCALE

29. In the given triangle ABC, the length of the side $\overline{BC}$ is

A. 7
B. 9
C. $\sqrt{63}$
D. $\sqrt{65}$



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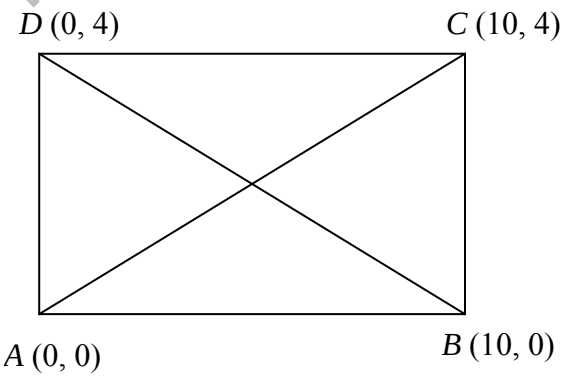
30. The point of intersection of the diagonals of the given rectangle $ABCD$ is



NOT TO SCALE

A. (0, 2)
B. (5, 2)
C. (5, 4)
D. (10, 2)

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