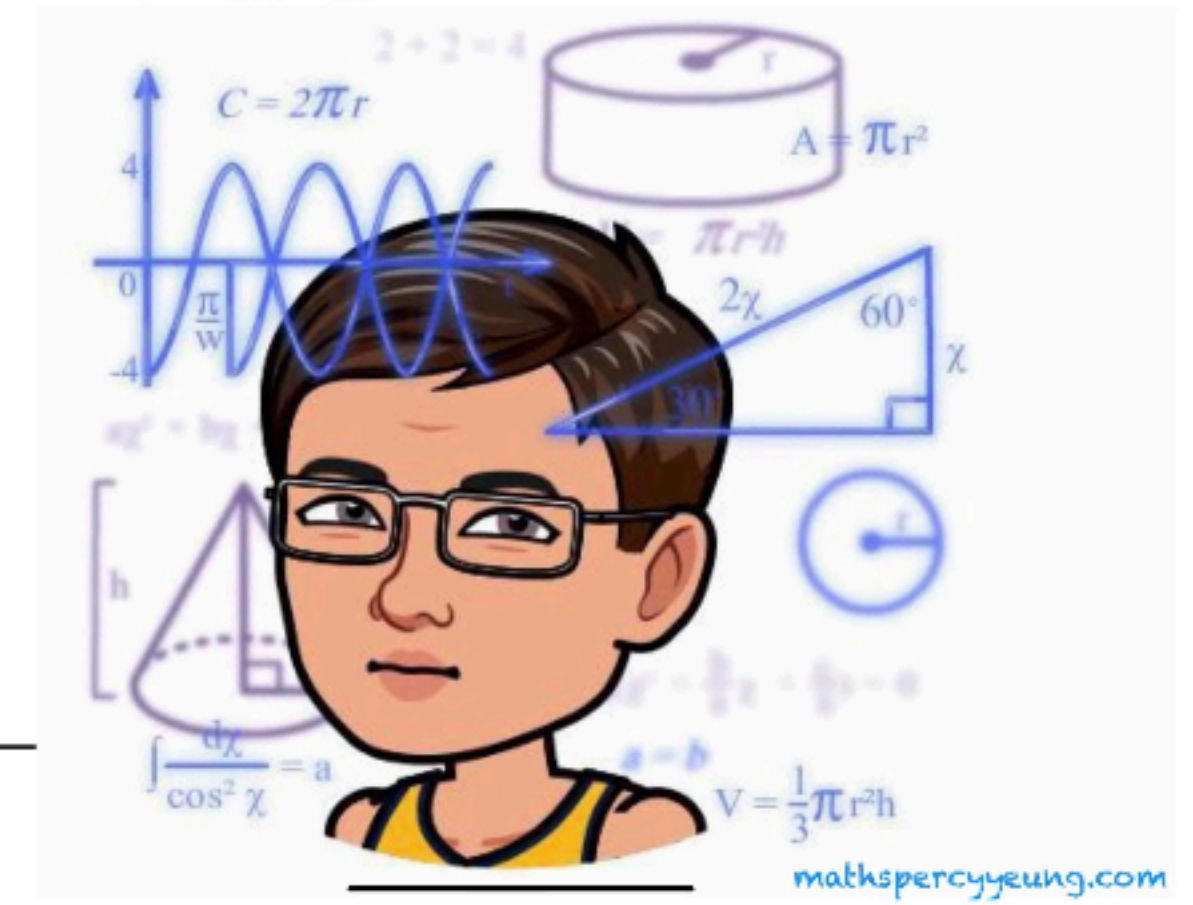


Form 1
140 students

Final Examination 2022-2023

MATHEMATICS
Paper II
Time Allowed: 1 hour

Name: _____ **Class No.** _____ **Class:** _____



Please read the following instructions very carefully.

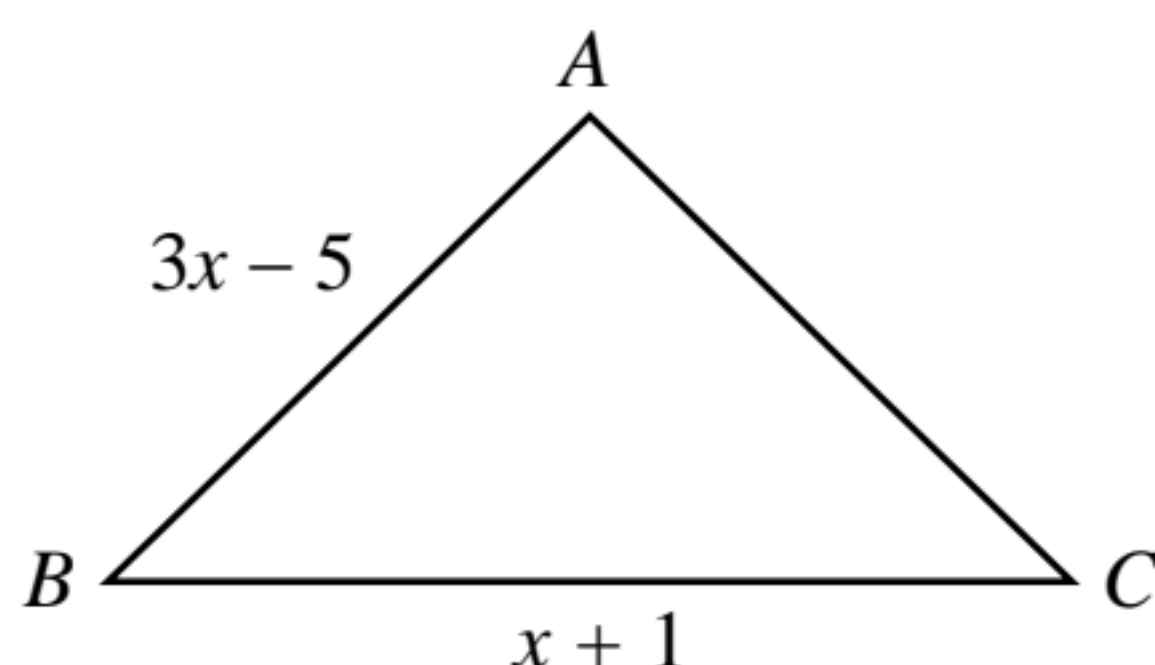
- Answer **ALL** questions in the spaces provided in this **Question-Answer Paper**.
- All rough work should be done on the rough work paper provided, but will not be marked.
- The diagrams in this paper are not necessarily drawn to scale.
- This paper carries 100 marks.

Marks:

/ 100

	<u>Answers</u>	<u>Marks</u>
1. Arrange the following numbers in descending order. $-3.2, \frac{9}{4}, 2, 0, -\frac{1}{10}$	1. _____	2
2. Evaluate the following. (a) $-1^8 - (-5)^2$ (b) $(-3) \div \left[\left(+1\frac{1}{2} \right)^2 \times (-2) \right]$	2. (a) _____ (b) _____	2 3
3. Find the L.C.M. of $2^3 \times 5^2$, $2^2 \times 3^3$ and $3^2 \times 7$. Express your answer using index notation.	3. _____	2
4. $341\heartsuit 2$ is a 5-digit number, where $\heartsuit$ is an integer from 0 to 9 inclusive. If $341\heartsuit 2$ is divisible by 8, write down all the possible value(s) of $\heartsuit$.	4. _____	2
5. Which of the following expressions is/are a monomial(s)? A. $\frac{3x}{y}$ B. $9a^2 + b$ C. $3p^2 \div q$ D. $\frac{1}{5}cd$	5. _____	2
6. Consider the polynomial $-3a^4 + 6x^2y^5 - \frac{pq}{2} - 8$. Find (a) the coefficient of pq term, (b) the constant term, (c) the order of the polynomial.	6. (a) _____ (b) _____ (c) _____	 1 1 1
7. Expand $(4a - 3a^2 + 1)(-2a)$ and arrange the terms in ascending powers of a .	7. _____	2
8. Simplify $\frac{3x^5}{y^3} \times \frac{-xy^2}{9}$.	8. _____	2
9. If $-2q^{x+4}p^2$ and $3p^{8-2y}q^9$ are like terms, find the sum of x and y .	9. _____	3
10. Express the following as an algebraic expression. (a) Subtract y from 6 and then multiply the result by the cube of x . (b) Divide the sum of m and n by the square of 2.	10. (a) _____ (b) _____	 2 2
	<u>Subtotal:</u>	/27

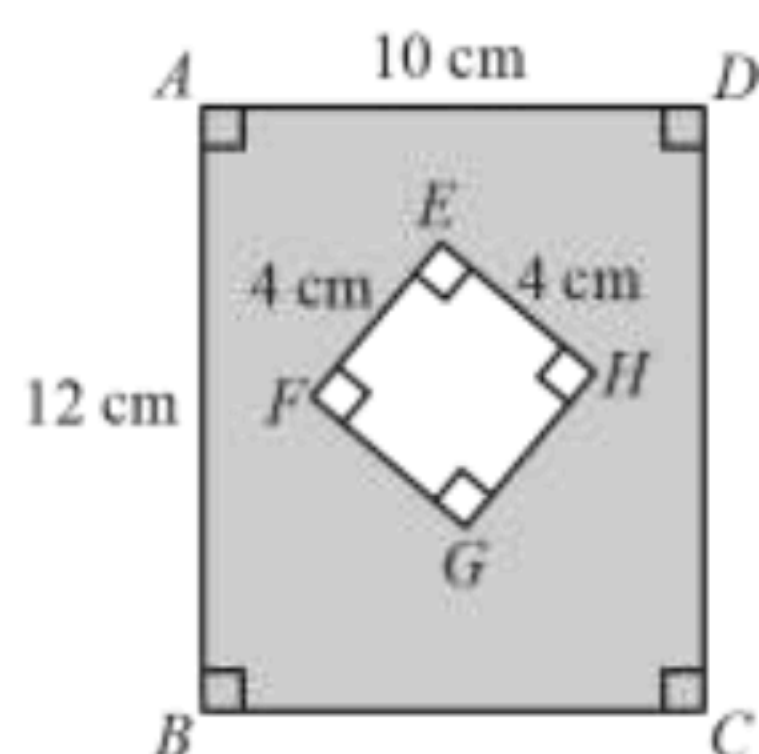
11. In the figure, it is given that the perimeter of $\triangle ABC$ is 24. Find the length of AC in terms of x .



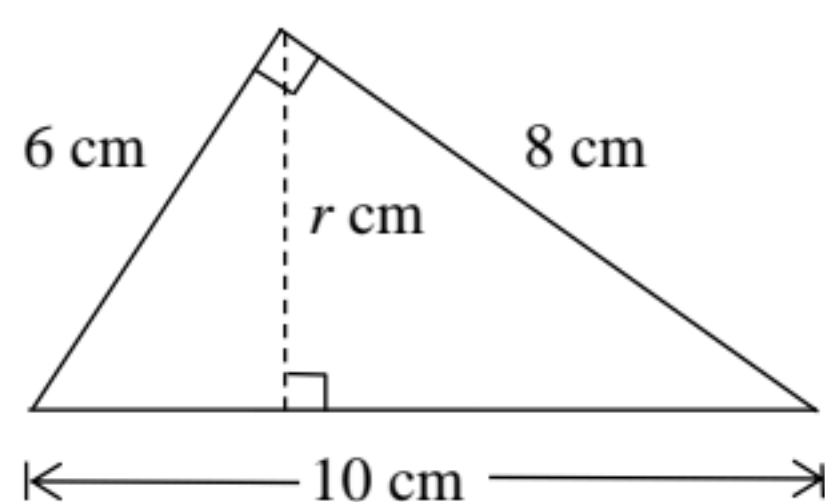
12. The price of a ball pen is \$ p . The price of a pencil is twice that of a ball pen. Let \$ C be the cost of 4 ball pens and p pencils. Find the formula for C .
13. Consider the formula $y = ax^2 + x + c$. If $a = -2$, $c = 9$ and $x = 4$, find the value of y .
14. Solve the equation $7y + 6 = 2y + 22 - 3y$.
15. Harry is 15 kg heavier than Terence and they weigh 145 kg in total. Find the weight of Terence.
16. The sum of three consecutive even numbers is 66. Find the three numbers.
17. If 24% of c is 30, find the value of c .
18. The price of a museum ticket increases by 20% from \$480. How much is the ticket now?
19. Miss Lee spends 30% of her monthly salary on rent, 15% on meals and 10% on transportation. If she still has \$8 082 left for other purposes, find her monthly salary.
20. There are 32 students in a class. If 87.5% of the students in the class passed the test, find the number of students who passed the test.

11. _____	3
12. _____	3
13. _____	2
14. $y =$ _____	2
15. _____	2
16. _____	3
17. _____	2
18. _____	2
19. _____	2
20. _____	2
<u>Subtotal:</u>	/23

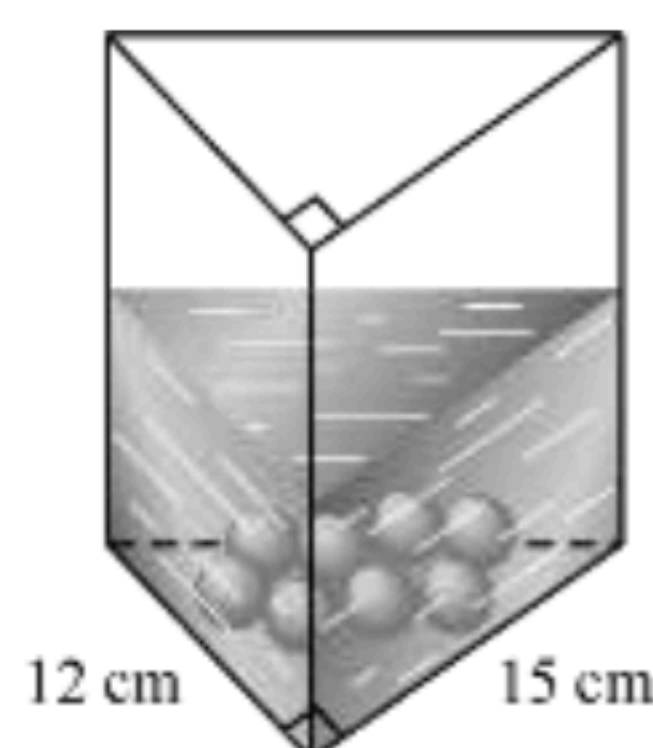
21. The length of each side of a square is 12 cm. If the percentage change of the length of each side of the square is -35% , find the perimeter of the new square.
22. The marked price of a smartwatch is \$2 200 and its selling price is \$1 804. Find the percentage discount.
23. Ida sells two computers for \$3 600 each. She gains 20% on one and loses 20% on the other. Find the overall profit or loss.
24. Find the area of the shaded region in the following figure.



25. The figure shows a right-angled triangle. Find the value of r .



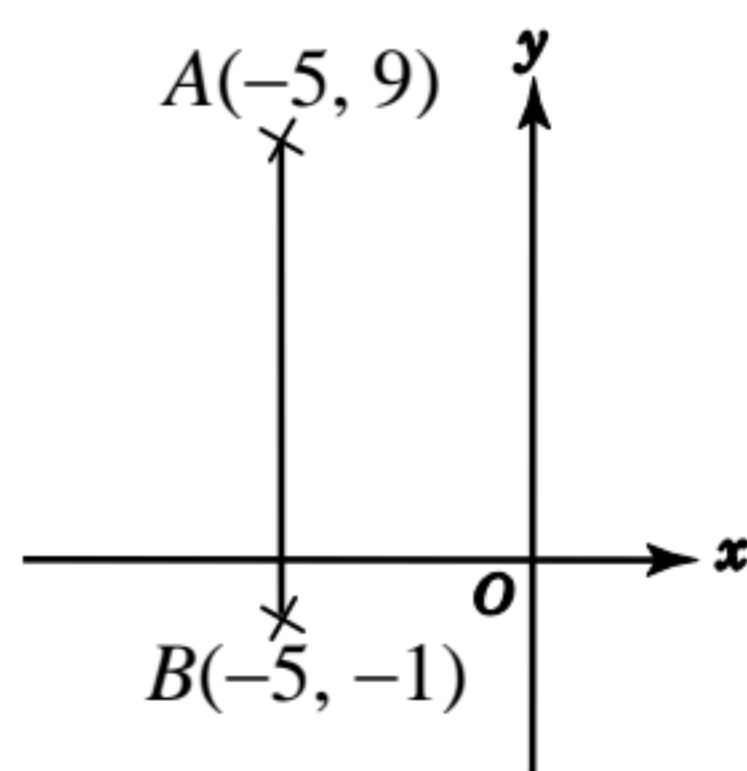
26. In the figure, a container in the shape of a right triangular prism is filled with 780 cm^3 of water. If 8 metal balls, of volume 15 cm^3 each, are put into the container such that they are completely immersed in water and no water overflows, find the new depth of water in the container.



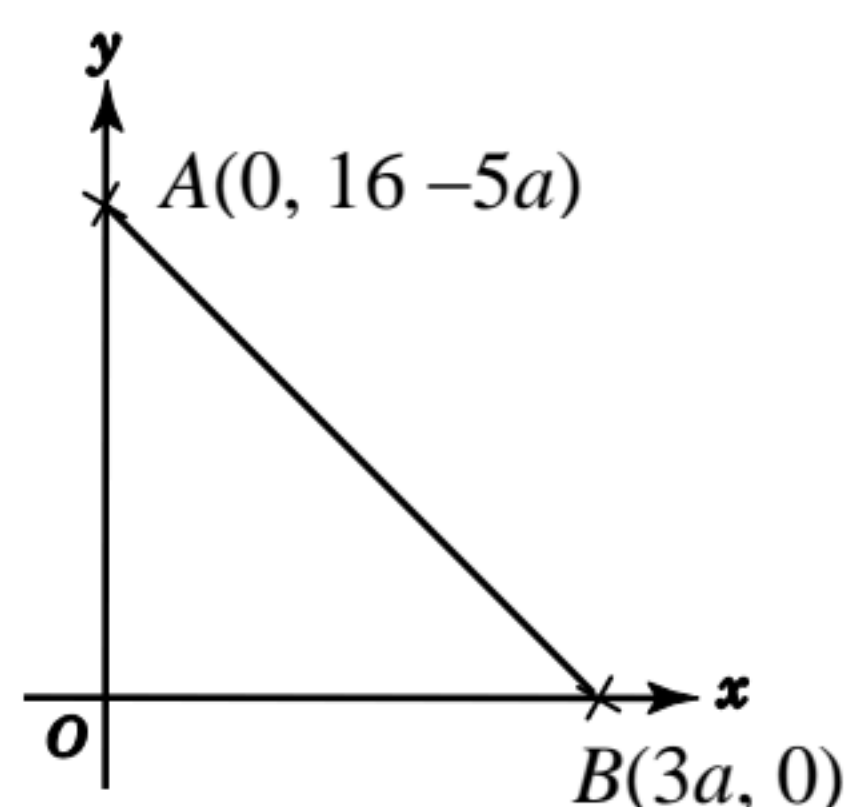
27. The coordinates of the points A and B are $(14, a + 1)$ and $(11, a + 1)$ respectively. Find the length of AB .

21. _____	2
22. _____	2
23. _____	3
24. _____	2
25. _____	2
26. _____	3
27. _____	2
<u>Subtotal:</u>	/16

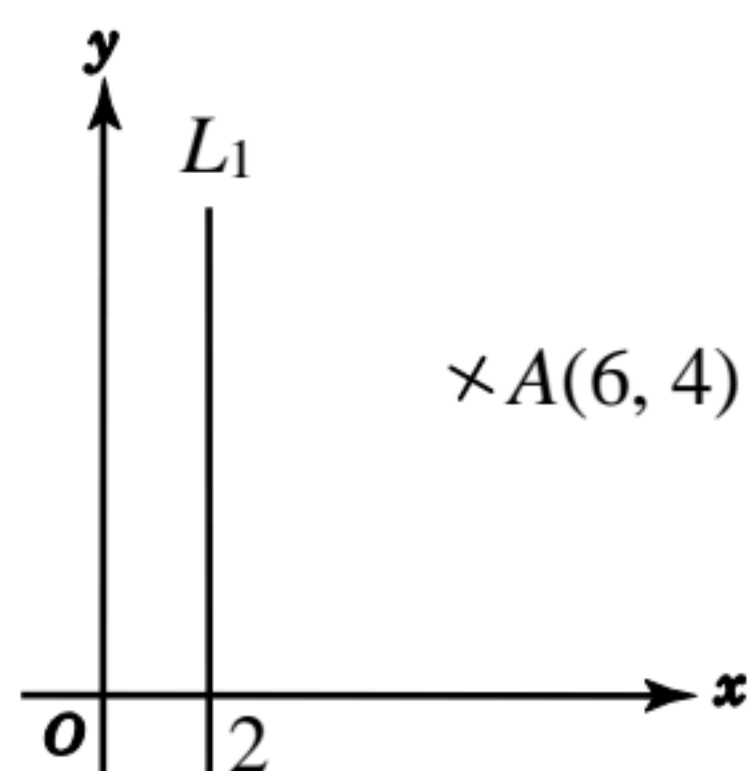
28. The coordinates of the points A and B are $(-5, 9)$ and $(-5, -1)$ respectively. If M is the mid-point of AB (i.e. $AM = MB$), find the coordinates of M .



29. In the figure, $\triangle ABO$ is an isosceles triangle. Find the value of a .



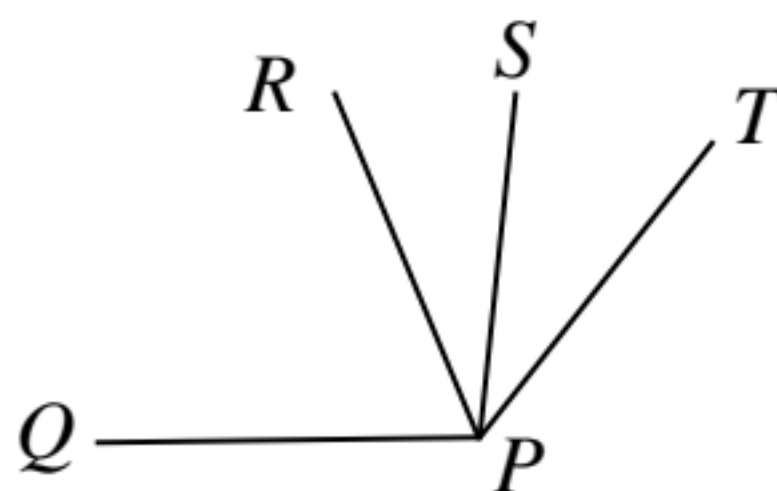
30. If A is reflected with respect to the x -axis to $B(-7, 2)$, which quadrant of the rectangular coordinate plane does A lie in?
31. If $A(6, 4)$ is reflected with respect to L_1 to $B(b, 4)$, find the value of b .



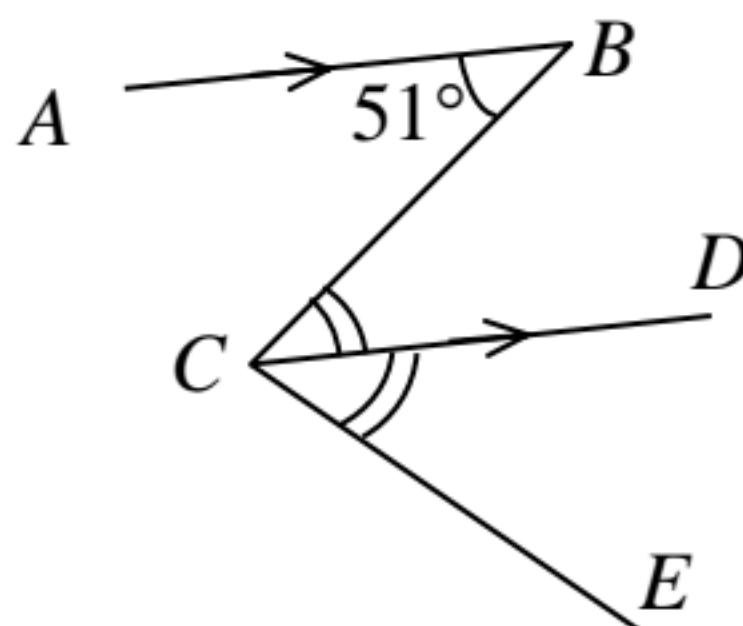
32. $A(0, a)$, where $a < 0$, is rotated anticlockwise about the origin through 270° and then translated upwards by 3 units and leftwards by 5 units to B . Write down the coordinates of B in terms of a .
33. Express the sum of $1\frac{1}{2}$ straight angles and $\frac{2}{3}$ of a right angle in degrees.
34. In $\triangle ABC$, $\angle A = 32^\circ$ and $\angle B = 10^\circ$, find the size of the remaining angle.

28. _____	3
29. _____	3
30. _____	2
31. _____	3
32. _____	3
33. _____	2
34. _____	2
<u>Subtotal:</u>	/18

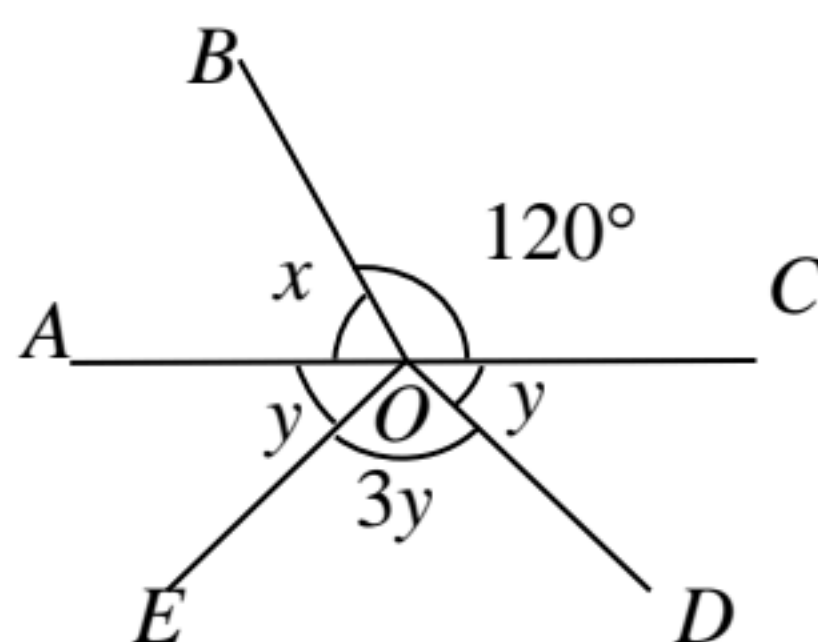
35. In the figure, $\angle QPR = 74^\circ$,
 $\angle SPT = 31^\circ$ and $\angle RPT = 60^\circ$.
 Find $\angle QPS$.



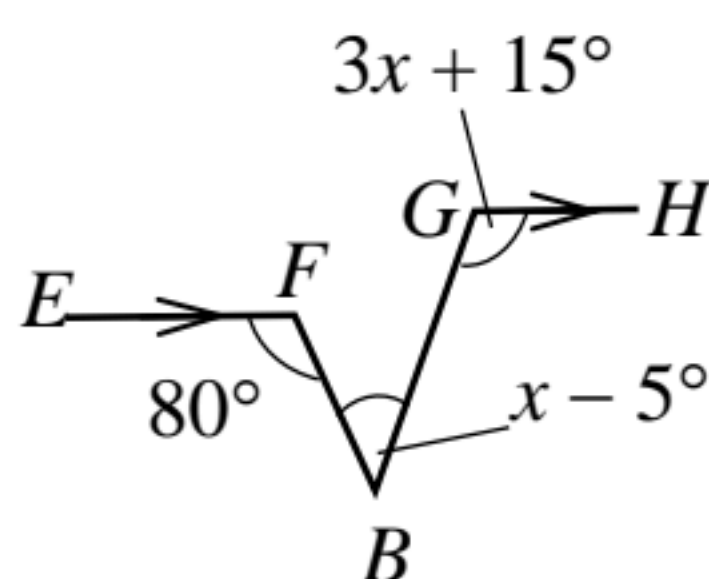
36. In the figure, $AB \parallel CD$, $\angle ABC = 51^\circ$
 and $\angle BCD = \angle DCE$.
 Find reflex $\angle BCE$.



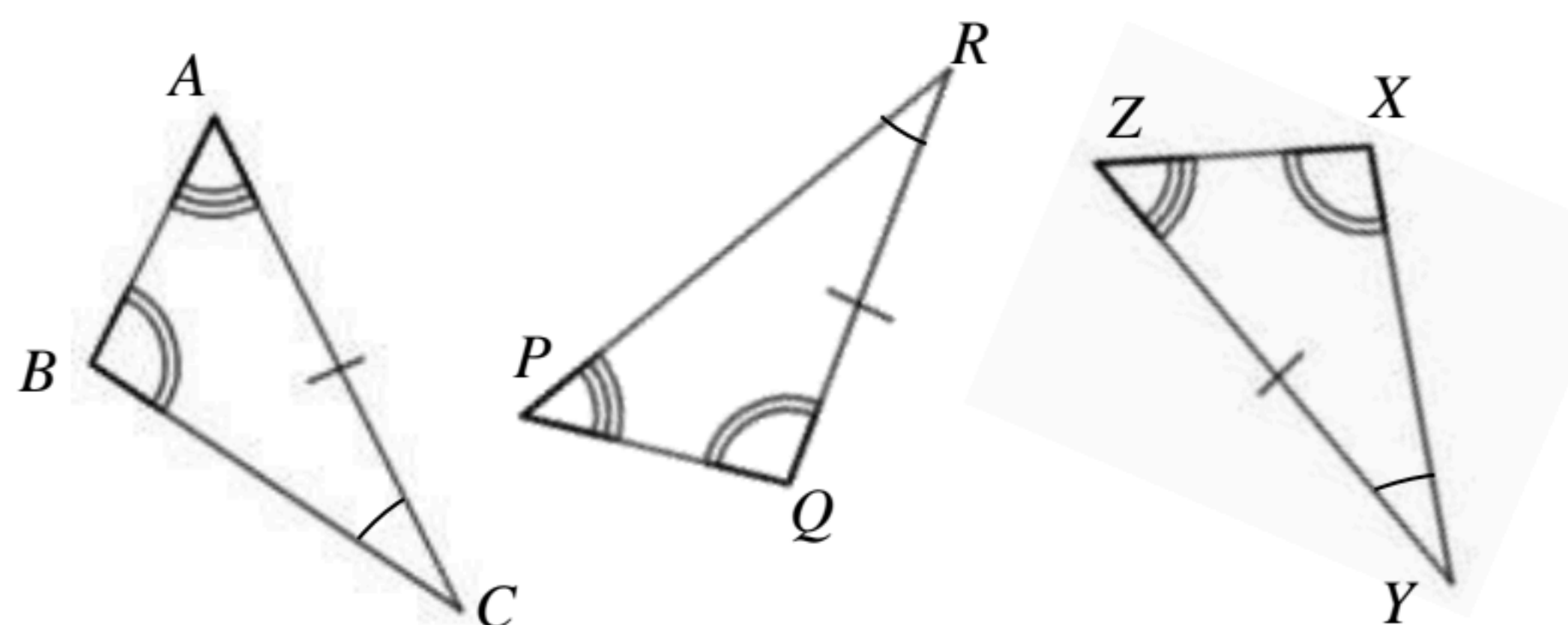
37. In the figure, AOC is a straight line. Find the values of x and y .



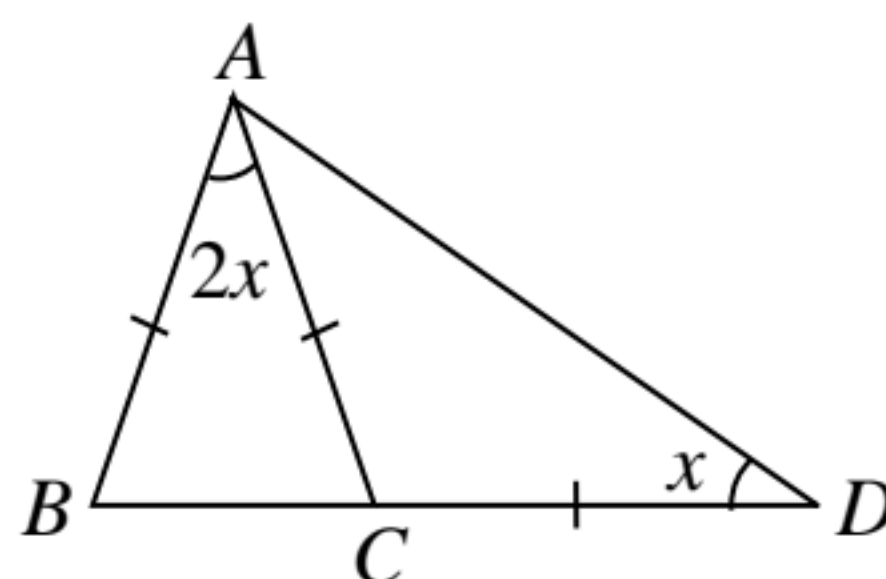
38. Find the value of x in the figure.



39. In the figure, name a pair of congruent triangles and give a reason.



40. In $\triangle ABC$, C is a point on BD such that $AB = AC = CD$. Find the value of x .



35. _____ 2

36. _____ 2

37. $x =$ _____ 1

$y =$ _____ 2

38. _____ 3

39. _____ 2

Reason (_____) 1

40. _____ 3

Subtotal:

/16

– END OF PAPER –