

The University of the West Indies
The 2019 Junior Mathematical Olympiad

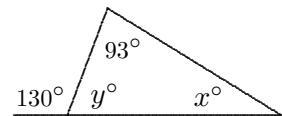
SOLUTIONS FOR FIRST ROUND EXAMINATION, GRADE 4
TUESDAY, FEBRUARY 19, 2019

1. We have $\frac{3 \times 4}{6} = \frac{12}{6} = 2$.

2. Five years ago, Sally was 7 years old. So, she is 12 years old now. In 2 more years, she will be 14.

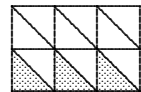
3. If x is the number, then $\frac{1}{2}(x) = 32$. Thus $x = 64$. Twice the same number is $2 \times 64 = 128$.

4. Since the angles with measure 130° and y° make a straight angle, $130 + y = 180$. Then $y = 50$. Since the sum of the angles in any triangle is 180° , we have $93 + 50 + x = 180$. Then $x = 37$.



5. The machine produces 150 items in 60 seconds. This is $\frac{150}{60} = \frac{5}{2}$ items per second. In 10 seconds, the machine will produce $\frac{5}{2} \times \frac{10}{1} = \frac{50}{2} = 25$ items.

6. The six squares may be divided into 12 equal triangles, as shown on the right. Since three of these triangles are shaded, $\frac{3}{12} = \frac{1}{4}$ of the area of the rectangle is shaded.



7. From the middle column, we see that each row, column, and diagonal will be $19 + 15 + 11 = 45$. From the top row, $14 + 19 + y = 45$. It follows that $y = 12$. From the diagonal containing x , we see that $x + 15 + 12 = 45$. Then $x = 18$.

14	19	y
	15	
x	11	

8. Each friend gets $\frac{1}{4}$ of $\frac{3}{4}$ of a pizza. This will be $\frac{1}{4} \times \frac{3}{4} = \frac{3}{16}$ of a whole pizza.

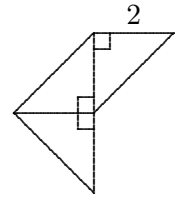
9. In four weeks, there will be 4 more boys and 8 more girls in the club. Then there will be 16 boys and 16 girls in all. At that time, there will be $16 + 16 = 32$ children in the club.

10. The 7 tables will be configured into a large table as shown below. A total of 16 children can sit at this table.



11. When Chris runs 100 m, this is equivalent to running 5 m a total of 20 times. While he does this, Scott will run 4 m 20 times. He will run 80 m in all.

12. Each triangle has base length 4 and a height of 4. Its area is $\frac{1}{2}(4)(4) = \frac{1}{2}(16) = 8$. Since the pentagon consists of three such triangles, its area is $3 \times 8 = 24$.



13. Since Juan won three games, a total of 3 points were deducted from Mary's score. Since she finished with a total of 5 points, this means that she would have otherwise had 8 points. Then Mary won 4 games in all. They played $3 + 4 = 7$ games in all.

14. Let A , B , and C stand for Ariel, Beth and Carol, respectively. The possible orders of finishing are ABC , ACB , BAC , BCA , CAB , and CBA . (Here, ABC represents a finish with Ariel first, Beth second, and Carol third, and so on.) There are 6 such possible orders in all.

15. Since the square has a perimeter of 48, its side length is 12. Then its area is 144, and the triangle has area 144 as well. Thus the area of the rectangle containing the triangle is 288. Since the height of the rectangle is 48, we must have $x = 6$.

