

The University of the West Indies
The 2019 Junior Mathematical Olympiad

FIRST ROUND EXAMINATION, GRADE 4
THURSDAY, FEBRUARY 21, 2019

1. We have $\frac{10 + 20 + 30 + 40}{10} = \frac{100}{10} = 10$.

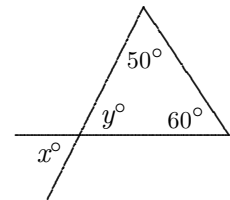
2. We have

$$\frac{6 - 5 + 4 - 3 + 2 - 1}{5 - 4 + 3 - 2 + 1} = \frac{(6 - 5) + (4 - 3) + (2 - 1)}{(5 - 4) + (3 - 2) + 1} = \frac{1 + 1 + 1}{1 + 1 + 1} = \frac{3}{3} = 1$$

3. For the new number to have the highest possible value, the digit 9 should be given the highest possible place value. The digit 1 should be changed to 9.

4. First, $23,456 + 15,734 - 3,894 = 35,296$. Rounded to the nearest thousand, this is 35,000.

5. Let y be the measure of the angle opposite x . Since the sum of the angles in any triangle is 180° , we have $50^\circ + 60^\circ + y^\circ = 180^\circ$. Thus $y = 70$. Since x and y make vertical angles, $x = 70$ as well.

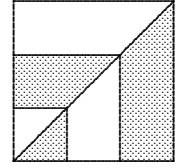


6. The five numbers Sherice could make are 32019, 23019, 20319, 20139, and 20193. The smallest one is 20139. This is achieved by inserting the 3 between the 1 and the 9.

7. Since Carol and Ellen do not live on the same floor that Dora lives on, they live on the same floor as each other. Since Ann and Carol do not live on the floor that Barb lives on, they also live on the same floor as each other. So, Carol, Ellen, and Ann all live on the same floor. This is the second floor. This means that Barb and Dora live on the first floor.

8. All together, Maria will be finished 8 hours and 45 minutes after 7:25 am. She will finish at 4:10 pm.

9. Each shaded section is matched exactly by an unshaded section of the same size and shape. One-half of the square is shaded.

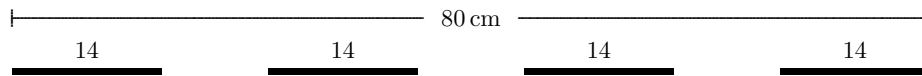


10. After Peter bought 3 servings of ice cream, he had \$30 left. He needed \$80 more to get the next one. So, the cost of a serving is $\$30 + \$80 = \$110$.

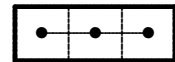
11. First, $\frac{1}{2}$ of $\frac{2}{3}$ is equal to $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$. Then $\frac{1}{3}$ of the squares will be removed. That is, $\frac{1}{3}(12) = 4$ squares will be removed. There will be 8 squares remaining.

12. Jumbo is 4 years older than Gumbo, and Gumbo is 4 years older than Mumbo. So, Jumbo is 8 years older than Mumbo. Let x be the age of Mumbo. The age of Jumbo is $x + 8$. Since Jumbo is five times as old as Mumbo, $x + 8 = 5x$. Subtracting x from both sides gives $8 = 4x$. Dividing both sides by 4 gives $x = 2$. Mumbo is 2 years old.

13. Since $14 + 14 + 14 + 14 = 56$, the four sticks have a total length of 56 cm. Since $80 - 56 = 24$, the three spaces have a total length of 24 cm. The length of one space is 8 cm.



14. Each square has four equal sides and a perimeter of 24 cm. So, the length of any side of a square is 6 cm. The distance from one centre of a square to the next is equal to the length of one side. Then the distance from the first centre to the third one is $6 \text{ cm} + 6 \text{ cm} = 12 \text{ cm}$.



15. Let x be the amount of money that Celine earned. Since Adam earned 4 times as much money as Celine did, Adam earned $4x$. He also earned twice as much as Brianna did. So, Brianna earned $2x$. The total amount that Adam, Brianna, and Celine earned is $4x + 2x + x$. This is $7x$. So, $7x = \$2800$. Dividing both sides by 7 gives $x = \$400$. Celine earned \$400.