## Class 5

## Unicus Global Mathematics Olympiad (UGMO)

Time: 60 minutes

| Pattern and Marking Scheme |  |  |  |
| :---: | :---: | :---: | :---: |
| Section | Total <br> Questions | Marks per <br> Question | Total <br> Marks |
| Classic Section | 30 | 1 | 30 |
| Scholar Section | 15 | 2 | 30 |
| Grand Total | $\mathbf{4 5}$ |  | 60 |

## Unicus Global Mathematics Olympiad (UGMO)

The Unicus Global Olympiad is organised around two dimensions:

1. Content dimension, specifying the subject matter domains to be assessed
2. Cognitive dimension, specifying the thinking processes to be assessed

Target percentages of the question paper devoted to cognitive domains


Scholar Section


Target percentages of the question paper devoted to content domains Content Domain


For more details, visit https://www.unicusolympiads.com/.

## Unicus Global Mathematics Olympiad (UGMO)

## Classic Section (Each Question is 1 Mark)

\section*{| Cognitive Domain: Knowing | Content Domain: Number |
| :--- | :--- |}

1. Which digit will be in the units place of the product of $25 \times 17 \times 18 \times 9$ ?
a. 5
b. 6
c. 4
d. 0

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

2. Sandra told her mother that she had 3,600 stamps. This number was rounded off to the nearest hundred. Which of these could have been the actual number of stamps she had?
a. 3,053
b. 3,589
c. 3,653
d. 3,161

\section*{| Cognitive Domain: Reasoning | Content Domain: Number |
| :--- | :--- |}

3. What is the difference between the 7 th and 13 th even numbers coming after 129,105 ?
a. 6
b. 8
c. 12
d. 5

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

4. Fionna packed 12 cookies each in 34 out of 60 boxes. She packed 15 cookies each in the remaining boxes. How many cookies did she pack in all?
a. 648
b. 798
c. 750
d. 1100

\section*{| Cognitive Domain: Reasoning | Content Domain: Number |
| :--- | :--- |}

5. $X$ is a number which is 465335 more than the sum of 498625454 and 2496254656 . Y is a number which is 165465 less than the sum of 564656532 and 905465325 . Find the difference between $X$ and $Y$.
a. 1025389053
b. 2525389053
c. 2025389053
d. 1525389053

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

6. A student incorrectly divided a number by 24 instead of 16 , resulting in a quotient of 85 and a remainder of 8 . What would be the remainder if the number were correctly divided by 16 ?
a. 10
b. 12
c. 0
d. 4

\section*{| Cognitive Domain: Knowing | Content Domain: Number |
| :--- | :--- |}

7. Which option shows the numbers in descending order?
a. $1 / 5,0.6,4 / 8,0.12$
b. $0.6,4 / 8,1 / 5,0.12$
c. $4 / 8,0.6,1 / 5,0.12$
d. $0.12,4 / 8,1 / 5,0.6$

## Cognitive Domain: Reasoning $\quad$ Content Domain: Number

8. In a school 48 students liked to play chess, 148 students liked to play badminton, 200 students liked to play football and 164 children liked to swim. Assuming each child liked to do only 1 activity, what fraction of the children in the school liked to play football?
a. 5/14
b. $10 / 14$
c. $14 / 10$
d. $5 / 7$

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

9. The teacher asked Diana to cut the ribbon into pieces of length 0.04 m each. If the ribbon was 28.72 m long, how many pieces of ribbon would Diana have?
a. 719
b. 7180
c. 71.8
d. 718

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

10. I am a decimal number. My decimal part is ( $1 / 16$ of 32 ) hundredth and my whole number is 3 parts more than ( $2 / 5$ of 40 ). Who am I?
a. 16.2
b. 19.02
c. 19.2
d. 16.24

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Reasoning | Content Domain: Number |
| :--- | :--- |}

11. Heidi thought of two numbers 34 and 76.12. She multiplied the number and got a product. She then realised that she wrongly multiplied 34 with 67.21 instead of 76.12 . By how much was her answer wrong?
a. 302.94
b. 303.56
c. 345.15
d. 312.88

\section*{| Cognitive Domain: Knowing | Content Domain: Number |
| :--- | :--- |}

12. Sara and Kim together have 15 pencils. Sara has 9 pencils. Mark and Kim together have 10 pencils. How many pencils does Mark have?
a. 4 pencils
b. 5 pencils
c. 6 pencils
d. 8 pencils

\section*{| Cognitive Domain: Applying | Content Domain: Measurement |
| :--- | :--- |}

13. A seamstress sewed 150 m of lace. If she sewed 3000 mm of lace each day, how many days did she take to sew all the lace?
a. 500
b. 50
c. 20
d. 100

\section*{| Cognitive Domain: Reasoning | Content Domain: Measurement |
| :--- | :--- |}

14. Shane and Diana are running on a track. The track is 400 m long. Shane can run one lap in 1 minute and 10 seconds, and Diana can run one lap in 1 minute and 45 seconds.
How many metres in total will Shane have run by the time Diana finishes her 10th lap?
a. 1000 km
b. 6000 m
c. 9 km
d. 8000 m

## Cognitive Domain: Knowing Content Domain: Measurement

15. Michael had $2 / 5 \mathrm{~kg}$ of sugar. If she packed the sugar into 10 packets equally, how many grams of sugar were there in each packet?
a. 100 g
b. 20 g
c. 40 g
d. 120 g

## Unicus Global Mathematics Olympiad (UGMO)

| Cognitive Domain: Reasoning | Content Domain: Measurement |
| :--- | :--- |

16. A basket with 60 oranges weighs 21 kg 800 g . The same basket with 8 oranges weighs 3 kg 600 g . If each orange in the basket weighs the same, then what is the weight of the empty basket?
a. 800 g
b. 400 g
c. 300 g
d. 600 g

## Cognitive Domain: Reasoning <br> Content Domain: Measurement

17. An oil tank has a capacity of 480 L . When the tank is one fourth full, it can fill 6 barrels halfway.
If each barrel has an identical hole that causes it to lose water at a rate of 0.5 litres per hour, how many hours will it take for a completely filled barrel to be empty?
a. 3 days 8 hours
b. 40 hours
c. 2 days 4 hours
d. 60 hours

\section*{| Cognitive Domain: Applying | Content Domain: Measurement |
| :--- | :--- |}

18. Harry and his family went to the theatre to watch a play. The play started at $9: 15$ hours and lasted for 3 hours 20 minutes. If they reached home at $1: 45$ p.m., how long did they take to reach home?
a. 60 minutes
b. 70 minutes
c. 45 minutes
d. 55 minutes

## Cognitive Domain: Reasoning <br> Content Domain: Measurement

19. Passengers usually start to board their flights 1 hour before the scheduled take-off time. The gates close 15 minutes before the takeoff time. Jack's plane was scheduled to take off at 12:05 a.m. His watch was 15 minutes slow and he reached 5 minutes before the gates closed. What was the time on his watch when he reached?
a. 11:45 AM
b. 11:45 PM
c. $11: 30 \mathrm{PM}$
d. 11:30 AM

\section*{| Cognitive Domain: Reasoning | Content Domain: Measurement |
| :--- | :--- |}

20. In the United Kingdom, temperatures are measured in degrees Celsius ( $\left.{ }^{\circ} \mathrm{C}\right)$, whereas in the United States, they are measured in degrees Fahrenheit ( ${ }^{\circ} \mathrm{F}$ ). If the weather forecast in London shows a temperature of $15^{\circ} \mathrm{C}$, what is the equivalent temperature in degrees Fahrenheit?
a. $36^{\circ} \mathrm{F}$
b. $42^{\circ} \mathrm{F}$
c. $49^{\circ} \mathrm{F}$
d. $59^{\circ} \mathrm{F}$

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Applying | Content Domain: Measurement |
| :--- | :--- |}

21. Jenny's recipe book lists the baking temperature as $350^{\circ}$. For her oven in Europe, which displays temperature in Celsius ( ${ }^{\circ} \mathrm{C}$ ), what temperature should she set? (approx.)
a. $150^{\circ} \mathrm{C}$
b. $176^{\circ} \mathrm{C}$
c. $180^{\circ} \mathrm{C}$
d. $200^{\circ} \mathrm{C}$

\section*{| Cognitive Domain: Knowing | Content Domain: Geometry |
| :--- | :--- |}

22. How many right angles did Ginny make if she was facing South and then turned anticlockwise to east?
a. 0
b. 2
c. 1
d. 3

## Cognitive Domain: Applying <br> Content Domain: Geometry

23. Read the given statements carefully and select the correct option:
i. At 5:00 a.m., the hands of a clock form an obtuse angle.
ii. An angle which measures more than $90^{\circ}$ but less than $180^{\circ}$ is known as a straight angle.
a. Only i statement is true
b. Only ii statement Is true
c. Both i and ii statements are true
d. Either i or ii statement is true

\section*{| Cognitive Domain: Knowing | Content Domain: Geometry |
| :--- | :--- |}

24. Which shows 2 rays that form an angle?

a. PV and TZ
b. AP and PS
c. VT and VZ
d. SP and TZ

## Cognitive Domain: Knowing

25. On the given line, some points are given, how many line segments are there on the line?

a. 4
b. 5
c. 8
d. 10

## Unicus Global Mathematics Olympiad (UGMO)

## Cognitive Domain: Applying

26. How many triangles of the shape and size of the shaded triangle can the trapezoid above be divided into?

a. 2
b. 3
c. 5
d. 6

## Cognitive Domain: Knowing

## Content Domain: Geometry

27. Which of the following is a mirror image of the following picture?

a.

b.

c.

d.


## Cognitive Domain: Knowing Content Domain: Geometry

28. Diana drew an equilateral triangle. How many lines of symmetry can she draw in that triangle?
a. 1
b. 2
c. 3
d. 4

## Unicus Global Mathematics Olympiad (UGMO)

Directions (29-30): The bar graph shows the movie ticket collection in a week by the theatre. Study the graph carefully and answer the following question:


\section*{| Cognitive Domain: Applying | Content Domain: Data Handling |
| :--- | :--- |}

29. If the cost of a ticket is $\$ 10$, what was the collection of the week?
a. $\$ 55,000$
b. $\$ 52,000$
c. $\$ 5,500$
d. $\$ 500,000$

\section*{| Cognitive Domain: Applying | Content Domain: Data Handling |
| :--- | :--- |}

30. By how much is the average sales of Monday, Tuesday and Wednesday more than the average sales of Thursday, Friday and Wednesday?
a. 100
b. 200
c. 50
d. 0

## Scholar Section (Each Question is 2 Marks)

\section*{| Cognitive Domain: Knowing | Content Domain: Number |
| :--- | :--- |}

31. Find the number which is 600000 more than sum of the numbers 674545646 and 2124402 .
a. 477852005
b. 566320058
c. 599500587
d. 677270048

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

32. A school organised a picnic to Disneyland in the winter break, which was attended by 80 students of grade 3 and 72 students of grade 4 . If $2 / 5$ th of the students of grade 3 were girls and $3 / 12$ th of the students of grade 4 were girls, what was the total number of girls that went for the picnic?
a. 48
b. 50
c. 102
d. 142

\section*{| Cognitive Domain: Reasoning | Content Domain: Number |
| :--- | :--- |}

33. Sandra baked 147 cookies on Monday and 1068 cookies on Tuesday. She then sold $1 / 5$ th of the cookies to her best friend and $2 / 3$ rd of the remaining to her neighbour. How many cookies did she sell to her neighbour?
a. 648
b. 750
c. 810
d. 972

\section*{| Cognitive Domain: Knowing | Content Domain: Number |
| :--- | :--- |}

34. The teacher asked the children to solve $1 / 125$. Veronica was the 1 st child to give the correct answer. What is the answer she gave?
a. 0.008
b. 0.08
c. 0.001
d. 0.01

\section*{| Cognitive Domain: Applying | Content Domain: Number |
| :--- | :--- |}

35. Brett got on an elevator and rode up 10 floors. Next, he rode down 7 floors. After that, he went up 4 floors. Finally, he went down 6 floors. When he got off the elevator, he was on the 11th floor. What floor was he on when he started his ride?
a. 4th floor
b. 10th floor
c. 12th floor
d. 14th floor

\section*{| Cognitive Domain: Applying | Content Domain: Measurement |
| :--- | :--- |}

36. Archie's car has a fuel tank that can hold 30 L of petrol. The car consumes 6.5 L of petrol for every 50 km driven. He started his trip to Disneyland with a full tank and travelled 175 km . How much fuel was left in them when they reached Disneyland?
a. 22.75 L
b. 550 mL
c. 7250 mL
d. 72.5 L

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Knowing | Content Domain: Measurement |
| :--- | :--- |}

37. Isaac was asked to convert 80 hours 120 minutes 7200 seconds into days. What will be the correct answer?
a. 8 days
b. 7 days
c. 7/2 days
d. $2 / 3$ days

\section*{| Cognitive Domain: Reasoning | Content Domain: Measurement |
| :--- | :--- |}

38. To ensure that he is not late for an exam, Rocky's teacher asked him to set the alarm for Monday at 11 a.m. He set it correctly at 1 a.m. on Sunday but wasn't aware of the fault in the clock. The clock gained 20 minutes for every 24 hours. What would be the actual time when the alarm would go off?
a. 28 minutes 20 seconds before 10 am
b. 31 minutes 40 seconds past 10 am
c. 28 minutes 20 seconds past 11 am
d. 31 minutes 40 seconds past 11 am

\section*{| Cognitive Domain: Reasoning | Content Domain: Geometry |
| :--- | :--- |}

39. Jason's dog was tied to a pole and was facing North. It spun $2 / 3$ rd of a right angle, then it made a $1 / 5$ th of a right angle turn in the same direction and then $1 / 9$ th of straight angle again in the same direction. At what angle was the dog from the pole by the end of making all the turns?
a. $80^{\circ}$
b. $98^{\circ}$
c. $140^{\circ}$
d. $78^{\circ}$

Directions (40-42): Study the given passage and answer the following questions:
Mr . Thomas is planning to redesign his rectangular garden which currently has a length of 8 m and a width of 6 m . He wants to increase the area of his garden by adding 2 m to both the length and the width. Once the expansion is complete, he plans to surround the entire garden with a decorative fence. Additionally, Mr Thomas is considering splitting the garden into two equal parts by adding a fence right through the middle from one side to the other, parallel to the width. He is curious about the new dimensions, the amount of fencing required, and how the area will be divided.

\section*{| Cognitive Domain: Applying | Content Domain: Mensuration |
| :--- | :--- |}

40. How much fence material is needed to surround the entire garden after the expansion? (Assume he does not need a gate)
a. 32 m
b. 36 m
c. 42 m
d. 48 m

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Applying | Content Domain: Mensuration |
| :--- | :--- |}

41. What is the new area of Mr Thomas's garden after the expansion?
a. $72 \mathrm{~m}^{2}$
b. $76 \mathrm{~m}^{2}$
c. $80 \mathrm{~m}^{2}$
d. $84 \mathrm{~m}^{2}$

\section*{| Cognitive Domain: Reasoning | Content Domain: Mensuration |
| :--- | :--- |}

42. If Mr Thomas plants flowers in $1 / 4$ of the new garden area and vegetables in $1 / 2$ of the garden area, how many square meters are used for flowers?
a. $20 \mathrm{~m}^{2}$
b. $24 \mathrm{~m}^{2}$
c. $30 \mathrm{~m}^{2}$
d. $36 \mathrm{~m}^{2}$

Directions (43-45): Study the given pie chart and answer the following questions:
At Greenwood High School, a remarkable milestone was reached when 900 students successfully passed their class 10th examinations. The students were then presented with the opportunity to choose from various educational streams for their higher studies, decisions that were recorded and represented in a comprehensive pie chart. The distribution of their choices revealed significant preferences and trends within the student body, offering insights into the academic inclinations and future aspirations of these young scholars.


## Cognitive Domain: Reasoning <br> Content Domain: Data Handling

43. What is the number of students who did not choose the science stream?
a. 648
b. 252
c. 270
d. 540

\section*{| Cognitive Domain: Reasoning | Content Domain: Data Handling |
| :--- | :--- |}

44. How many more students chose Commerce as compared to Arts?
a. 378
b. 450
c. 108
d. 210

## Unicus Global Mathematics Olympiad (UGMO)

\section*{| Cognitive Domain: Applying | Content Domain: Data Handling |
| :--- | :--- |}

45. What is the number of students who did choose the science and Art stream?
a. 486
b. 512
c. 522
d. 586

## Answer Key

| 1. | d | 2. | b | 3. | c | 4. | b | 5. | d | 6. | c | 7. | b |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8. | a | 9. | d | 10. | b | 11. | a | 12. | a | 13. | b | 14. | b |
| 15. | c | 16. | a | 17. | a | 18. | b | 19. | c | 20. | d | 21. | b |
| 22. | c | 23. | a | 24. | b | 25. | d | 26. | c | 27. | a | 28. | c |
| 29. | a | 30. | d | 31. | d | 32. | b | 33. | a | 34. | a | 35. | b |
| 36. | c | 37. | c | 38. | b | 39. | b | 40. | b | 41. | c | 42. | a |
| 43. | a | 44. | c | 45. | d |  |  |  |  |  |  |  |  |

