

INTERNATIONAL MATHEMATICS OLYMPIAD 2011  
Class V

Questions: 50

Time: 60 Minutes

There are 3 sections, 20 questions in Section-1, 20 questions in Section-2, 10 questions in Section-3

Section-1 - Logical Reasoning

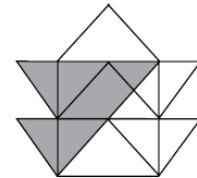
1. Ginni used pebbles to make a design in the sand. Based on this pattern, how many pebbles are there in row 6?

- (A) 16 pebbles
- (B) 17 pebbles
- (C) 20 pebbles
- (D) 21 pebbles

Row 1	
Row 2	
Row 3	
Row 4	
Row 5	

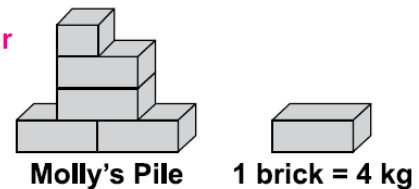
2. The figure is made up of identical triangles. What fraction of the figure is unshaded?

- (A)  $\frac{4}{7}$
- (B)  $\frac{3}{7}$
- (C)  $\frac{8}{19}$
- (D)  $\frac{3}{8}$



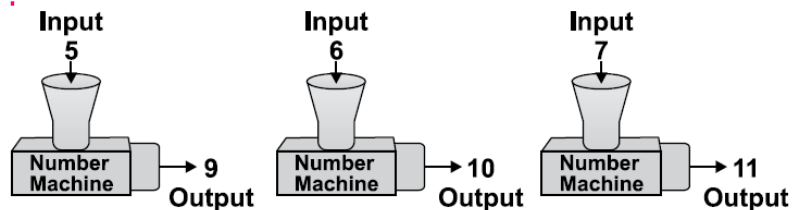
3. About how many more bricks does Molly need in her pile to make it equal to 50 kilograms?

- (A) 7
- (B) 8
- (C) 45
- (D) 46



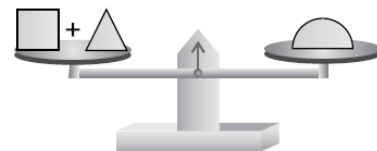
4. This number machine used the same rule each time to find the output numbers shown here. If  $n$  is the input number, which rule could the machine have used to find each output number?

- (A)  $n \div 4$
- (B)  $n - 4$
- (C)  $n \times 4$
- (D)  $n + 4$



5. Which of the following sentence must be true if the adjoining scale is balanced?

- (A)  $\triangle = \text{semicircle} + \square$
- (B)  $\triangle = \text{semicircle} - \square$
- (C)  $\triangle = \text{semicircle} \times \square$
- (D)  $\triangle = \text{semicircle} \div \square$



6. Observe the given pattern.



If the pattern continues, which could be the next two figures?



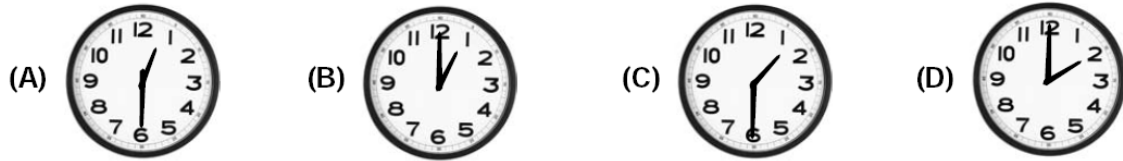
7. The fact family shown below is missing a fact.

$$3 \times 8 = 24; 8 \times 3 = 24; 24 \div 8 = 3; \underline{\quad? \quad}$$

Which is the missing fact?

- (A)  $24 \div 3 = 8$  (B)  $24 \div 4 = 6$  (C)  $24 + 3 = 27$  (D)  $24 - 4 = 20$

8. Peter went to watch a movie at a cinema. The movie started at 11:45 a.m. and lasted 1 h 45 min. Choose the clock face that correctly shows the time at which the movie ended.

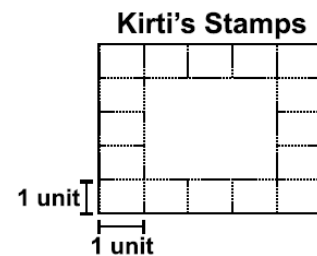


9. There are 10 children sitting in a row. Ali is the second child from the left while Devi is the second child from the right. How many children are sitting in between Ali and Devi?

- (A) 4 (B) 6 (C) 7 (D) 8

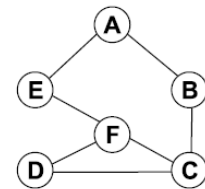
10. Kirti had a square page of stamps. She used some of the stamps from the centre of the page. The picture shows the stamps Kirti has left. How much area of the page of stamps did Kirti use?

- (A) 6 square units (B) 9 square units  
(C) 12 square units (D) 16 square units



11. In the adjoining figure how many different paths can be travelled from point A to point D by visiting a point only once?

- (A) 2 (B) 3  
(C) 4 (D) 5



12. Johny used the rule "double the number" to create the pattern given below.

$$3, 6, 12, 24, \underline{\quad}$$

Which pair of numbers is part of the pattern?

- (A) 36, 72 (B) 48, 72 (C) 96, 144 (D) 96, 192

13. The given table shows the possible food choices for lunch. How many different lunches can be made that include 1 type of soup, 1 type of sandwich and 1 type of salad?

Lunch Choices		
Soup	Sandwich	Salad
Chicken	Ham	Vegetable
Tomato	Turkey	Fruit

- (A) 2                      (B) 3                      (C) 6                      (D) 8

14. Look at the puzzle. Which piece completes the puzzle?



15. Letters of a word have been jumbled up. You have to construct the word. Each letter has been numbered and is followed by four options. Choose the option which gives the correct order of the letters as indicated by the numbers to form a word.

N I W E T R  
1 2 3 4 5 6

- (A) 4, 5, 1, 3, 2, 6      (B) 1, 4, 5, 6, 3, 2      (C) 3, 2, 1, 5, 4, 6      (D) 1, 2, 3, 4, 5, 6

16. Which of the figures below has the line of symmetry drawn correctly ?



17. Find the odd one out.

- (A) 15                      (B) 21                      (C) 27                      (D) 31

18. Rohit is in charge of feeding breakfast to the animals on his farm. He feeds them 4 oats every morning. If Rohit has 16 oats left after feeding them on Sunday, what is the last day he will most likely have oats for the animals?

- (A) Wednesday      (B) Thursday      (C) Friday      (D) Saturday

19. Jackie's mom baked cookies. Jackie wants to share the cookies equally with five friends. What information is needed to determine how many cookies each person could get?

- (A) The kind of cookies.                      (B) The size of the cookies.  
(C) The number of cookies baked.                      (D) The time it took to bake the cookies.

20. Riya asked the students in her class if they have any pets. Her results are shown below.

- 4 students have cats.
- 8 students have fish.
- 5 students have parrots.
- 12 students have dogs.
- No student has a frog.

Based on the above information, which statement is most likely true?

- (A) Cats are better pets than Fish.                      (B) Fish are better pets than Dogs.  
(C) Frogs are the most popular pet.                      (D) Frogs are the least popular pet.

## Section-2 – Mathematical Reasoning

21. What is the numeric form of the number given below ?

“One hundred four thousand, one hundred three”

- (A) 1,413                      (B) 14,103                      (C) 104,103                      (D) 104,113

22. Which figure has only one base and one vertex?



23. Jay arranged 48 books in 4 equal piles to find the quotient of  $48 \div 4$ . How can Jay use this method to find the quotient of  $189 \div 9$ ?

- (A) Put 189 books in 4 equal piles.                      (B) Put 189 books in 9 equal piles.  
(C) Add 189 to 48 books. Put them in 4 piles.  
(D) Add 189 to 48 books. Put them in 9 piles.

24. Look at the calendar. What best describes the dates that are on Saturdays?

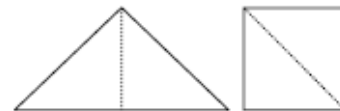
- (A) Multiples of 2                      (B) Multiples of 3  
(C) Multiples of 4                      (D) Multiples of 7

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

25. Sara used cutouts of two triangles to make the figures shown below.

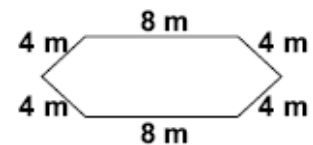
Which of the following statements is true about the figures?

- (A) Both figures have the same area.  
(B) Both figures have the same perimeter.  
(C) Both figures have the same number of sides.  
(D) Both figures have the same number of vertices.



26. Look at the diagram of Shreya's yard. Which expression can Shreya use to find the perimeter of her yard?

- (A)  $(4 \times 4) + (2 \times 8)$                       (B)  $(4 \times 8) + (2 \times 8)$   
(C)  $(4 + 4) + (2 + 8)$                       (D)  $(4 \times 8) + (2 \times 4)$



27. Sandy solved the adjoining problem in her math class.

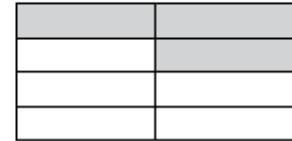
What is another way that Sandy could solve the problem?

- (A) Sandy can determine  $78 \times 10$ , then add that to  $78 \times 5$ .  
 (B) Sandy can determine  $70 \times 10$ , then add that to  $8 \times 5$ .  
 (C) Sandy can determine  $78 \times 10$ , then add that to  $5 \times 10$ .  
 (D) Sandy can determine  $70 \times 10$ , then add that to  $15 \times 10$ .

$$\begin{array}{r} 78 \\ \times 15 \\ \hline 390 \\ +780 \\ \hline 1170 \end{array}$$

28. Look at the given figure. Which fraction represents the shaded part of the figure?

- (A)  $\frac{3}{8}$  (B)  $\frac{3}{5}$   
 (C)  $\frac{5}{8}$  (D)  $\frac{5}{3}$



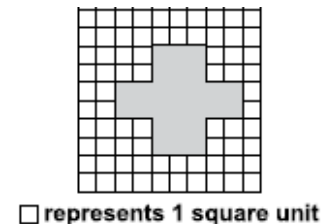
29. What is the solution to the given expression ?

$$3 \times 10 + (9 \times 2) =$$

- (A) 48 (B) 78 (C) 84 (D) 114

30. What is the area of the shaded figure?

- (A) 20 square units  
 (B) 22 square units  
 (C) 26 square units  
 (D) 28 square units



31. Which list shows all the prime numbers between 0 and 22?

- (A) 1,3,5,7,11,13,19 (B) 2,3,5,7,11,13,17,19  
 (C) 2,4,6,8,10,12,14,16,18,20,21 (D) 1,2,4,6,8,9,10,12,14,15,16,18,20,21

32. Which figure appears to have exactly two perpendicular sides?

- (A)  (B)  (C)  (D) 

33. Multiply the smallest 3-digit number formed using the digits 4, 2 and 5 by 8.





- (A) 4336 (B) 3400 (C) 2032 (D) 1960

34. The widths of two skateboards are shown in the table. Which number sentence correctly compares the widths of these two skateboards?

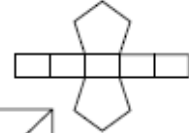
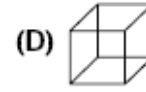
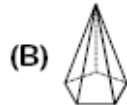
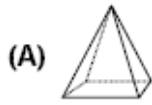
- (A)  $8.125 < 8\frac{1}{8}$  (B)  $8.125 = 8\frac{1}{8}$   
 (C)  $8.125 > 8\frac{1}{8}$  (D) None of these

Skateboard Widths	
Skateboard	Width in Inches
X	8.125
Y	$8\frac{1}{8}$

35. Which item is the heaviest?

- (A)  1 kg 100 g  
 (B)  1090 g  
 (C)  1400 g  
 (D)  1390 g

36. Which of the following figures can be made by folding the adjoining three-dimensional net along the dashed line segments?



37. Subtract :  $2.38 - 1\frac{9}{100} =$

(A) 0.48

(B) 1.29

(C) 3.47

(D) 0.29

38. Danish drew an angle as shown here. Sarah drew an angle that was twice the measure of Danish's angle. What was the measure of Sarah's angle?

(A)  $20^\circ$

(B)  $70^\circ$

(C)  $80^\circ$

(D)  $60^\circ$



39. What is the missing fraction?

$$\frac{3}{4} - \boxed{\phantom{00}} = \frac{3}{8}$$

(A)  $\frac{3}{8}$

(B)  $\frac{5}{8}$

(C)  $\frac{6}{8}$

(D)  $\frac{7}{8}$

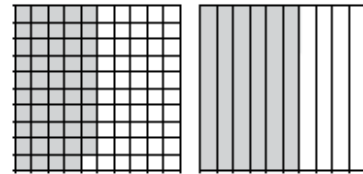
40. Each adjoining model is shaded to represent a decimal number. Which number sentence correctly compares these decimal numbers?

(A)  $0.49 < 0.6$

(B)  $0.49 = 0.6$

(C)  $0.49 > 0.6$

(D) None of these



### Section-3 – Everyday Mathematics

41. Garima measures a bean plant at the end of every week. At the end of week 1, the plant is 4 inches tall. It grows  $\frac{1}{2}$  inch each week for 5 more weeks. How tall is Garima's bean plant at the end of week 5?

(A) 5 inches

(B)  $5\frac{1}{2}$  inches

(C) 6 inches

(D)  $6\frac{1}{2}$  inches

42. Jay is 86 cm tall. His father is twice as tall as Jay. How tall is Jay's mother if she is 18 cm shorter than his father?

(A) 1 m 54 cm

(B) 1 m 66 cm

(C) 1 m 72 cm

(D) 1 m 90 cm

43. The information about Richa's favourite book is listed below:
- There are 364 pages.
  - Each chapter has the same number of pages.
  - There are 14 chapters.

How many pages are there in each chapter of this book?

- (A) 26                      (B) 27                      (C) 28                      (D) 29
- 

44. Farah and her friends are baking cookies for a school function. The recipe they are using states that they need  $\frac{3}{4}$  cups of sugar for every 3 dozen cookies they make. If they make 7 dozen cookies, about how much sugar will they need?

- (A) Approximately 1 cup                      (B) Approximately 2 cups  
(C) Approximately 4 cups                      (D) Approximately 7 cups
- 

45. Anuj made a chart showing how much time he spends on homework in one week. Based on the information in the chart, which statement is true?

Time Spent on Homework	
Day	Minutes
Monday	20
Tuesday	45
Wednesday	45
Thursday	30
Friday	30

- (A) Anuj has no homework on Monday.  
(B) Anuj spends the most time on homework on Friday.  
(C) Anuj spends the least amount of time on homework on Wednesday.  
(D) Anuj spends more time on homework on Tuesday than on Thursday.
- 

46. Nidhi is going to make bracelets to sell for a function. She bought 8 metres of yarn. She wants to cut it into pieces that are 16 centimetres long for each bracelet. How many bracelets can Nidhi make?

- (A) 2                      (B) 6                      (C) 50                      (D) 128
- 

47. Ritesh helps his teacher to pass out books 4 times in a day. How many times does Ritesh help his teacher in 5 days?

- (A) 5                      (B) 9                      (C) 20                      (D) 25
- 

48. John has 45 stickers. Mary has 20 more stickers than John. How many stickers must Mary give to John so that both of them have an equal number of stickers?

- (A) 5                      (B) 10                      (C) 25                      (D) 55
- 

49. There are 18 pupils in a group. There are 10 boys and the rest are girls. 7 pupils are wearing glasses. If 3 girls are wearing glasses, how many boys are not wearing glasses?

- (A) 3                      (B) 6                      (C) 8                      (D) 9
- 

50. There were 1582 chicken eggs and 475 duck eggs in a basket. 128 chicken eggs and duck eggs were broken. How many eggs were not broken?

- (A) 981                      (B) 1929                      (C) 2021                      (D) None of these
-