(Olympiad Champs Question)

Operations on Numbers

Multiple Choice Questions

CHALLENGE A

1. Which of the following property of multiplication is shown in the statement given below?

$3\times6=6\times3$

(a) associative (b) Distributive

(c) Identity (d) Commutative

2. The correct order to apply operations is

(a) Addition - Multiplication - Division - Subtraction

(b) Division - Multiplication - Subtraction - Addition

(c) Division - Multiplication - Addition - Subtraction

(d) Subtraction - Addition - Multiplication – Division

3. $96\div2=48$ is not equivalent to

(a) 2×24 (b) 4×12

(c) 8×6 (d) 7×8

4. 86 - 23 = ? Which of the following statement is not equivalent to given statement?

(a) 7×9 (b) 3×21

(c) $45+18$ (d) $187\div2$

5. Which of the following equation shows the identity property of addition?

(a) (6 + 8) + 3 = 6 + (8 + 3)

(b) 0 + 3 = 3

(c) 9+1=1+9

(d) 1+2=3

6. Which equation shows the commutative property of addition?

(a) $5+4=5+4$

(b) $1+(4+7)=(1+4)+7$

(c) $6+1=7$

(d) $8+4=4+8$

7. What should be subtracted from 14y to get 8 as answer?

(a) 6 (b) 6y

(c) 3y (d) None of these

8. If 4a + 3 = 15 then the value of 2a is

(a) 9 (b) 3

(c) 6 (d) 5

9. Look at these numbers:

0.7	0.5	0.8	0.6

Which two numbers in the box have a difference of 0.3?

(a) 0.8,0.5 (b) 0.8,0.7

(c) 0.8,0.6 (d) 0.7,0.5

10. Find the number in place of box in

$3\frac{1}{4}+6\frac{1}{4}+\square=10\frac{1}{10}$

(a) $\frac{5}{10}$ (b) $\frac{6}{10}$

(c) $\frac{7}{10}$ (d) $\frac{8}{10}$

11. If $20 \times 2.5 = 50$ then $2 \times 0.0025 = ?$

(a) 0.0005 (b) 0.005

(c) 0.05 (d) 5

CHALLENGE B

12. Match the following:

List I		List II	
A.	25 + 8	1.	80 - 11
B.	87 + 6	2.	220 - 76
C.	78 + 66	3.	42 - 9
D.	65 + 4	4.	100 - 7

	A	B	C	D
(a)	3	4	2	1
(b)	2	1	3	4
(c)	4	3	1	2
(d)	3	2	1	4

13. Read the statements and choose the correct option,

Statement A: $3 \times 15 = 15 \times 3$

Statement B: $3 \div 2 = 2 \div 3$.

(a) Only statement A is true.

(b) Only statement B is true.

(c) Both A and B are true.

(d) Both A and B are false,

14. Match the following :

List I		List II	
A.	3×8	1.	6×5
B.	15×3	2.	3×27
C.	9×9	3.	4×6
D.	3×10	4.	9×5

	A	B	C	D
(a)	3	4	2	1
(b)	2	3	1	4
(c)	4	3	2	1
(d)	1	3	2	4

15. If there are 5000 mangoes in 100 boxes, how many mangoes will be there in 75 boxes?

(a) 3570 (b) 3750

(c) 4000 (d) 2750

16. If Fatima has an equal number of notes of denomination 10,5 and 2 and the total amount she has Rs. 510, then the number of notes of each she had

(a) 17 (b) 25

(c) 30 (d) 20

17. Estimate. Which sign makes the sentence true?

$296 \div 5 \_\_\_\_ 78$

(a) > (b) <

(c) = (d) None of these

18. There are 1,82.039 roses in a garden. If one rose out of every 13 roses is spoiled, then the total number of spoiled roses, is

19.

(a) 16,343

(b) 14.533

(c) 14,003

(d) Can't be determined

20. $25/36 \div 10/9$

(a) 5/8 (b) 8/5

(c) 5/2 (d) 5/6

Directions (Qs. 20 to 27): Use the MULTIPLICATION OPERATION and evaluate the following questions.

21. 24×64

(a) 1356 (b) 1563

(c) 1536 (d) 1653

22. 1042×5

(a) 5210 (b) 5102

(c) 5201 (d) 50102

23. 35×106

(a) 3710 (b) 3071

(c) 3701 (d) 37011

24. 101.0×101

(a) 100011 (b) 10201

(c) 10201.1 (d) 10201.100

25. $7/9 \times 4/5$

(a) 45/28 (b) 28/45

(c) 35/36 (d) 35/35

26. 10.14×7.6

(a) 77.064 (b) 70.764

(c) 7.7064 (d) 770.64

27. 0.50×0.025

(a) 125 (b) 0.125

(c) 0.0125 (d) 125.005

28. $1/7 \times 3/5$

(a) 3/35 (b) 21/5

(c) 35/3 (d) 5/21

29. Match the following :

	List I		List II
A.	3×3	1.	$100 \div 5$
B.	5×10	2.	$150 \div 3$
C.	4×5	3.	$48 \div 6$
D.	4×2	4.	$72 \div 8$

	A	B	C	D
(a)	4	2	1	2
(b)	3	2	1	4
(c)	1 4		3	2
(d)	2	3	4	1

Directions (Qs. 29 to 34): Use the ADDITION OPERATION and evaluate the following questions.

30. 881 + 88

(a) 968 (b) 969

(c) 970 (d) 900

31. 2547 + 9998

(a) 12545 (b) 24524

(c) 12505 (d) 12547

32. Look at these numbers:

0.2 2.5 2.66.1

Choose two numbers from the box to complete the addition sentence.

____+_____=2.7

(a) 2.6,0.2 (b) 0.2,6.1

(c) 2.5 ,0.2 (d) 2.6 + 2.5

33. 428.65 + 500.5

(a) 930 (b) 929.70

(c) 929.15 (d) 928.70

34. $3/7+1/7+2/7$

(a) 5/7 (b) 4/7

(c) 1 (d) 6/7

35. $2/5+2/5+1/5$

(a) 4/5 (b) 0

(c) 1 (d) 6/5

Directions (Qs. 35 to 40); Solve the following questions using the correct order of operations.

36. $1+3\times8\div2$

(a) 15

(b) 5

(c) 13

(d) 17

37. $9+1\times9\div1$

(a) 10 (b) 11

(c) 19 (d) 18

38. $5\times6-9\div3$

(a) 27 (b) 25

(c) 26 (d) 23

39. $5\times2-9+5$

(a) 0 (b) 5

(c) 4 (d) 6

40. $4\times2\div4+3$

(a) 5 (b) 7

(c) 6 (d) 4

41. $5+9\times8\div1$

(a) 5 (b) 15

(c) 77 (d) 16

Directions (Qs. 41 to 50): Solve the word problems based on the operations of numbers.

42. Tamana bikes 2.2 kilometres each school day. In total, how far will Tamana bike over 10 school days?

(a) 2.2 (b) 22

(c) 220 (d) 22.20

43. A chef bought 6.6 kilograms of almonds and 5.8 kilograms of pecans. How many kilograms of nuts did the chef buy in all?

(a) 12.4 (b) 13.4

(c) 1.24 (d) 13

44. A builder needs 6 nails to finish a project. If the nails come in packages of 6. How many packages should the builder purchase?

(a) 3 (b) 1.5

(c) 8 (d) 1

45. Maya had 9.2 grams of pepper. Then she used 5 grams of the pepper to make some scrambled eggs. How much pepper does Mayo have?

(a) 5.2 (b) 6.2

(c) 3.2 (d) 4.2

46. A carpenter bought a piece of wood that was 4.8 centimetres long. Then he sawed 0.9 centimetres off the end. How long is the piece of wood now?

(a) 3.9 (b) 3

(c) 5.7 (d) 6

47. So far. an orchard has sold a total of 77,449 kilograms of fresh fruit and 503 kilograms of frozen fruit this season. In total, how many kilograms of fruit have been sold?

(a) 77698 (b) 77574

(c) 77952 (d) 77463

48. Jaya's science class places weights on a scale during on experiment. Each weight weighs 8.4 kilograms. If the class puts 2 weights on the scale at the same time what will the scale read?

(a) 16.8 (b) 16.2

(c) 15.8 (d) 10.4

49. Since he was hired, a chef has served a total of 8.805 guests. Of those guests. 8.704 were adults. How many children has the chef served?

(a) 100 (b) 105

(c) 101 (d) 201

50. A birthday card costs Rs. 2.37. How much would it cost to buy 4 birthday cards?

(a) Rs 8 (b) Rs.48

(c) Rs.56 (d) Rs8.95

51. Each piece of cardboard is 0.4 centimetres thick. If Tanveer stacks 7 pieces of cardboard on top of one another, how thick will the stack be?

(a) 3 (b) 2.8

(c) 2.6 (d) 47

52. The population of a village is 78692. Out of which 29642 are men and 28167 are women and the remaining are children. Then the number of children is

(a) 20883 (b) 21883

(c) 20893 (d) 20783

53. Find the smallest number by which the number 81 must be divided to obtain a perfect cube

(a) 27

(b) 81

(c) 9

(d) 3

54. Simplify : $25 \times 8358 \times 4$

(a) 837900

(b) 835100

(c) 835800

(d) None of these

55. Average age of A, B and C is 10 years. If the average age of A and C is 9 years, then how many years old is B?

(a) 9 (b) 10

(c) 11 (d) 12

56. Which one of the following is divisible by 25?

(a) 4855 (b) 5685

(c) 6790 (d) 7150

57. Divide 50 by half and add 20. From the same, subtract 35. What do you get?

(a) 10 (b) 85

(c) 15 (d) None of these

58. Each digit 1, 2, 3, 4, 5, 6, 7, 8 and 9 is represented by a different letter A, B, C, D, E, F, 6. H and I but not necessarily in that order. Further each of A + B + C, C + D - E, E + F + G and G + H + I is equal to 13. What is the sum of C, E and G?

(a) 7

(b) 9

(c) 11

(d) Cannot be determined

59. A shop has 239 toys. Seventy more toys were brought in. then 152 of them were sold. The number of toys left was

(a) 239+70-152 (b) 239-70-152

(c) 239+70+152 (d) 239-70+152

60. In the product 3759×9573, the sum of tens' digit and units' digit is

(a) 16 (b) 0

(c) 7 (d) 9

61. In which of the following divisions, will the remainder be more than the remainder you get when you divide 176 by 3?

(a) $176 \div 2$ (b) $173 \div 5$

(c) $174 \div 4$ (d) $175 \div 3$

62. What should be added to the product 103×301 to get 31103?

(a) 301 (b) 103

(c) 110 (d) 100

63. What should be subtracted from the product 101×101 to get 10101?

(a) 102 (b) 101

(c) 100 (d) 99

64. Which operation would be used to solve the problem?

If Jonathan has four candy bars, Rudy has three candy bars, and Duncan has 26 candy bars, how many candy bars do they have altogether?

(a) Addition
(b) Subtraction
(c) Multiplication
(d) Division

65. The result of adding two or more numbers. Or, what you call the answer for an addition equation.

(a) Product (b) Quotient
(c) Sum (d) Difference

66. The aquarium sold tickets to the polar bear exhibit on Saturday and Sunday. On Saturday, the aquarium sold 584 tickets. On Sunday, the aquarium sold 296 tickets. How many total tickets did the aquarium sell on Saturday and Sunday?

(a) 770 (b) 880
(c) 900 (d) 990

67. The Electronics Experts store sold 8,124 computers last year. The store also sold 2,33(5 printers. How many computers and printers did the store sell last year?

(a) 10,460 (b) 10,640
(c) 10,840 (d) 10,940

68. Ms. Rice drove 12,481 miles and Mr. Whitaker only drove 10,913 miles. How many more miles did Ms. Rice drive than Mr. Whitaker?

(a) 2568 (b) 1568
(c) 1562 (d) 23394

69. Which number would make this statement true?

674 < _____ < 764

(a) 785 (b) 693
(c) 654 (d) 876

70. 92 people ride the train to work each day. After the train stops at the train station, only 36 people are still on the train. How would you justify the number of students who were dropped off at the train station?

(a) 65 people were dropped off at the train station because 92 - 36 = 65
(b) 56 people were dropped off at the train station because 92 + 36 = 56
(c) 56 people were dropped off at the train station because 92 - 36 = 56
(d) 56 people were dropped off at the train station because 92 - 36 = 92 +36

71. Paco's store has 45 boxes of plums. In each box there are 345 plums. How many plums does Paco's store have in all?

(a) 15,000 (b) 15,525
(c) 14,545 (d) 390

72. Which has the greatest product?

(a) 132×20 (b) 100×40
(c) 142×30 (d) 123×50

73. Which operation would be used to solve the problem?

There are 20 students in Mr. Adam's class. Each student has 5 dollars. How much money is there in all?

(a) Addition (b) Subtraction

(c) Multiplication (d) Division

74. At the school concert there were 560 people seated in 8 rows. If there were no empty seats, how many people were in each row?

(a) 553 people (b) 480 people

(c) 70 people (d) 60 people

Solutions with Explanation

CHALLENGE A

1. (d) Commutative property. We can multiply in any order and get the same product.

2. (c) According to BODMAS, the correct order of operations is Division –Multiplication - Addition-Subtraction.

3. (d) 96 - 2 = 48. Now evaluating the options, we get, $2\times24=48; 4\times12=48; 8\times6=48$ and $7\times8=56$. Thus the solution other than 48 is the odd one out. Therefore 7×8 is the odd one out.

4. (d) 86-23 =63. Now evaluating the options, we get $7\times9=63; 3\times21=63, 45+18=63$ and $187\div3=62.333$. Thus the solution other than 63 is the odd one out. Therefore $187\div3$ is the odd one out.

5. (b) Identity property: t=0+t

Adding zero does not change a number. Here 0 + 3 = 3 shows the identity property where adding zero does not change the sum.

6. (d) Commutative property: r + s = s + r We can add numbers in any order and get the same sum. Here 8+4=4+8 shows the commutative property.

7. (d) Let 'a' be subtracted from 14 y to get 8.

Then, 14y - a = 8

$\Rightarrow a=14y-8$

8. (c) $4a+3=15\Rightarrow 4a=15-3=12$

$\Rightarrow a=12\div4=3$

$\therefore\ 2a=2\times3=6$

9. (a) Look for numbers in the box that are greater than 0.3.

Try 0.7. What number can you subtract from 0.7 to get 0.3?

0.7 - 0.4 = 0.3

0.4 is not in the box.

Try 0.5. What number can you subtract from 0.5 to get 0.3?

0.5 - 0.2 = 0.3, 0.2 is not in the box.

Try 0.8. What number can you subtract from 0.8 to get 0.3?

0.8 - 0.5 = 0.3

0.5 is in the box.

The numbers 0.8 and 0.5 have a difference of 0.3.

10. (b) $\frac{13}{4}+\frac{25}{4}+\square=\frac{101}{10}$

$\Rightarrow \frac{13+25}{4}+\square=\frac{101}{10}$

$\Rightarrow \square=\frac{101}{10}-\frac{38}{4}=\frac{101}{10}-\frac{19}{2}$

$= \frac{101-95}{10} = \frac{6}{10}$

11. (b) $20 \times 2.5 = 50$

$\Rightarrow 20 \times \frac{25}{10} = 50 \Rightarrow 2 \times 25 = 50$

$\Rightarrow 2 \times 0.0025 = \frac{2 \times 25}{10000}$

$= \frac{50}{10000} = 0.005$

CHALLENGE B

12. (a)

13. (a) $3 \times 15 = 45$ and also $15 \times 3 = 45$. Thus A is true. $3 \div 2 = 1.5$ and $2 \div 3 = 0.66$ which are not equal. Therefore only statement A is true.

14. (a)

15. (b) Mangoes in 100 boxes $\frac{5000 \times 75}{100} = 3750.$

mangoes in 1 box $= \frac{5000}{100}$,

mangoes in 75 boxes $= \frac{5000 \times 75}{100} = 3750.$

16. (c) Let the number of notes of each kind be x.

then $10x + 5x + 2x = 510 \Rightarrow \times = \frac{510}{17} = 30.$

17. (b) $296 \div 5 = 59.2$. This is less than 78. Thus $296 \div 5 < 78.$

18. (c) No. of spoiled roses = $182039 \div 13 = 14003.$

19. (a) $25/36 \div 10/9 = 25/36 \times 9/10 = 5/8$ [When we divide two fractions, then one number gets reciprocated and then the product is simplified.]

20. (c) $24 \times 64 = 1536$

21. (a) $1042 \times 5 = 5210$

22. (a) $35 \times 106 = 3710$

23. (b) $101.0 \times 101 = 10201$

24. (b) $7/9 \times 4/5 = 28/45$

25. (a) $10.14 \times 7.6 = 77.064$

26. (c) $0.50 \times 0.025 = 0.0125$

27. (a) $1/7 \times 3/5 = 3/35$

28. (a)

29. (b) 881 + 88 = 969

30. (a) 2547 + 9998 = 12545

31. (c) Look for numbers in the box that are less than 2.7. Try 0.2. Now we have to find the number which when added to 0.2 gives 2.7. That number is 2.5. thus 2.5 + 0.2 =2.7.

32. (c) 428.65 + 500.5 = 929.15 [Since 500.5 = 500.50]

33. (d) 3/7 + 1/7 + 2/7 = 6 /7 [Since the denominator is the same, we will only add the numerators.]

34. (c) 2/5 + 2/5 + 1/5 = 5/5 = 1. [Since the denominator is the same, we will only add the numerators. Now, since after addition, both the numerator and denominator are same which divide to be equal to 1.]

35. (c) $1 + 3 \times 8 \div 2 = 13$,

Order of operations:

1. Multiplication and division
2. Addition and subtraction

Step 1: Multiply and divide from left to right.

$1 + 3 \times 8 \div 2 = 1 + 24 \div 2 = 1 + 24 \div 2 = 1 + 12$

Step 2: Add and subtract from left to right.

$1 + 12 = 13$,

So: $1+3\times8\div2=13$

36. (d) $9+1\times9\div1=18$

Order of operations:

1. Multiplication and division
2. Addition and subtraction

Step 1: Multiply and divide from left to right.

$9+1\times9\div1=9+9\div1=9+9\div1=9+9$

Step 2: Add and subtract from left to right.

$9 + 9 = 18$

So: $9+1\times9\div1=18$

37. (a) Order of operations

1. Multiplication and division
2. Addition and subtraction

Step 1: Multiply and divide from left to right

$5\times6-9\div3=30-9\div3=30-9\div3=30-3$

Step 2: Add and subtract from left to right

$30 - 3 = 27$

So: $5\times6-9\div3=27$

38. (d) Order of operations:

1. Multiplication and division
2. Addition and subtraction

Step 1: Multiply and divide from left to right.

$5\times2-9+5=10-9+5$

Step 2: Add and subtract from left to right

$10-9+5=1+5=1+5=6$

So: $5\times2-9+5=6$

39. (a) Order of operations:

1. Multiplication and division
2. Addition and subtraction

Step 1; Multiply and divide from left to right

$4\times2\div4+3=8\div4+3=8\div4+3=2+3$

Step 2: Add and subtract from left to right

$2 + 3 = 5$

So: $4\times2\div4+3=5$

40. (c) Order of operations:

1. Multiplication and division
2. Addition and subtraction

Step 1: Multiply and divide from left to right

$5+9\times8\div1=5+72\div1=5+72\div1=5+72$

Step 2: Add and subtract from left to right

$5 + 72 = 77$

So: $5+9\times8\div1=77$

41. (b) Multiply the kilometres biked each school day by the number of school days. Multiple as you would multiply whole whole numbers.

$2.2\times10=220$

Count the number of decimal places in the factors. There is 1 decimal place in 2.2. Move the decimal point 1 place to the left in the answer.

$220=22.0$

Tamana will bike 22 kilometres.

42. (a) Add the numbers of kilograms. Remember to line up the decimal points

$6.6 + 5.8 = 12.4$

The chef bought 12.4 kilograms of nuts.

43. (d) Divide the number of nails by the number in each package.

$6/6=1$

The builder should purchase 1 package.

44. (d) Subtract the numbers of grams. Remember to line up the decimal points. You can write extra zeroes to make equivalent decimals.

$9.2- 5.0 = 4.2$

Maya has 4.2 grams of pepper left.

45. (a) Subtract the numbers of centimetres. Remember to line up the decimal points.

4.8 - 0.9 = 3.9

The piece of wood is 3.9 centimetres long now.

46. (c) Add the kilograms. 77,449 + 503 = 77952 kilograms.

A total of 77,952 kilograms of fruit have been sold.

47. (a) Multiply the weight of each weight by the number of weights. Multiply as you would multiply whole numbers. $8.4 \times 2 = 168$. Count the number of decimal places in the factors. There is 1 decimal place in 8.4. Move the decimal point 1 place to the left in the answer.

168 = 16.8

The scale will read 16.8 kilograms.

48. (c) Subtract the number of adults served from the total number of guests.

8805 – 8704 = 101

Thus the chef has served 101 children.

49. (b) Cost of 1 birthday card

= Rs. 2.37, Cost of 4 birthday cards = $4 \times Rs.2.37$ = Rs. 9.48

50. (b) Multiply the thickness of each piece of cardboard by the number of pieces in the stack.

$0.4 \times 7 = 2.8$

The stack will be 2.8 centimetres thick.

51. (a) Men + Women + Children = 78692

$\therefore$ Children = 78692 - 29642 - 28167

= 20,883

52. (a) $\frac{81}{3} = 27$

$\therefore$ 27 is a perfect cube.

53. (c) $25 \times 8358 \times 4 = 8358 \times 100 = 835800$

54. (d) Average of A, Band C=10 years

$$\frac{A+B+C}{3} = 10$$

A + B + C = 30 yr.

$$\frac{A+C}{2} = 9 A + C = 18$$

Now, (A + C) + B = 30 yr.

18 + B = 30 B = 30 – 18 = 12 yrs.

55. (d)

56. (a) $\frac{50}{2} + 20 - 35 = 45 - 35 = 10$

57. (a) A + B + C = 13

C + D + E = 13

E + F + G = 13

G + H + I = 13

Adding these equations,

(A +B +C + D + E + F + G + H + I) + (C + D + E) =52

(1 + 2 + 3 + 4 + 5 ++6 + 7 + 8 + 9) + (C + D + E) = 52

C + D + E = 52 - 45 = 7

58. (a) Total number of toys = 239

Since, seventy more toys were brought in

$\therefore$ Total number of toys = 239 +70

Now, 152 toys were sold

$\therefore$ Left toys = 239 + 70 - 152

59. (c) Product of $3759 \times 9573 = 35984907$

Sum of tens' and units' digit = 0 + 7 = 7.

60. (b) From qu.

$$
\begin{array}{r}
3\overline{)176}(58 \\
15 \\
\hline
26 \\
24 \\
\hline
2 \rightarrow \text{Remainder}
\end{array}
$$

From options

When we divide

$$176 \div 2, \text{, Remainder} = 0$$

Similarly, $176 \div 3, \text{, Remainder} = 1$

$$174 \div 4, \text{ Remainder} = 2$$

$$173 \div 5, \text{Remainder} = 3$$

61. (d) product of $103 \times 301 = 31003$

Now, 100 is to be added to get 31103.

62. (c) $101 \times 101 = 10201$

Required number = 10201 - 10101 = 100.

63. (a)

64. (c)

65. (b)

66. (a)

67. (b)

68. (b)

69. (c)

70. (b)

71. (d)

72. (c)

73. (c)