

Sample Paper

Class 8

Unicus Mathematics Olympiad (UMO)



Section	Total Questions	Marks per Questions	Total Marks		
Classic Section	40	1	40		
Scholar Section	10	2	20		
Grand Total	50		60		

Classic Section (Each Question is 1 Mark)

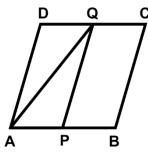
1. Ruhel spent \$7x on buying stationary items, \$28 in canteen and was left with \$14. How much money did he have initially? (Express in terms of x)

a.
$$(7x + 42)$$

b.
$$(7x + 14)$$

d.
$$(7x + 28)$$

2. The given figure ABCD is a parallelogram. If angle QPB = 84° and angle AQP is one-fourth of angle QPB, find angle AQD:



3. Which of the following is not a rational number?

c.
$$\frac{9}{0}$$

d.
$$-\frac{3}{5}$$

4. Simplify the following:

$$2\frac{1}{15} - 3\frac{1}{2} + 7\frac{1}{4}\left(4\frac{1}{3} - \frac{1}{5}\right)$$

a.
$$10\frac{8}{15}$$

c. $16\frac{17}{30}$

b.
$$11\frac{14}{15}$$

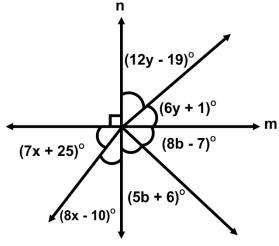
c.
$$16\frac{17}{30}$$

d.
$$28\frac{\frac{13}{8}}{15}$$

5. If Robert buys 1 kg of orange from three different fruit vendors at the price of \$60, \$75 and \$80 per kg respectively, then find the average rate of 1 kg of oranges:

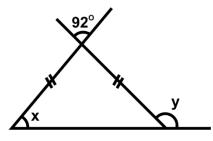
a. 49°

6. Look at the image given below. The lines m and n are perpendicular bisector of each other. Find the values of \angle (12y - 19) and \angle (6y + 1), respectively:



- a. 53°, 37°
- c. 64°, 17°

- b. 37°, 53°
- d. 17°, 64°
- 7. Find the value of angles x and y respectively from the figure given below:

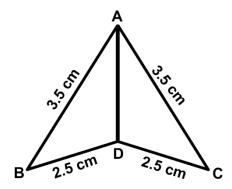


- a. 44°, 136°
- c. 27°, 141°

- b. 24°, 146°
- d. 32°, 147°

8. Fill in the blank:

Triangles ABD and ACD are congruent because of _____ congruence property.



- a. SAS
- c. ASA

- b. SSS
- d. RHS

9. Simplify the following:

$$5^0 + 5^1 + 25^4 \div 5^3$$

- a. 625
- c. 3125

- b. 631
- d. 3131

10. Simplify the following:

$$(3 \times 7^2 \times 11^5) / (21 \times 11^2)$$

- a. 11³
- c. $7^2 \times 11^3$

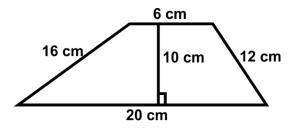
- b. 7×11^3
- d. $7^2 \times 11^{10}$
- 11. The value of [-243 + 121 (-122) + 4 (124 ÷ 12)] is equal to:
 - a. 80.67
 - c. -202.67

- b. 41.33
- d. -41.33
- 12. In the following expression, find the value of x:

$$(x-3)/4 + (x-7)/5 - (x-2)/7 = 7/10$$

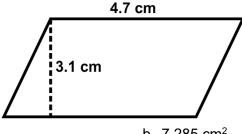
- a. $8\frac{15}{43}$ c. $7\frac{22}{43}$

13. Find the area of the trapezium:



- a. 130 cm²
- c. 208 cm²

- b. 140 cm²
- d. 156 cm²
- 14. Find the area of the given parallelogram:



- a. 14.57 cm²
- c. 29.14 cm²

- b. 7.285 cm²
- d. 24.47 cm²

15. Arya bowled 7 games in a tournament. The list shows his scores in the 7 games: 149, 160, 180, 155, 160, 137, 158
What is the mode of his scores?

a. 155c. 160

b. 158 d. 156.5

16. Four sheets of 50 cm X 5 cm are to be arranged in such a manner that a square could be formed. What will be the area of inner part of the square so formed?

a. 2000 cm²

b. 2025 cm^2

c. 1800 cm²

d. 2500 cm²

17. In statistics, a suitable graph for representing the partitioning of total into sub parts is:

a. A bar graph

b. A pictograph

c. A pie chart

d. A line graph

18. What % of 40 is 16?

a. 100%

b. 60%

c. 40%

d. 50%

19. Plantation G has q durian trees of grade r, s durian trees of grade t and u durian trees of grade v. The total number of durian trees in plantation G is:

a. p+q+r+s+t+u+v

b. p+r+u+v

c. q+s+u

d. r + t + v

20. A lends \$2,500 to B and a certain sum to C to the same time at 7% p.a. simple interest. If after 4 years, A altogether receives \$1,120 as interest from B and C, then the sum lent to C is:

a. \$700

b. \$1,500

c. \$4,000

d. \$6,500

21. A cistern can be filled up by one pipe in 12 hours and by another in 8 hours. Both the pipes are kept open for 2 $\frac{1}{2}$ hours. The part of the cistern filled up is:

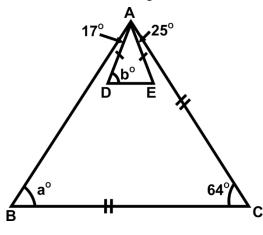
a. $\frac{25}{48}$

b. $\frac{5}{6}$

c. $\frac{25}{36}$

d. $\frac{12}{25}$

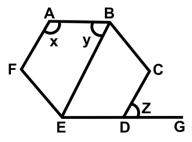
22. The diagram given below shows two isosceles triangles. What is the sum of a and b?



- a. 79º
- c. 140°

- b. 58°
- d. 116°

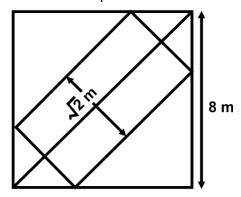
23. The image given below shows a regular hexagon. The value of angles x, y and z are respectively:



- a. 60°, 120°, 60°
- c. 120°, 60°, 60°

- b. 60°, 60°, 120°
- d. 60°, 60°, 100°

24. A rectangular plank $\sqrt{2}$ m wide is placed symmetrically on the diagonal of a square of side 8 metres as shown. What is the area of the plank?



- a. $(16\sqrt{2} 3) \text{ m}^2$
- c. 98 m^2

- b. $7\sqrt{2} \text{ m}^2$
- d. 14 m²

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icus	Mathematics	Olympiad (l	JMO)				
	The diameter oper minute. Wi					10 complete	revolutions
á	a. 4.8			b. 9.6	ĵ		
	c. 8.8			d. 2.4			
	Each edge of a cube is:	a cube is incre	eased by 50%	6. The percent	tage increase	e in the surfac	ce area of the
á	a. 50			b. 12	25		
	c. 150			d. 22			
	A box contains probability of s				umber of orai	nge stones in	the box if the
á	a. 20			b. 15	;		
C	c. 10			d. 40			
8	From the follow 40: Mark Number of students a. 29 b. 8	0-19 8	20-39 6	40-49 15 b. 7 d. 14	50-59 13	60-89 18	90-100 7
6	A man has a h much money h a. \$47.80 c. \$73.25		s. He bought	vegetables fo b. \$5 d. \$3	2.40	fruits for \$25	.45. How
á	A bag contains these is \$36, the a. 40 c. 50				?	2 : 3. If the tot	al value of
	The ratio of lar What is the rat					northern her	nisphere.

a. 4: 11 c. 1:4

b. 1:3

d. 4: 7

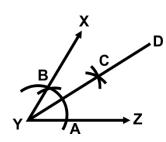
- 32. Two equal sums of money were invested, one at 4% and the other at 4 $\frac{1}{2}$ %. At the end of 7 years, the simple interest received from the latter exceeded that received from the former by \$31.50. The sum of money that was invested is:
 - a. \$1,000
 - c. \$750

- b. \$500
- d. \$900
- 33. Peter purchased a new car for \$750,000. After 2 years, he sold the car for 20% less than the original price. Find the selling price of the car:
 - a. \$400,000
 - c. \$600,000

- b. \$500,000
- d. \$650,000
- 34. In a rhombus DEMO, \angle DEO = 70°. What is the measure of \angle EMO?
 - a. 20°
 - c. 70°

- b. 140°
- d. 40°
- 35. If x: y = 5 : 3, then find the value of (8x 5y)/(8x + 5y):
 - a. 7: 11
 - c. 5: 11

- b. 11: 13
- d. 13: 15
- 36. Look at the image given below. The measure of ∠XYC is equal to:



- a. 45°
- c. 60°

- b. 30°
- d. 80°
- 37. Which of the following fractions is less than $\frac{7}{8}$ and greater than $\frac{1}{3}$?
 - a. $\frac{1}{4}$
 - c. $\frac{11}{12}$

- b. $\frac{23}{24}$
- d. $\frac{17}{24}$

38. If p = 3/5, q = 7/9 and r = 5/7, then which of the following options is correct?

a.
$$p < q < r$$

c.
$$p < r < q$$

d.
$$r < q < p$$

39. The selling price of an article is 4/3 times its cost price. The gain per cent is:

a.
$$20\frac{1}{3}\%$$

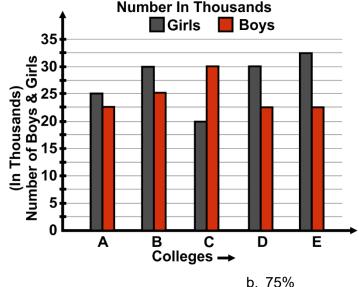
b.
$$20\frac{1}{2}\%$$

c.
$$25\frac{1}{4}\%$$

d.
$$33\frac{1}{3}\%$$

40. The total number of girls from colleges D and E together are approximately what per cent of the total number of girls from colleges A, B and C together?





- a. 83%
- c. 70%

- b. 75%
- d. 88%

Scholar Section (Each Question is 2 Marks)

41. Fill in the blank:

If 11 is subtracted from 5 times a number and it becomes the same as 4 subtracted from 7 times the number, then this fact can be represented as

a.
$$5x - 11 = 4x - 7$$

c.
$$11x - 5 = 4x - 7$$

b.
$$5x - 11 = 7x - 4$$

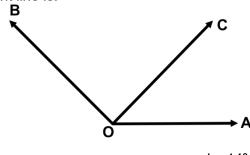
d.
$$11x - 5 = 7x - 4$$

42. A rectangular garden is of dimension 60 m × 40 m. There are two roads 5 m wide each running in the middle of the garden, one parallel to the length and the other parallel to its breadth. If the cost of gravelling the road is \$5 per m², then find the cost of gravelling both roads:

- a. \$1,000
- c. \$2,500

- b. \$1,500
- d. \$2,375

43. In the given figure, if $\angle BOC = 7x + 20^{\circ}$ and $\angle COA = 3x^{\circ}$, then the value of x for which AOB becomes a straight line is:



- a. 16º
- c. 20°

- b. 14°
- d. 21°
- 44. A number is divided by three and multiplied by the square of a second number. The product is then divided into three. Write the algebraic term for the given statements using p as the first number and q as the second number:
 - a. $9pq^2$
 - c. pq²/9

- b. pq²/3
- $d. 3pq^2$

45. Match Column A with Column B:

Colu	ımn A	Column B			
a.	x:5::2:3	(p)	6/5		
b.	2:x::4:3	(q)	15/2		
C.	2:5::x:3	(r)	10/3		
d.	2:5::3:x	(s)	3/2		

- a. (a) (p), (b)- (q), (c) (r), (d) (s)
- c. (a) (q), (b)- (s), (c) (p), (d) (r)
- b. (a) (r), (b)- (p), (c) (s), (d) (q)
- d. (a) (r), (b)- (s), (c) (p), (d) (q)

- 46. Which of the following is true?
 - A. Triangle is a polygon.
 - B. An isosceles triangle can be obtuse.
 - C. All scalene triangles are acute.
 - a. Only A
 - c. Only A and B $\,$

- b. Only B and C
- d. A, B and C

- 47. Following are steps while constructing a line segment of length 5 cm using a ruler. Which of the following steps is/are INCORRECT?
 - Step 1. First mark a point A on paper.
 - Step 2. Place a ruler in such a way that its zero point coincides with point A.
 - Step 3. Draw a line from point A of the measures of 4.5 cm on the ruler.
 - Step 4. Now, name the endpoints as Q.
 - Step 5. AB is the required line segment.
 - a. Step 1
 - c. Both Steps 3 and 4

- b. Step 3
- d. Both Steps 4 and 5
- 48. Rubi decided to donate 16% of her monthly salary to an NGO. On the day of donation, she changed her mind and donated \$6567 which was 75% of what she had decided earlier. How much is Rubi's monthly salary?
 - a. \$50,000

b. \$54,000

c. \$54,725

- d. \$60,000
- 49. The population of a town increases at a certain rate per cent per annum. The present population of the town is 3600 and in 5 years' time, it will become 4800. How much will it be in 10 years' time?
 - a. 5000

b. 6000

c. 6400

- d. 7000
- 50. The simple interest on a certain sum for 8 months at 4% per annum is \$129 less than the simple interest on the same sum for 15 months at 5% per annum. The sum is:
 - a. \$2,530

b. \$2,400

c. \$2,529

d. \$3,600

Answer Key

1.	а	2.	С	3.	С	4.	d	5.	С	6.	а	7.	а
8.	b	9.	d	10.	b	11.	b	12.	а	13.	а	14.	а
15.	С	16.	b	17.	С	18.	С	19.	С	20.	b	21.	а
22.	С	23.	С	24.	d	25.	d	26.	b	27.	а	28.	d
29.	а	30.	d	31.	а	32.	d	33.	С	34.	d	35.	С
36.	b	37.	d	38.	С	39.	d	40.	а	41.	b	42.	d
43.	а	44.	С	45.	d	46.	С	47.	С	48.	С	49.	С
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