

SWO International Mathematics Olympiad 2021-22

Class 9th

Questions: 20

Time Duration: 30 Minutes

There are 4 Sections- 5 Questions in Section-1, 5 Questions in Section-2, 5 Questions in Section-3, 5 Questions in Section-4.

Section 1- (Number systems, polynomials, linear equations)

1. Simplify the expression $(2x^3 y^4) (3xy^5)^2$

- a. $18x^5y^{14}$
 - b. 18
 - c. x
 - d. y
- (a)

2. What is the remainder if $a^4 + a^3 - 2a^2 + a + 1$ is divided by $a - 1$.

- a. 0
 - b. 1
 - c. 2
 - d. 3
- (c)

3. Find the value of k, if $x - 1$ is a factor of $p(x) = kx^2 - \sqrt{2}x + 1$

- a. 2
 - b. $2-1$
 - c. $2+1$
 - d. $\sqrt{2} - 1$
- (d)

4. Factorize $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$.

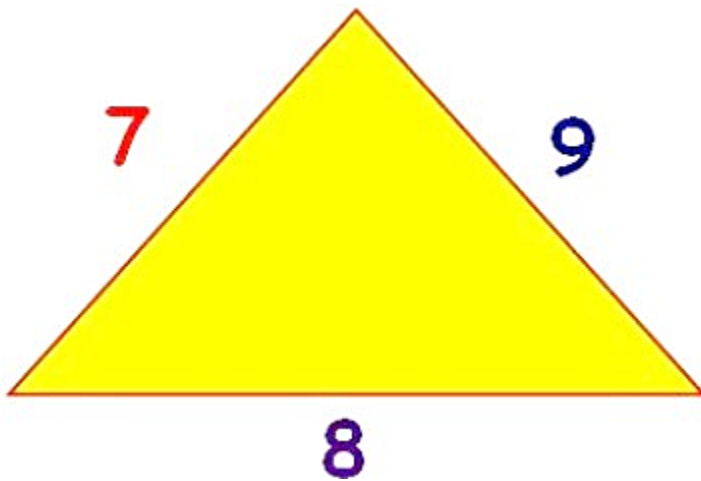
- a. $(2x - y + z) (2x - y + z)$
 - b. $2x$
 - c. $-y$
 - d. z
- (a)

5. Find one solution for the equation $2x + y = 7$.

- a. (0,7)
- b. (7,0)
- c. (3,0)
- d. (0,3) (a)

Section 2 (Triangles, Areas, and Circles)

6. Show whether the inequality theorem applies to this triangle or not?



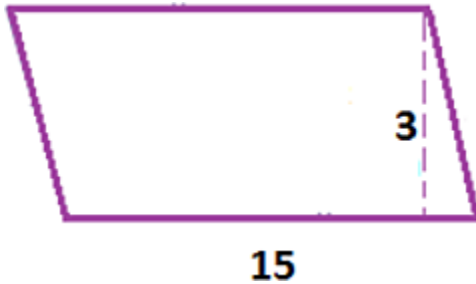
- a. It's not applicable
- b. It's applicable
- c. Can't say
- d. Inequality theorem only applies to specific type of triangle. (b)

7. Find $\angle A$ and $\angle D$, if $BC \parallel AD$ and $\angle B = 52^\circ$ and $\angle C = 60^\circ$ in the quadrilateral ABCD.



- a. $\angle A = 128^\circ$ and $\angle D = 120^\circ$
 - b. $A = 127$ and $D = 121$
 - c. $A = 126$ and $D = 122$
 - d. $A = 125$ and $D = 123$
- (a)

8. Calculate the Area of the parallelogram if the base is 15 ft and the height is 3 ft.



- a. 42 square feet
 - b. 43 square feet
 - c. 44 square feet
 - d. 45 square feet
- (d)

9. Angles from a common chord which are on the same segment of a circle are always ___.

- a. Unequal
 - b. Equal
 - c. Parallel
 - d. Congruent
- (b)

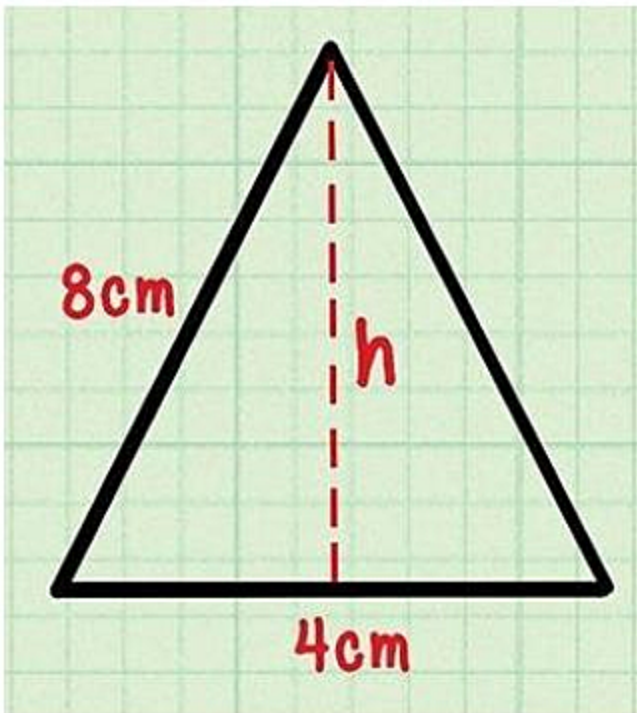
10. Any pair of opposite angles of a cyclic quadrilateral has the sum of ___.

- a. 90 degree
- b. 360 degree
- c. 180 degree
- d. 240 degree

(c)

Section 3- (Heron's Formula, Surface Area and Volumes)

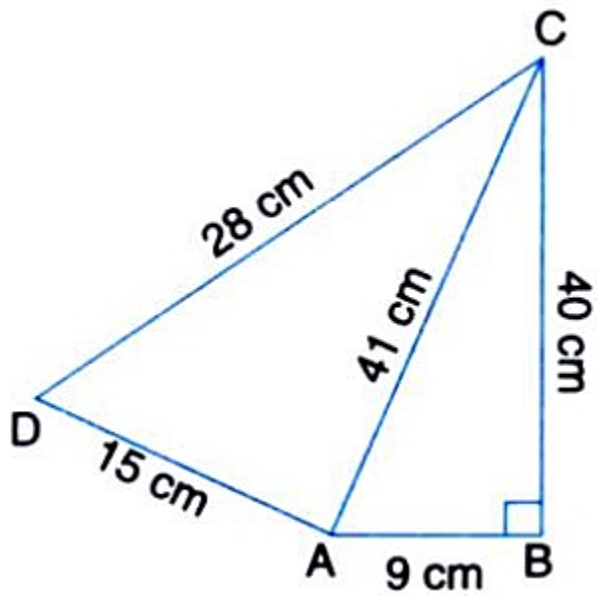
11. Find the area of the triangle



- a. $4\sqrt{15} \text{ cm}^2$
- b. 4 cm
- c. 15 cm
- d. 2 cm

(a)

12. Find the area of the quadrilateral.

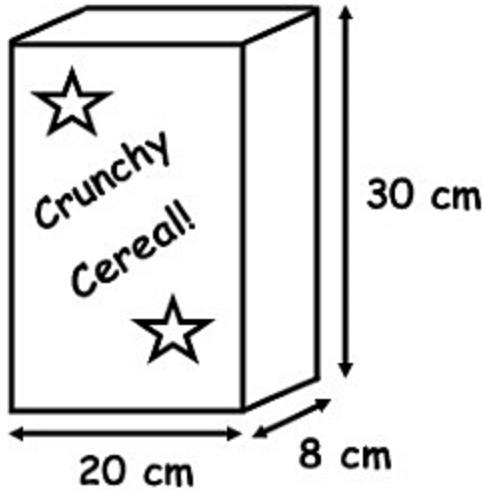


- a. 303 square cm
 - b. 304 square cm
 - c. 305 square cm
 - d. 306 square cm
- (d)

13. What is the capacity of a cubical vessel having each side of 8 cm?

- a. 254 square cm
 - b. 255 square cm
 - c. 256 square cm
 - d. 257 square cm
- (c)

14. What is the surface area of a cereal box whose length, breadth and height is 20 cm, 8 cm and 30 cm respectively?



- a. 1000 square cm
 - b. 2000 square cm
 - c. 3000 square cm
 - d. 4000 square cm
- (b)

15. Find the Total surface area of a hollow cylinder whose length is 22 cm and the external radius is 7 cm with 1 cm thickness. ($\pi = 22/7$)

- a. 1878.65 square cm
 - b. 1878.66 square cm
 - c. 1878.67 square cm
 - d. 1878.68 square cm
- (c)

Section 4- (Probability, Statistics, Surface Areas and Volumes)

16. If we have a metal piece of cone shape with volume 523.33 cm³ and we mold it in a sphere then what will be the surface area of that sphere?

- a. 314.28 square cm
 - b. 314.29 square cm
 - c. 314.27 square cm
 - d. 314.26 square cm
- (a)

17. Find the median of the following data.

6, 7, 10, 12, 13, 4, 8, 12

- a. 9
- b. 8
- c. 7
- d. 6 (a)

18. Find the Mode of the following data:

15, 20, 22, 25, 30, 20, 15, 20, 12, 20

- a. 10
- b. 20
- c. 30
- d. 40 (b)

19. What is the probability of not hitting a six in a cricket match, if a batsman hits a boundary six times out of 30 balls he played?

- a. 0.8
- b. 0.7
- c. 0.6
- d. 0.5 (a)

20. Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg):

4.97, 5.05, 5.08, 5.03, 5.00, 5.06, 5.08, 4.98, 5.04, 5.07, 5.00

Find the probability that any of these bags chosen at random contains more than 5 kg of flour.

- a. 6/11

b. $5/11$

c. $4/11$

d. $7/11$

(d)