



CREST Mathematics Olympiad (CMO)  
Previous Year Paper (2021-22)

**Class 8**

**Time Allowed: 1-hour**

**Maximum Marks: 60**

- Additional **10 minutes** will be allotted to fill up information on the OMR Sheet, before the start of the exam.
- Fill in all the mandatory fields clearly on the OMR Sheet.
- There are **2 sections** in the question paper namely the **Practical Mathematics & Achievers' Section** consisting of **40 questions (1 mark each) & 10 questions (2 marks each)**, respectively.
- There is no negative marking. The use of a calculator is not permitted.
- There is **only ONE correct option** to a given question.
- Use **HB Pencil or Blue / Black ball point pen only** for marking the correct choice of answers on the OMR Sheet.
- Rough work is to be done in the space provided in the test booklet. Extra plain sheet may be provided by the school for the rough work.
- The OMR Sheet is to be handed over to the invigilator at the end of the exam.
- No candidate is allowed to carry any textual material, printed or written, bits of paper, any electronic device, etc. inside the examination hall.
- The use of unfair means may result in the cancellation of the exam. Any such instances may be reported at **+91-98182-94134** or **info@crestolympiads.com**

**DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO**

**FILL IN THE DETAILS**

Student Name: \_\_\_\_\_

Class: \_\_\_\_\_ Section: \_\_\_\_\_

Enrollment No: \_\_\_\_\_



7. A person travels at a speed of 24 km/hr and reaches a town in 32 hours. How much time does he take to cover the same distance if his speed is 32 km/hr?
- a. 8 hours  
b. 12 hours  
c. 24 hours  
d. 28 hours
8. From a wire  $10\frac{1}{2}$  m long, Samir cut of 5 pieces of  $1\frac{1}{4}$  m each. How much length of the wire is left?
- a.  $4\frac{1}{4}$   
b.  $21\frac{1}{4}$   
c.  $6\frac{1}{4}$   
d.  $5\frac{1}{4}$
9. The product of three rational numbers is  $-\frac{4}{11}$ . If two of the numbers are  $-\frac{2}{3}$  and  $-\frac{1}{11}$ , then find the third number:
- a. -6  
b. 6  
c. 11  
d. -11
10. Find the value of 'a' such that  $\left(\frac{6}{7}\right)^a \times \left(\frac{6}{7}\right)^{3a} = \frac{1296}{2401}$ :
- a. 4  
b. 1  
c. 0  
d. 5
11. The sum of three expressions is  $x^2 + y^2 + z^2$ . If two of them are  $4x^2 - 5y^2 + 3z^2$  and  $-3x^2 + 4y^2 + 2z^2$ , the third expression is:
- a.  $2x^2 + 2z^2$   
b.  $2y^2$   
c.  $2x^2 - 2z^2$   
d.  $2y^2 - 4z^2$
12. What is the quotient when  $(x^3 + 8)$  is divided by  $(x^2 - 2x + 4)$ ?
- a.  $x - 2$   
b.  $x + 2$   
c.  $x + 1$   
d.  $x - 1$
13.  $\frac{1}{2}$  is subtracted from a number and the difference is multiplied by 4. If 25 is added to the product and the sum is divided by 3, the result is equal to 10. Find the number:
- a.  $\frac{3}{5}$   
b.  $\frac{7}{4}$   
c.  $\frac{6}{7}$   
d.  $\frac{2}{3}$
14. Which of the following is not a possible solution for  $2x - 5y = 4$ ?
- a.  $x = 2, y = 0$   
b.  $x = 7, y = 2$   
c.  $x = 12, y = 4$   
d.  $x = 15, y = 6$

15. The product of two rational numbers is  $-\frac{13}{35}$ . If one of them is  $\frac{3}{7}$ , then find the absolute value of the difference of these rational numbers:

a.  $\frac{2}{35}$   
c.  $\frac{4}{5}$

b.  $1\frac{31}{105}$   
d.  $\frac{46}{105}$

16. A bag contains 3 red balls, 5 yellow balls and 7 pink balls. If one ball is drawn at random from the bag, what is the probability that it is either pink or red?

a.  $\frac{1}{3}$   
c.  $\frac{11}{15}$

b.  $\frac{2}{3}$   
d.  $\frac{1}{15}$

17. In an examination, a batch of 60 students made an average score of 55 and another batch of 40 made it only 45. What is the overall average score?

a. 52  
c. 51

b. 40  
d. 56

18. Find the points where the straight line  $2x - 3y = 12$  cut x-axis and y-axis:

a. (6, 0) & (0, 4)  
c. (6, 0) & (0, -4)

b. (-6, 0) & (0, 4)  
d. (4, 0) & (6, 0)

19. My brother is 3 years elder to me. My father was 28 years of age when my sister was born while my mother was 26 years of age when I was born. If my sister was 4 years old when my brother was born, then what was the age of my father and mother respectively when my brother was born?

a. 32, 23 years  
c. 32, 29 years

b. 35, 29 years  
d. 35, 33 years

20. A train travelling at 90 km/h crosses a stationary goods train 200 m long in the same direction in 15 s. In how much time will it cross a man moving in the opposite direction at 5 m/s?

a. 5.83 s  
c. 5 s

b. 7.5 s  
d. 8.33 s

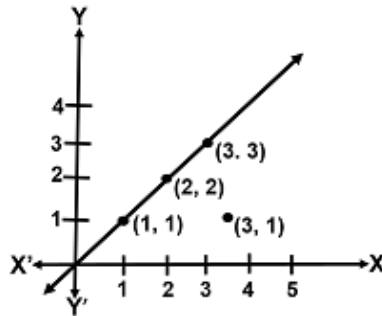
21. Find the square root of the following:

$$\frac{1}{4} \times \frac{1}{49} \div \frac{25}{121}$$

a.  $\frac{11}{5}$   
c.  $\frac{7}{11}$

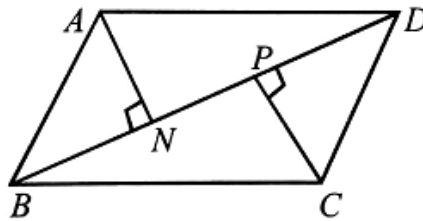
b.  $\frac{11}{70}$   
d.  $\frac{11}{7}$

22. Observe the graph and identify the point which is not collinear:



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

23. In the figure given below AN and CP are perpendiculars to the diagonal BD of a parallelogram, then which of the following options is correct?



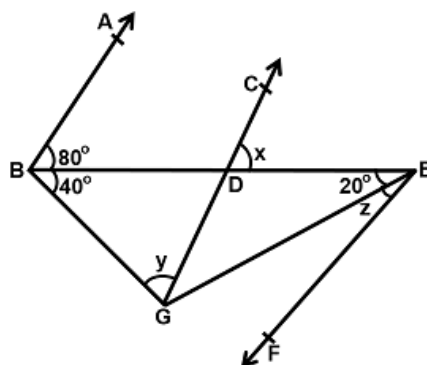
- a.  $AN = CP$
- b.  $AN > CP$
- c.  $AN < CP$
- d. None of these

24. Which of the following statements is incorrect?

- a. Probability of an event can never exceed 1
- b. The median of the data 21, 26, 16, 29, 32 is 16.
- c. The mode of a set of data is the value which occurs most often.
- d. Double bar graphs are used to compare two sets of data

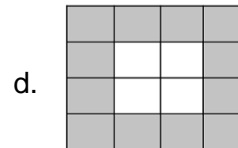
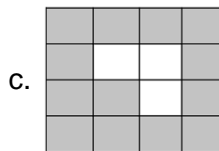
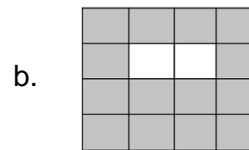
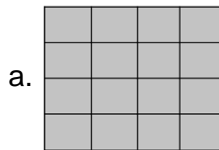
25. In the given figure (not drawn to scale), if  $AB \parallel CG \parallel EF$ , then find the value of the following:

- (i)  $2z - x$
- (ii)  $x + 2y$

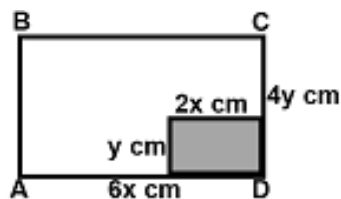


- a. (i)  $40^\circ$ , (ii)  $220^\circ$
- b. (i)  $60^\circ$ , (ii)  $200^\circ$
- c. (i)  $50^\circ$ , (ii)  $200^\circ$
- d. (i)  $40^\circ$ , (ii)  $200^\circ$

26. Which of the following figures shows the given solid as viewed from above?



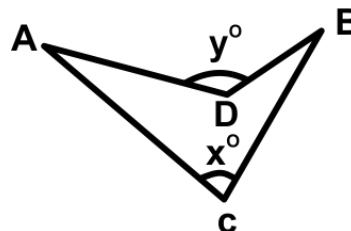
27. The figure shows a rectangle ABCD. Calculate the unshaded area:



- a.  $4x + 3y$   
c.  $12xy$

- b.  $8x + 5y$   
d.  $22xy$

28. In the given figure,  $\angle DAC = 30^\circ$ ,  $\angle CBD = 40^\circ$ ,  $\angle ADB = y^\circ$ , and  $\angle ACB = x^\circ$ . Find the difference between angles  $y^\circ$  and  $x^\circ$ :



- a.  $30^\circ$   
c.  $60^\circ$

- b.  $80^\circ$   
d.  $70^\circ$

29. Subtract  $4p^2 - 2q + 7r^3$  from  $3q + 7p^2 - 2r^3 + 4$ :

- a.  $p^2 + 2q + 5r^3 + 1$   
c.  $-3p^2 + 5q + 9r^3 - 7$

- b.  $11p^2 + q + 5r^3 + 1$   
d.  $3p^2 + 5q - 9r^3 + 4$

30. A triangular prism has P faces, Q vertices and R edges. Choose the correct value of P, Q and R:

- a. P - 5, Q - 6, R - 7  
c. P - 5, Q - 5, R - 8

- b. P - 5, Q - 6, R - 9  
d. P - 6, Q - 8, R - 12

31. The side of a cube is halved. By what percent will its surface area decrease?

- a. 50%
- b. 75%
- c. 25%
- d. Surface area remains same

32. Simplify and match the following:

List-I		List-II	
1.	$(8x + 8y)/8$	I.	$7x^{10} - 4$
2.	$(-15x^3 + 12x^7)/3$	II.	$(3x^5 + 4y^9)/y^3$
3.	$(14x^{12}y - 8x^2y)/2x^2y$	III.	$x + y$
4.	$(36x^5 + 48y^9)/12y^3$	IV.	$4x^7 - 5x^3$

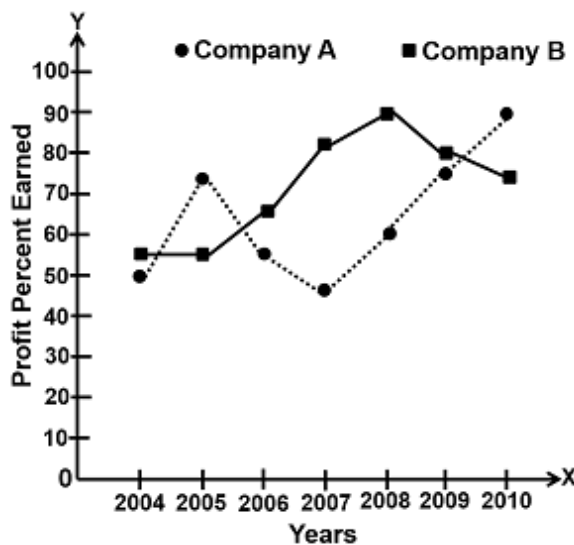
- a. 1 – IV, 2 – III, 3 – II, 4 – II
- b. 1 – II, 2 – I, 3 – III, 4 – IV
- c. 1 – I, 2 – II, 3 – III, 4 – IV
- d. 1 – III, 2 – IV, 3 – I, 4 – II

33. Study the following graph carefully to answer the following question:

$$\text{Profit \%} = (\text{Profit earned} / \text{Total investment}) \times 100$$

$$\text{Profit earned} = \text{Total income} - \text{Total investment in the year}$$

If the total amount invested by the two Companies in 2009 was 27 million, while the amount invested by Company B was 50% of the amount invested by Company A, what was the total profit earned by the Companies?



- a. \$21.15 million
- b. \$20.70 million
- c. \$18.70 million
- d. \$20.15 million

34. Given that the number 1735538A36 is divisible by 3, where A is a digit, what are the possible values of A?

- a. 1
- b. 4
- c. 7
- d. All of these







**48.** A bag has 2\$ and 5\$ coins. If the value of the coins in the bag is \$150 and there are coins of both types, find the number of ways in which the two types of coins can be distributed:

- a. 11
- b. 13
- c. 12
- d. 14

**49.** Draw four rays OA, OB, OC, OD such that  $\angle AOB = 58^\circ$ ,  $\angle COD = 64^\circ$ . OP bisects  $\angle AOB$ , OQ bisects  $\angle COD$ . If OQ is perpendicular to OP, then find the value of  $\angle BOC$ :

- a.  $29^\circ$
- b.  $50^\circ$
- c.  $51^\circ$
- d.  $48^\circ$

**50.** The smallest number that must be added to 680621 to make the sum a square is:

- a. 4
- b. 5
- c. 6
- d. 8

## Answer Key

1. c    2. b    3. b    4. a    5. c    6. d    7. c    8. a    9. a    10. b  
11. d    12. b    13. b    14. d    15. b    16. b    17. c    18. c    19. a    20. a  
21. b    22. b    23. a    24. b    25. d    26. d    27. d    28. d    29. d    30. b  
31. b    32. d    33. b    34. d    35. a    36. c    37. a    38. b    39. a    40. c  
41. d    42. d    43. c    44. b    45. a    46. a    47. b    48. d    49. a    50. a