



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

Class 7

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: _____

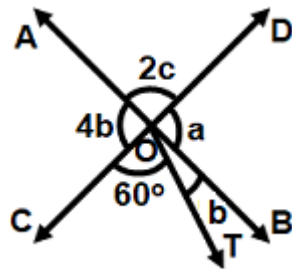
EnrollmentNo: _____

Practical Mathematics (Each Question is 1 Mark)

1. Ammy's income is 20% more than his brother Arna. How much percent is Arna's income less than Ammy?

a. 20.00% b. 25.00%
c. 16.67% d. 40.00%

2. In the given figure, two straight lines AB and CD intersect at O. If $\angle COT = 60^\circ$, then find the value of a, b, c respectively:



a. $96^\circ, 24^\circ, 42^\circ$ b. $42^\circ, 24^\circ, 96^\circ$
c. $64^\circ, 34^\circ, 96^\circ$ d. $64^\circ, 24^\circ, 86^\circ$

3. The H.C.F. and L.C.M. of two numbers are 11 and 385 respectively. If one number lies between 75 and 125, then the number is:

a. 77 b. 88
c. 99 d. 110

4. A trader mixes three varieties of cashews costing \$50, \$20, and \$30 per kg in the ratio 2: 4: 3 in terms of weight and sells the mixture at \$33 per kg. What percentage of profit does he make?

a. 80% b. 9%
c. 10% d. $11 \frac{1}{9}\%$

5. A trader mixes 26 kg of Sausages at \$20 per kg with 30 kg of Sausages of other variety at \$36 per kg and sells the mixture at \$30 per kg. His profit percent is:

a. No profit, no loss b. 5%
c. 8% d. 10%

6. By selling 110 mangoes, the CP of 120 mangoes is realised. What is the gain percentage?

a. $11\frac{1}{9}\%$

b. $9\frac{1}{9}\%$

c. $10\frac{10}{11}\%$

d. $9\frac{1}{11}\%$

7. A lamp post has half of its length in mud, $\frac{1}{3}$ of its length in water and $3\frac{1}{3}$ m above the water. Find the total length of the post:

a. 20 m

b. 15 m

c. 25 m

d. 30 m

8. What should come in place of x in the equation?

$$x/\sqrt{128} = \sqrt{162}/x$$

a. 12

b. 14

c. 144

d. 196

9. The sum of the square of two numbers is 146 and the square root of one of them is $\sqrt{5}$. The cube of the other number is:

a. 1111

b. 1221

c. 1331

d. 1441

10. A completes a work in 12 days. B completes the same work in 15 days. A started working alone and after 3 days B joined him. How many days will they now take together to complete the remaining work?

a. 6

b. 8

c. 5

d. 4

11. The square of natural number when subtracted from its cube results in 48. The number is:

a. 6

b. 5

c. 4

d. 8

12. The product of $(x^2 + 3x + 5)$ and $(x^2 - 1)$ is:

a. $x^4 + 3x^3 - 4x^2 - 3x - 5$

b. $x^4 + 3x^3 + 4x^2 - 3x - 5$

c. $x^4 + 3x^3 + 4x^2 - 3x + 5$

d. $x^4 + 3x^3 + 4x^2 + 3x - 5$

13. In a camp there is provision for 1600 participants for 60 days. Actually 1200 participated, how many days will the provision last for?

a. 70 days

b. 80 days

c. 83 days

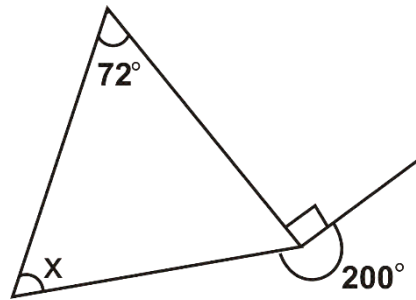
d. 95 days

14. Ayra can stitch 'x' shirts in $\frac{3}{4}$ minutes. At this rate, how many shirts can she stitch in $\frac{3}{4}$ th of an hour?
- | | |
|--------|--------------------|
| a. 50x | b. $\frac{9}{16}x$ |
| c. 60x | d. $\frac{16}{9}x$ |
15. The length of a rectangular plot is 'a' and the breadth is three times the length. Find the ratio of the area to perimeter of the plot:
- | | |
|-----------|-----------|
| a. 8 : 3a | b. 8a : 3 |
| c. 3 : 8a | d. 3a : 8 |
16. Out of 208 people in a party, 48 are children. The remaining people, males and females are in the ratio of 2 : 3. Find the number of males and females in the party respectively:
- | | |
|------------|------------|
| a. 84, 125 | b. 125, 84 |
| c. 96, 64 | d. 64, 96 |
17. In the data given below, the observation p is missing.
2.5, 1.5, p, 1.7, 2.5, 1.3, 3.5
If the mean is 2.5, then the missing observation p will be:
- | | |
|--------|--------|
| a. 0.5 | b. 1.5 |
| c. 3.5 | d. 4.5 |
18. The grades obtained by 30 students of class VII are as follows:
A+, B+, A, B, A+, B+, A+, B, B+, A, A, A+, B, B+, A, A+, B, B, A, A, A+, A+, B, B+, B, B+, A+, A+, A, B
If a student has been selected at random, then find the probability that he has obtained grade A+:
- | | |
|-------------------|-------------------|
| a. $\frac{7}{10}$ | b. $\frac{7}{30}$ |
| c. $\frac{9}{10}$ | d. $\frac{3}{10}$ |
19. Which congruence criterion do you use in the following?
Given: $AC = DF$, $AB = DE$, $BC = EF$. So, $\triangle ABC \cong \triangle DEF$
- | | |
|-------------|-------------|
| a. ASA rule | b. SAS rule |
| c. RHS rule | d. SSS rule |
20. Tom is 7 years older than John. Four years ago, Tom was twice as old as John. Find the sum of their ages after 7 years:
- | | |
|-------------|-------------|
| a. 37 years | b. 43 years |
| c. 60 years | d. 52 years |

- 21.** The cost of 12 chairs and 15 tables is \$58,968. What is the cost of 4 chairs and 5 tables?
- a. \$19,656
b. \$29,484
c. \$39,312
d. \$40,672
- 22.** By selling an article for \$144, a man loses $\frac{1}{7}$ th of its cost price. By selling it for \$226.8, his gain or loss is:
- a. neither gain nor loss
b. 35% gain
c. 15% loss
d. 25% gain
- 23.** The ratio of three numbers is 3: 4: 5 and the sum of their squares is 1250. The sum of the three number is:
- a. 60
b. 90
c. 30
d. 50
- 24.** The product of the two numbers is $-\frac{16}{35}$. If one of the numbers is $-\frac{15}{14}$, then find the additive inverse of other:
- a. $-\frac{2}{5}$
b. $\frac{32}{75}$
c. $-\frac{32}{75}$
d. $-\frac{8}{3}$
- 25.** Which of the following statements is true for a rectangle?
- a. All rectangles are squares
b. Its diagonals are perpendicular
c. Its diagonals are equal
d. All sides are equal
- 26.** The present age of a father is twice that of his son. 15 years ago, the age of father was thrice that of his son. What is the present age of father (in years)?
- a. 40 years
b. 50 years
c. 60 years
d. 70 years
- 27.** In a two-digit number, the unit's digit is 2 more than that of the ten's digit. The sum of the digits is 18 less than the number. Find the product of the digits of the number:
- a. 8
b. 15
c. 9
d. 6
- 28.** If 175 is divided into two parts such that twice the first part is equal to thrice the second part, then find the smaller part:
- a. 60
b. 65
c. 70
d. 75

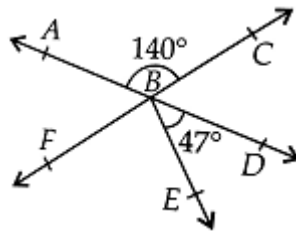
- 29.** Jack was attempting to answer the following question in order to determine the value of x . assist her by selecting the correct answer
 $(9/x) - (6/x) = (1/3)$
- a. 1/0
c. 6
- b. 1/6
d. 9
- 30.** Duke was preparing for CMO. He began working on CMO worksheets and came across the following question.
87% of 78 + 78% of 13
- a. 78
c. 91
- b. 87
d. 103
- 31.** In an equilateral triangle, the length of an altitude is 9 cm. What is the length of its in-radius?
- a. 6 cm
c. 3 cm
- b. 3.5 cm
d. 4 cm
- 32.** Solve:
 $(0.0625)^{1/4} \times (32)^{1/5} \times (81)^{3/4}$
- a. 27
c. 108
- b. 54
d. 32
- 33.** Find the value of:
 $\sqrt{3 \frac{1}{16}} - \sqrt{2 \frac{14}{25}}$
- a. 11/20
c. 3/20
- b. 7/2
d. 1/20
- 34.** The fourth proportional of 10, 15 and 18 is _____.
- a. 21
c. 27
- b. 25
d. 30
- 35.** A student got 45% marks in an exam and failed by 10 marks. If the maximum marks in the exam is 200, what is the minimum percentage marks required for passing the exam?
- a. 48.5%
c. 50%
- b. 55%
d. 45%

36. Look at the figure given below and calculate the value of x :



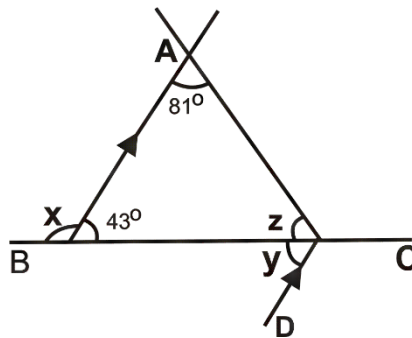
- a. 35°
- b. 36°
- c. 37°
- d. 38°

37. In the figure given below, AD and CF are straight lines. Find the value of $\angle EBF$:



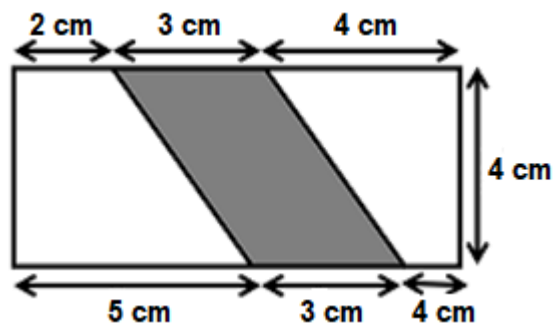
- a. 93°
- b. 140°
- c. 47°
- d. 107°

38. Look at the image given below. Find the values of the angles x , y , and z respectively:



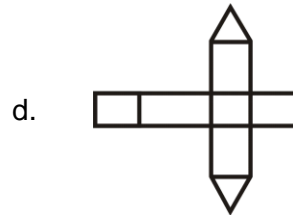
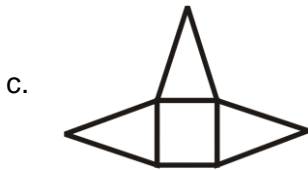
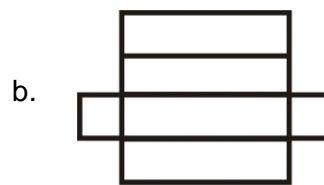
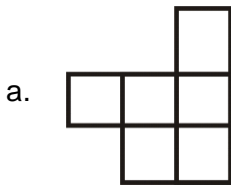
- a. $137^\circ, 56^\circ, 48^\circ$
- b. $122^\circ, 56^\circ, 48^\circ$
- c. $116^\circ, 43^\circ, 56^\circ$
- d. $137^\circ, 43^\circ, 56^\circ$

39. Find the area of the shaded portion in the figure given below:



- a. 20 cm^2
- b. 16 cm^2
- c. 14 cm^2
- d. 12 cm^2

40. Which of the following is net of a solid?



Achiever's Section (Each Question is 2 Marks)

41. \$7,500 is borrowed at CI at a rate of 4% per annum. What will be the amount to be paid after 6 months, if interest is compounded quarterly?

- a. \$7650.75
- b. \$7320.25
- c. \$72155.30
- d. \$7035.16

42. If $47.2506 = 4A + 7/B + 2C + 5/D + 6E$, then the value of $5A + 3B + 6C + D + 3E$ is:

- a. 53.6003
- b. 53.603
- c. 153.6003
- d. 213.0003

43. The denominator of a fraction is 1 more than its numerator. If 1 is deducted from both the numerator and the denominator, the fraction becomes equivalent to 0.5. The fraction is:

- a. $\frac{3}{4}$
- b. $\frac{4}{5}$
- c. $\frac{2}{3}$
- d. $\frac{7}{8}$

44. A merchant has 1000 kg of sugar, some part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity of sugar sold at 18% profit is:

- a. 560 kg
- b. 600 g
- c. 400 g
- d. 640 g

45. If the sides of an equilateral triangle are increased by 20%, 30% and 50% respectively to form a new triangle, then the increase in the perimeter of the triangle is:

- a. 25%
- b. 33.33%
- c. 75%
- d. 100%

46. Which of the following statements is incorrect?

- a. The addition of a negative and a positive integer is always zero.
- b. The product of a positive and a negative integer is always negative.
- c. For all non-zero integers a and b, $a \times b$ is always greater than either a or b.
- d. An integer is a decimal number with all zeros after the decimal separator.

47. The area of a big rectangle is 6 times the area of a small rectangle. If the length of the big rectangle is equal to the length of the small rectangle and the width of the big rectangle is 2 m, then what is the width of the small rectangle?

- a. $\frac{1}{3}$ m
- b. 1 m
- c. 2 m
- d. 6 m

48. If the diagonal of a square is equal to the diameter of a circle, then what is the ratio between the area of the square to the area of the circle?

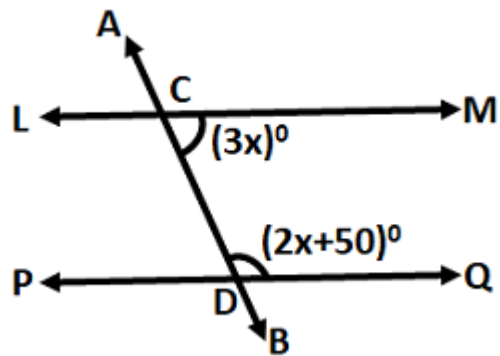
- a. $\pi : 2$
- b. $2 : \pi$
- c. $\pi : 1$
- d. $1 : \pi$

49. This frequency table shows the results of a small class quiz. If a student is selected at random, then the probability that he or she scored 2, 4 or 5 is:

Marks	Frequency
1	4
2	3
3	2
4	6
5	5

- a. $\frac{3}{20}$
- b. $\frac{1}{4}$
- c. $\frac{7}{10}$
- d. 9.20

50. In the given figure, LM and PQ are parallel to each other and AB is the transversal. If $\angle MCD = (3x)^\circ$ and $\angle QDC = (2x + 50)^\circ$, then find the value of x:



- a. 26°
c. 40°

- b. 36°
d. 50°

Answer Key

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