

Class: 7
Subject: Mathematics
Topic: OASK1507SA203
No. of Questions: 26

Time: 2 1/2Hrs.

M.M. 60

General Instructions:

1. All questions are **compulsory**.
2. The question paper consists of **26** questions and it is divided into three sections A, B C and D.
3. **Section A** comprises of **8** question carrying 1 mark each.
4. **Section B** comprises of **6** questions carrying 2 marks each.
5. **Section C** comprises of **8** questions carrying 3 marks each.
6. **Section D** comprises of **4** questions carrying 4 marks each.
7. Question numbers **1 to 8** in **Sections A** are multiple choice questions where you are to select one correct option out of the given four.

SECTION - A

- Q1. The sum of a rational number and its additive inverse is
- (a) 0
 - (b) 1
 - (c) -1
 - (d) None of these

Sol. (a)

- Q2. The value of $1^\circ + 2^\circ + 3^\circ$ is
- (a) 0
 - (b) 1
 - (c) 3
 - (d) 6

Sol. (c)

- Q3. If $\triangle ABC \cong \triangle PQR$, then
- (a) $AB = QR$
 - (b) $AB = PR$
 - (c) $AB = PQ$
 - (d) $AB = RP$

Sol. (c)

- Q4. The ratio of 3 km to 300 m
- (a) 100 : 1
 - (b) 1 : 10
 - (c) 10 : 1
 - (d) 1 : 100

Sol. (c)

- Q5. The circumference of a circle of diameter d cm is
- (a) $2\pi d$ cm
 - (b) πd cm
 - (c) πr cm
 - (d) None of these

Sol. (b)

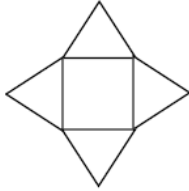
- Q6. The number of lines of symmetry of an isosceles triangle is
- (a) 0
 - (b) 1
 - (c) 2
 - (d) 3

Sol. (d)

- Q7. Name the triangle which does not exhibit line of symmetry.
- (a) Equilateral triangle
 - (b) Isosceles triangle
 - (c) Scalene triangle
 - (d) Right triangle

Sol. (c)

Q8. The given figure represents the net of

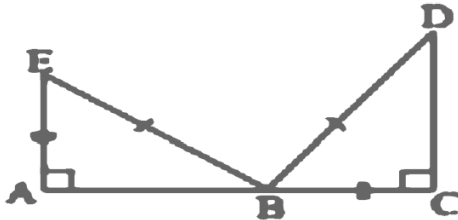


- (a) Cylinder
- (b) Cube
- (c) Pyramid
- (d) Cuboid

Sol. (c)

SECTION – B

Q10. The following triangles are congruent. State the three corresponding congruent parts and name the criterion used.



Sol. Identifying the 3 congruent parts
RHS congruence rule.....

Q10. Represent $(-\frac{3}{4})$ on the number line.

Sol. Drawing the number line
Making the points

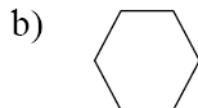
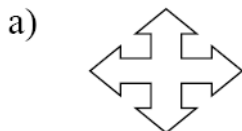
Q11. Convert each part of the ratio 2 : 3 to percentage.

Sol. $2 + 3 = 5$
 $\frac{2}{5} \times 100 = 40\% \dots \dots$
 $\frac{3}{5} \times 100 = 60\% \dots \dots$

Q12. Express 1000 as a product of powers of prime factors.

Sol. $1000 = (2 \times 2 \times 2) \times (5 \times 5 \times 5) = 2^3 \times 5^3$

Q13. Give the order and angle of rotational symmetry for the following figures.



Sol. (a) order – 4, angle of rotation – 90°
(b) order – 6, angle of rotation – 60°

Q14. Find the value of the expression $a^2 + ab + b^2$ when $a = 3$ and $b = -2$.

Sol. $a^2 + ab + b^2$; $a = 3, b = (-2)$
Substitution (1), calculation & arriving at the answer = 7 (1)

SECTION – C

Q15. Rohit bought a car for Rs. 3,50,000 /-. The next year, the price went upto Rs. 3,70,000 /-.
What was the percentage of price increase?

Sol. Cost price = Rs. 3,50,000 Selling price = Rs. 3,70,000
Profit = S.P – C.P
 $= 3,70,000 - 3,50,000 = \text{Rs. } 20,000$
Profit % = $\frac{\text{Profit}}{\text{original price}} \times 100$
 $= \frac{20000}{350000} \times 100$
 $= \frac{40}{7} = 5\frac{5}{7} \%$

Q16. Find $-2\frac{1}{3} + 4\frac{3}{5}$

Sol. $\left(-2\frac{1}{3}\right) + 4\frac{3}{5} = \left(-\frac{7}{3}\right) + \frac{23}{5}$

LCM = 15

$$= \frac{-35+69}{15} = \frac{34}{15}$$

Q17. From the sum of $3x - y + 11$ and $-y + 11$, subtract $3x - y - 11$.

Sol. $3x - y + 11 + (-y + 11) = 3x - 2y + 22$

$$(3x - 2y + 22) - (3x - y - 11)$$

$$= 3x - 2y + 22 - 3x + y + 11$$

$$= -2y + 33$$

Q18. Simplify the expression and find the value if x is equal to 2.

$$4(2x - 1) + 3x + 10$$

Sol. $4(2x - 1) + 3x + 10 = 8x - 4 + 3x + 10 = 11x + 6$

$$11x + 2 + 6 = 22 + 6 = 28$$

Q19. Simplify using the laws of exponents

$$\frac{3 \times 7^2 \times 11^8}{21 \times 11^3}$$

Sol. $\frac{3 \times 7^2 \times 11^8}{21 \times 11^3} = \frac{3 \times 7^2 \times 11^8}{3 \times 7 \times 11^3}$

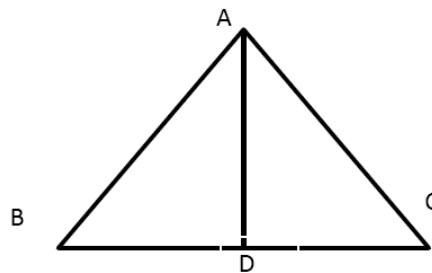
$$\text{Simplifying} = 7 \times 11^5$$

Q20. What cross – section do you get when you give a vertical cut to the following objects?

- (a) A round lemon
- (b) A dice
- (c) A cone ice – cream

Sol. (a) circle
(b) Square
(c) Triangle

Q21. In the given figure $AB = AC$ and D is the mid – point of BC .



- (a) State the three pairs of congruent parts in $\triangle ADB$ and $\triangle ADC$
- (b) Is $\triangle ADB \cong \triangle ADC$? Give reason.

Sol. (a)
(i) $AB = AC$ (Given)
(ii) $BD = CD$ (D is the mid - point)
(iii) $AD = AD$ (common side)
(b) Yes, SSS congruence rule

Q22. Diameter of a circular garden is 9.8 m. Find its area.

Sol. Diameter = 9.8 m, radius = $9.8/2 = 4.9$ m
Area of a circle = πr^2
 $= \frac{22}{7} \times 4.9 \times 4.9 = 75.46 \text{ m}^2$

Q23. David borrows Rs. 9500 from a Bank. Find the amount to be paid by him at the end of 4 years at the rate of 7% annum simple interest.

Sol. Money borrowed = Rs. 9500
 Time = 4 years, rate of interest = 7%

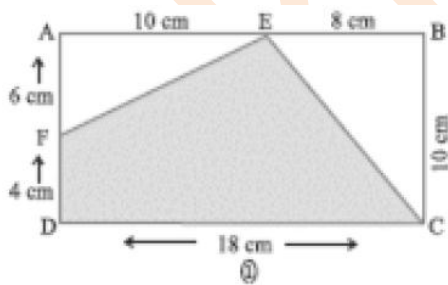
$$I = \frac{P \times R \times T}{100}$$

$$= \frac{9500 \times 7 \times 4}{100} = \text{Rs. } 2660$$
 Amount = Principal + interest
 $A = 9500 + 2660 = \text{Rs. } 12160$

Q24. A path 5 m wide runs along inside a square park of side 100 m. Find the area of the path. Also find the cost of cementing it at the rate of Rs. 250 per 10 m².

Sol. Area of square ABCD = $S \times S = 100 \times 100 = 10000 \text{ m}^2$
 $PQ = 100 - (5 + 5) = 100 - 10 = 90 \text{ m}$
 Area of square PQRS = $S \times S = 90 \times 90 = 8100 \text{ m}^2$
 \therefore Area of the path = $(10000 - 8100) \text{ m}^2 = 1900 \text{ m}^2$
 Cost of fencing 1 m² = Rs 250 /10
 \therefore Cost of fencing 1900 m² = Rs. 250 × 1900 = Rs. 47,500

Q25. Find the area of the shaded portion



Sol. Area of shaded portion = area of ABCD – area of ($\Delta EBC + \Delta AEF$)
 $\text{Area of } ABCD = 180 \text{ cm}^2$
 $\text{Area of } \Delta AEF = 30 \text{ cm}^2$ $\Delta EBC = 40 \text{ cm}^2$
 Area of shaded portion = $180 - 70 = 110 \text{ cm}^2$

Q26. Simplify and expression in the exponential form:

(a) $[(5^2)^3 \times 5^4] \div 5^7$

(b) $\frac{2^8 \times a^5}{4^3 \times a^3}$

Sol. (a) $\frac{5^6 \times 5^4}{5^7}$

$$= \frac{5^{10}}{5^7} = 5^3$$

(b)

$$2^8 \times a^5$$

$$2^6 \times a^3$$

$$= 2^2 \times a^2$$