



Mathematics

Grade 9

Time : 2h 30 mints

Name:

Part A

Answer all questions

01. Write the next two terms of the number pattern

11,15,19,....

02. If $x=5$, find the value of $2x+4$

03. If a vendor buys mangoes for Rs 250 and sells Rs 300.

- 1) Find the profit
- 2) Determine the profit percentage

04. Simplify

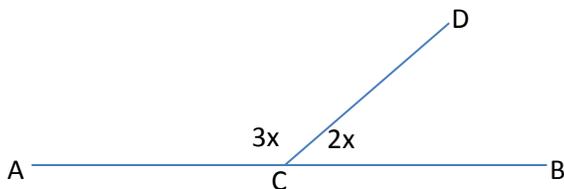
$$1011_{\text{two}} - 101_{\text{two}}$$

05. length, breath and height of a cuboid is 8cm, 5cm and 3cm.express the capacity of the cuboid.

06. simplify $\frac{1}{2} + \frac{3}{7}$ of $\frac{2}{3}$

07. Factorize $4x^2 - 9$

08. If AB and CD are straight lines, find the angle of \hat{DCB} .



09. Solve $\frac{a}{3} - 1 = 7$

10. n^{th} term of a number pattern is $5n-2$. A student write an equation to determine the term which is equal to 63.

$$5n-2=63$$

1. By solving above equation determine the term which is equal to 63.
2. Find the 14th term.

11. If $AB=CD$ in the following straight line, by using axioms show that $AC= BD$



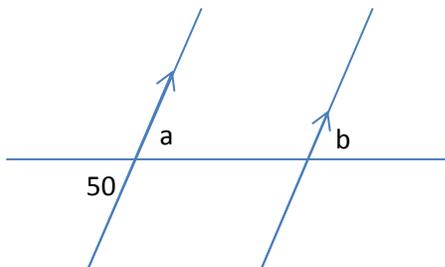
12. If $\frac{1}{2}$ of money is Rs. 900 then find the value of $\frac{1}{3}$ of that money.

13. If perimeter of the square is 44cm find the length of one side.

14. Expand and simplify as a trinomial quadratic expression

$$(x+5)(x-3)$$

15.



Find the value of a and b

16. Seller gives 8% discount when selling an electronic item. The marked price which is Rs 12,000. Find the selling price after giving the discount.

17. Factorize $x^2 - 6x + 5$

18. Fill the cages $\frac{1}{3} \times \text{---} = \frac{\text{---}}{15}$

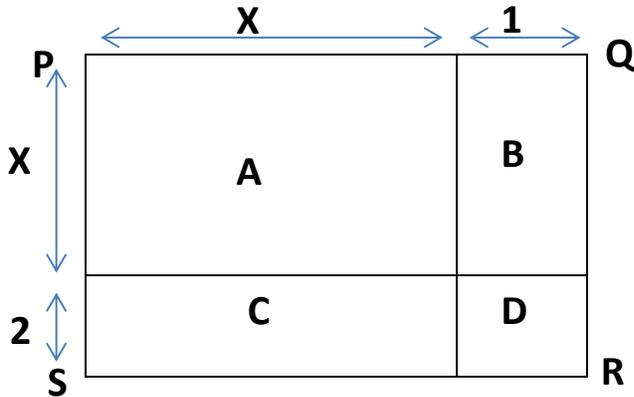
19. Simplify $3x^2 \times x^3$

20. Simplify $3x(2x-1)$

Part B

Answer the first question and another four(4) questions only.

- 1) By considering an exploratory study you have done to simplify binomial expressions, answer all questions using the below rectangle diagram.



- a)
- Obtain an expressions for the length PQ and PS of this rectangle.
 - Obtain an expressions for the perimeter of PQRS and simplify it.
 - If $x=5$ find the perimeter of PQRS.
- b)
- Write an expression for the area of PQRS by using the above expressions of PQ and PS. Simply the answer.
 - Find the areas of A, B, C and D separately and then by using them write an expression for the area of PQRS.
 - What can you observe the answer I and II
- 2)
- If a man spend $\frac{1}{4}$ of its salary for food, find the remaining fraction of its salary.
 - $\frac{1}{3}$ of the remaining is spend for education what fraction of the whole salary is spend for education?
 - What fraction of the whole salary is spend for food and education?
 - After all the expenses mentioned above, if he deposits the remaining amount in a bank and it is Rs 20,000, how much is his monthly salary?

3)

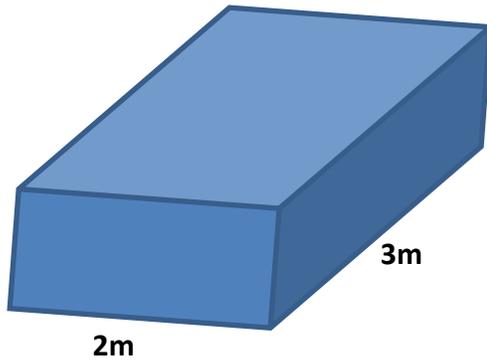


figure shows the cuboid shaped water tank placed on the school building overhead. Capacity of the water tank is 6000L.

- I. Find the capacity of this water tank in cubic meters
- II. Find the height of the tank.
- III. When the tank is filled to its capacity and this water in this tank be sufficient for 5 days, find the daily water consumption in liters.
- IV. If water is supplied to the tank at a rate of 120 liters per minute. How much time is needed to fill the tank if it is empty.

4) a)

- I. Find the next term of the number pattern
5, 10, 15, 20,
- II. Write a general term of this number pattern.

b)

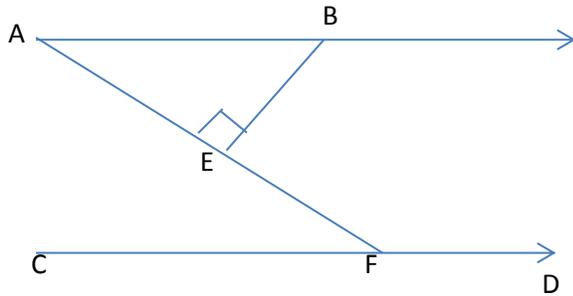
- i. Consider the number pattern with general term $T_n = 2n + 1$. Write the first term of this sequence
- ii. Write the first four terms of this sequence.
- iii. What is the special characteristic that can be observed with your written number pattern
- iv. Which term is equal to 41?

5)

- i. The production cost of a chair made by Sarath is Rs240. He sells the chair to a vendor at a profit of 60%. How much Sarath earns by selling it?
- ii. The vendor mark the price at a profit of 25%. What is the marked price of that chair?

- iii. A vendor offer a discount of 5% on the marked price, find the selling price of that chair.
- iv. when buying that chair, customer has to pay extra money than the production cost .Find the extra money percentage gained by production cost.

6) In the given figure $AB \parallel CD$. $\hat{A}BE = 35^\circ$. $AF \perp BE$.



- a) considering the above figure
 - i. Write three pairs of alternate angles
 - ii. Write two pairs of supplementary angles.
 - b) Find the angles of \hat{BAF} and \hat{AFD}
 - c) What are the reasons that BE and CD lines are not pallel.
- 7)
- i. How many digits use to express numbers in " base two". What are they?
 - ii. Write 307 as the binary number.
 - iii. Simplify
 - a. $101_{\text{two}} + 110_{\text{two}}$
 - b. $111_{\text{two}} + 111_{\text{two}}$
 - iv Convert to the decimal number
 - 11011_{two}