

Standard : 8

Time : 1½ Hours
 Score : 40

Instructions

- Read the instructions before answering the questions.
- Give explanations wherever necessary.
- First 15 minutes time is cool – off time.

Write any 4 questions from 1 to 5. Each question carries 2 scores. (4 x 2 = 8)

1. Fill in the blanks:

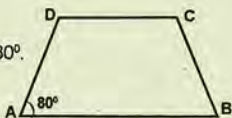
(a) $51^2 = 50^2 + 50 + \dots\dots\dots$ [1, 50, 51]

(b) $(x + 1)^2 = x^2 + x + \dots\dots\dots$ [2x, x+1, 1]

2. In the figure, ABCD is an isosceles trapezium, $\angle A = 80^\circ$.

(a) $\angle B = \dots\dots\dots$

(b) $\angle C = \dots\dots\dots$



3. Ramu deposited 1000 rupees in a bank, which gives simple interest. After one year, Ramu got 100 rupees as interest. What is the rate of interest ?

4. (a) $x^2 - y^2 = (x + y) (\dots\dots\dots)$

(b) Using the above principle, find $52^2 - 48^2$.

5. Which of the following statement is always true regarding a parallelogram ?

(i) All angles right.

(ii) Diagonals bisect each other.

(iii) Diagonals are perpendicular bisectors of each other.

Answer any 4 questions from 6 to 11. Each question carries 3 scores. (4 x 3 = 12)

6. Four numbers forming a square in a calendar are given below:

| | |
|----|----|
| 4 | 5 |
| 11 | 12 |

(a) Find the difference of its diagonal products.

(b) Is it the same for all squares of four numbers in a calendar? Explain using algebra.

7. Draw a square of diagonal 7 centimetres.
8. Sumesh deposited 10000 rupees in a bank which gives 5% interest compounded annually. How much would he get back after two years?

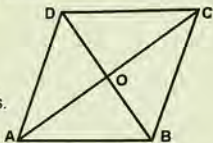
9. (a) $(x+1)(y+1) = xy + x + y + \dots$
- (b) Find 51×21 by using the above principle.

10. (a) ABCD is a rhombus. The diagonals AC and BD intersect at O.

What is the measure of $\angle AOB$?

- (b) Draw the rhombus ABCD in which

AC = 7 centimetres, BD = 6 centimetres.



11. The simple interest at 8% got for a certain amount after 2 years is 200 rupees. If the interest is compounded annually, what would be the interest for the same amount at the same rate after 2 years?

Answer any 5 questions from 12 to 18. Each question carries 4 scores.

(5 x 4 = 20)

12. Look at this pattern.

$$1 \times 4 = (2 \times 3) - 2$$

$$2 \times 5 = (3 \times 4) - 2$$

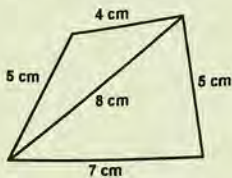
$$3 \times 6 = (4 \times 5) - 2$$

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- (a) Write the next two lines in this pattern.
- (b) If a, b, c, d are four consecutive natural numbers, then find the relation between $a \times d$ and $b \times c$.
- (c) Using the above principle, find 98×101 .
13. A laptop manufacturing company decreases the price of a particular model by 10% each year. The current price of this model is 40000 rupees. What would be the price after 2 years?

14. Draw the quadrilateral shown below with given measurement.



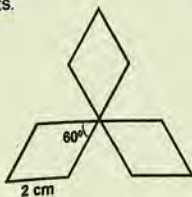
15. Some natural numbers can be written as the difference of two perfect squares. For example,

$$8 = 4 \times 2 \times 1 = 3^2 - 1^2$$

$$12 = 4 \times 3 \times 1 = 4^2 - 2^2$$

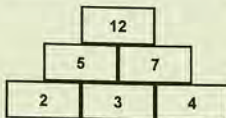
$$16 = 4 \times 4 \times 1 = 5^2 - 3^2$$

- (a) Write 20 as the difference of two perfect squares.
- (b) Explain using algebra, the method of writing all multiples of 4, starting with 8 as the difference of two perfect squares.
16. Ajayan deposited 20000 rupees in a bank which gives interest compounded annually and Vijayan deposited the same amount in another bank which gives interest compounded half yearly. The annual rate of interest is 8% in both the banks. After 2 years they withdrew their deposits.
- (a) How much amount did Ajayan get ?
- (b) How much amount did Vijayan get?
- (c) Who got more amount? By how much ?
17. Three equal rhombuses are joined together in the figure given below. Draw the figure in the given measurements.



18. Read the mathematical concept given below and answer the following questions.

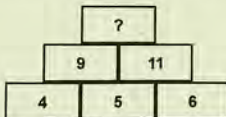
Observe the number pyramids:-



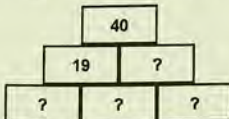
Do you see any relation between the numbers ?

"Pairs of adjacent numbers in the bottom row are added to get the two numbers in the middle row; and these two numbers are added to get the topmost number. Also the numbers in the bottom row are consecutive natural numbers".

- (a) Write the missing number in this number pyramid.



- (b) Identify the relation between the middle number in the bottom row and the topmost number.
(c) Write the missing numbers in this number pyramid:



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