

Sample Question Paper
Mathematics

Class 8

Time : $1\frac{1}{2}$ Hours
Score : 40

Instructions

- Use the first 15 minutes to read the questions and think about the answers
 - There are 16 questions, split into four parts A, B, C, D
 - Answer all questions; but in questions of the type **A or B**, you need answer only one of those
 - You can answer the questions in any order, writing the correct question number
 - Answers must be explained, whenever necessary
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Section A

This section has 4 questions of score 1 each

(1) $(8.5)^2 = 64 + \dots + 0.35$

- (A) 2 (B) 4 (C) 8 (D) 16

- (2) Which three measures of a triangle being equal to the same measures of another triangle, make the remaining three measures also equal?

- (A) Three sides
(B) Two sides and any one angle
(C) One side and any two angles
(D) Three angles

- (3) Read the two statements below:

Statement A : The sum of the inner angles of a pentagon is 540°

Statement B : The sum of the inner angles of a triangle is 180°

Now choose the correct answer from those given below:

- (i) A is true, B is false
(ii) A is false, B is true
(iii) Both are true and B is the reason for A
(iv) Both are true and B is not the reason for A

(4) Read the statements below:

- (i) All squares of odd numbers are odd numbers
- (ii) Perfect squares divided by 3 leaves remainder 2
- (iii) Squares of odd numbers divided by 4 leaves remainder 1
- (iv) Perfect squares divided by 4 leaves remainder 2 or 0

Which of the following is correct?

- (A) (i) and (ii) are true
- (B) (i) and (iii) are true
- (C) (i) and (iv) are true
- (D) (ii) and (iv) are true

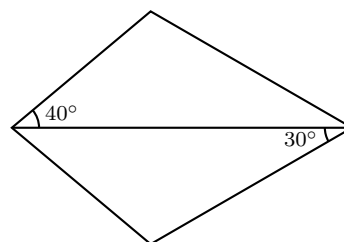
Section B

This section has 4 questions of score 2 each

(5) A regular polygon has 10 sides

- (i) How much is an outer angle of this polygon?
- (ii) How much is an inner angle?

(6) In the quadrilateral shown, the Left and right sides above the diagonal are equal to the left and right sides below the diagonal. Calculate all angles of the quadrilateral.



(7) One angle of an isosceles triangle is 80° . What can be the other two angles?

(8) Using $65 = 8^2 + 1^2$, write 130 as the sum of two perfect squares

Section C

This section has 4 questions of score 3 each

(9) (A) See the pattern of these equations

$$2^2 - 1^2 = 3 = 2 + 1$$

$$3^2 - 2^2 = 5 = 3 + 2$$

$$4^2 - 3^2 = 7 = 4 + 3$$

.....

.....

(i) Write the next equation in this pattern

- (ii) Write the general principle of this in algebra
 (iii) What is $50^2 - 49^2$

OR

- (B) Some natural numbers can be written as the difference of two perfect squares.
 For example

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

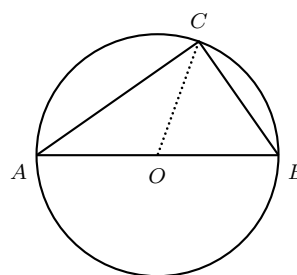
$$12 = 4 \times 3 \times 1 = 4^2 - 2^2$$

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

- (i) Write 20 as the difference of two squares like this
 (ii) Describe the method of writing any multiple of 4, starting with 8, as the difference of two squares
- (10) The sum of the outer angles of a polygon is half the sum of the inner angles.
- (i) How many sides does this polygon have?
 (ii) If it is a regular polygon, how much would be each inner angle?
 (iii) How much is each outer angle of a polygon with the number of sides one less than this?
- (11) The sum of the squares of a number and its reciprocal is $9\frac{1}{9}$
- (i) What is the square of the sum of these numbers?
 (ii) What is the square of the difference of these numbers?
- (12) (A) Pairs of opposite angles of a quadrilateral are equal. Prove that it is a parallelogram

OR

- (B) In the picture, AB is a diameter of the circle centres at O . Prove that $\angle ACB$ is a right angle



Section D

This section has 4 questions of score 4 each

- (13) The picture shows a square formed by 9 dates of a month in a calendar. The difference of the diagonal products give 28

$$16 \times 4 = 64$$

$$18 \times 2 = 36$$

$$64 - 36 = 28$$

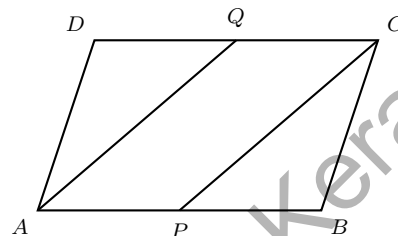
2	3	4
9	10	11
16	17	18

Explain why the difference of the diagonal products is 28 for any such square of 9 dates

- (14) (A) The sides of a triangle are 15 centimetres, 15 centimetres and 24 centimetres. Draw a rough sketch of the triangle and compute its area

OR

- (B) In the picture, P and Q are the midpoints of the sides AB and CD of the parallelogram $ABCD$. Prove that $APCQ$ is a parallelogram



- (15) (A) Draw a regular hexagon of sides 4 centimetres

OR

- (B) Draw a hexagon of all sides 3 centimetres, but not all angles are equal

- (16) The grid shows some of the numbers in the computation of the square of a two-digit number

- (i) Write the missing numbers (indicated by question marks)
- (ii) The square of which number is computed? What is its square?

	?	?
?	900	?
?	?	16