Annual Examination 2017
Mathematics

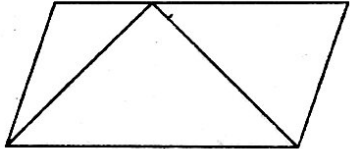Class : 8   Time : $1\frac{1}{2}$ Hours
                                             Marks : 40

Instructions

1. *Read and understand each question and then write the answer*
2. *The first fifteen minutes is cool-off time for trying to understand the questions*
3. *Give explanations in the answers, wherever necessary*

Part 1

(Answer all questions. Each question is of 1 mark)

1. To make concrete, sand and cement are to be mixed in the ratio 4 : 1. For 40 sacks of cement, how many sacks of sand are needed?

2. The diagonals of a rhombus are 10 centimeters and 15 centimeters. What is its area?

3. In the picture, the lower vertices of a parallelogram are joined to a point on the upper side to form a triangle. The area of the parallelogram is 40 square centimeters. What is the area of the shaded triangle?

4. To get $2x + 5 = 3x$, what number should be taken as x?
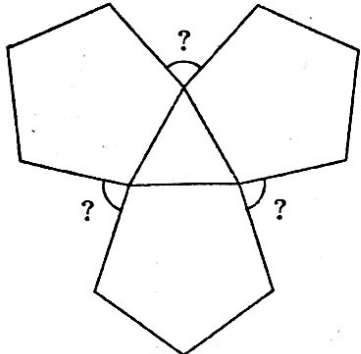
5. If $-\frac{1}{x} = 5$, then what is x?

Part 2
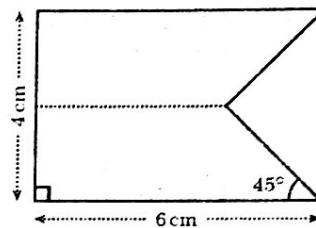
(Answer all questions. Each question is of 2 marks)

6. A money-lending institution compounds interest monthly at 12% annual rate. How much interest is to be paid a month for 5000 rupees?

7. Prove that if $(a - b)^2 + (b - c)^2 = 0$, then $a = b = c$

Part 3

(Answer any 5 questions. Each question is of 3 marks)

8. In the picture, regular pentagons are drawn on each side of an equilateral triangle. How much is each angle between the pentagons?

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9. Draw a parallelogram of sides 8 centimeters and 6 centimeters and the angle between them 70°

10. The line joining a pair of opposite vertices of a quadrilateral is 25 centimeters long, and the perpendiculars to this line from the other two vertices are 12 centimeters and 8 centimeters long. What is the area of this quadrilateral?

11. The diagonals of a quadrilateral are perpendicular to each other and their lengths are 18 centimeters and 20 centimeters. What is the area of this quadrilateral?

12. The weights of 30 children are given on the right. Make a frequency table of this data with class-interval 5

26	32	43	44	48	52	29	46	26	33
37	39	54	28	42	38	37	49	36	39
47	41	44	36	32	33	43	34	31	24

13. Draw a trapezium with lengths of parallel sides 7 centimeters and 4 centimeters, and the angles at the ends of the longer side 50° and 60°

14. The picture shows two equal trapeziums placed one over the other. Find the area of the figure

Part 4

(*Answer any 4 questions. Each question is of 4 marks*)

15. All sides of a parallelogram are of length 10 centimeters and one of its diagonals is of length 16 centimeters

    (a) What is the length of the other diagonal?
    (b) What is the area of the parallelogram?
    (c) What is the distance between two of its parallel sides?

16. A ball is rolled up a slanted plank at 18 meters/second and the speed decreases every second by by 3 meters/second. When the speed becomes 0, it will start rolling downwards with speed increasing at the same rate.
    At what time does the speed becomes 0? If the speed is to be obtained as a non-negative number at all times,

    (a) What is the algebraic equation connecting speed and time till 6 seconds?
    (b) For the journey after 6 seconds, what is the algebraic equation connecting speed and time?
    (c) If the speed downwards is taken as a negative number, what is the speed-time equation which holds for all times?

17. The equation connecting two numbers x and y are given below:

$$y = \frac{1}{1-x} - \frac{1}{1+x}$$

In this, what are the numbers got as y for $x = 2$ and $x = -2$?

18. A square pond is inside a square garden. The sides of the garden are 120 meters each and the sides of the pond are 20 meters each. What is the area of the garden excluding the pond?

19. Write 1000 as the difference of two perfect squares in two different ways

20. 45 workers are sorted according to their monthly wages in the table on the on the right. Draw a histogram of this data

WAGES	NUMBER
3000-3500	7
3500-4000	10
4000-4500	13
4500-5000	9
5000-6000	6