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Junior Division

Questions 1 to 10, 3 marks each

1. The value of $37 - 16$ is

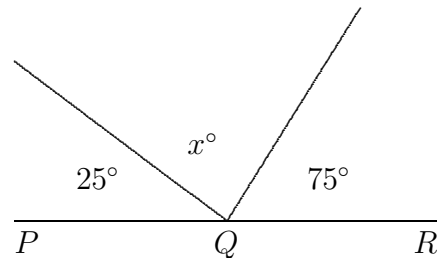
- (A) 1 (B) 9 (C) 11 (D) 21 (E) -21
-

2. The value of $\frac{6 \times 7}{3}$ is

- (A) 7 (B) 14 (C) 21 (D) 1 (E) 39
-

3. In the diagram, where PQR is a straight line, x equals

- (A) 60 (B) 70 (C) 80 (D) 90 (E) 100



4. My mother left her car in the car park at 11 am and returned 5 hours later. The time when she returned was

- (A) 6 pm (B) 5 pm (C) 4 pm (D) 3 pm (E) 2 pm
-

5. The sum of the smallest and largest of the five numbers 3.1, 0.6, 3, 6 and 0.5 is

- (A) 6 (B) 9 (C) 6.1 (D) 6.6 (E) 6.5
-

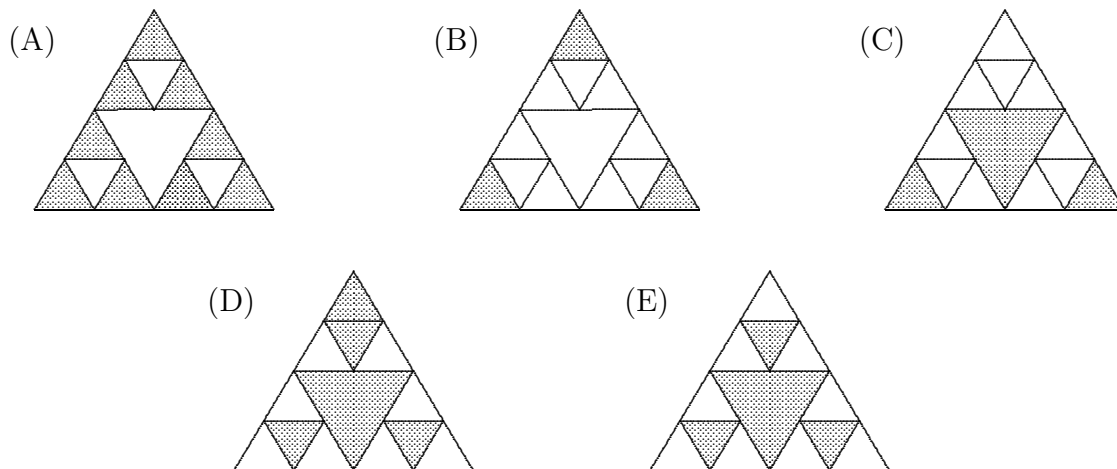
6. Tony wanted to add 97 to 298 and first added 100 to 300. What must he now subtract from this result to obtain $97 + 298$?

- (A) 2 (B) 3 (C) 5 (D) 6 (E) 15
-

7. A tray of mangoes costs \$46. Each tray has 5 rows with 6 in each row. The cost of three mangoes is

- (A) \$4 (B) \$4.20 (C) \$4.30 (D) \$4.60 (E) \$5
-

8. Which of the following shows three-eighths of the figure shaded?



9. If $97 + a = 100 + b$, then

- (A) $a = b + 3$ (B) $a = b - 3$ (C) $a = 3b$ (D) $b = 3a$ (E) $a + 3 = b - 3$
-

10. Of the following, which is the largest fraction?

- (A) $\frac{7}{15}$ (B) $\frac{3}{7}$ (C) $\frac{6}{11}$ (D) $\frac{4}{9}$ (E) $\frac{1}{2}$
-

Questions 11 to 20, 4 marks each

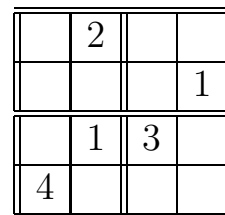
11. Two cats together catch 60 mice. If Tiger catches three mice for every two Shorty catches, how many mice does Shorty catch?

- (A) 20 (B) 24 (C) 30 (D) 36 (E) 40
-

12. A class of 30 students has a spelling quiz every day. On Monday, 17 of the students scored 100% on the quiz. On Tuesday, 18 students scored 100% on the quiz. The least possible number of students who scored 100% on both quizzes is

- (A) 1 (B) 5 (C) 13 (D) 15 (E) 17
-

13. The game of *Four Tofu* is played on a 4×4 grid. When completed, each of the numbers 1, 2, 3 and 4 occurs in each row and column of the 4×4 grid and also in each 2×2 corner of the grid. When the grid shown is completed, the sum of the four numbers in the corners of the 4×4 grid is



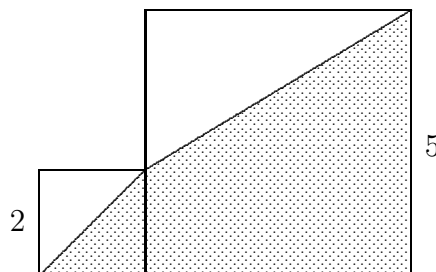
- (A) 13 (B) 11 (C) 15 (D) 12 (E) 10

14. How many numbers in the range 100 to 1000 are divisible by 6?

- (A) 136 (B) 150 (C) 160 (D) 165 (E) 166

15. A square with side length 2 units is placed next to a square with side length 5 units as shown. The shaded area, in square units, is

- (A) 13.5 (B) 14.5 (C) 18.5
(D) 19.5 (E) 26

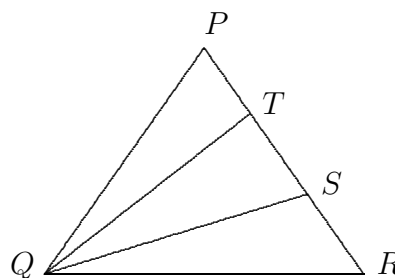


16. Ace, Bea, Cec, Dee, Eve, Fie and Geo are 1, 2, 3, 4, 5, 6 and 7 years old, in some order. Dee is three times as old as Bea. Cec is four years older than Eve. Fie is older than Ace and Ace is older than Geo, but the combined ages of Ace and Geo is greater than the age of Fie. The age of Ace is

- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6

17. PQR is an equilateral triangle, QS and QT divide $\angle PQR$ into three equal parts. The size of $\angle QTS$, in degrees, is

- (A) 60 (B) 70 (C) 80
(D) 90 (E) 100



18. Jim's average score in his first six matches was 8.5. If all scores are whole numbers and his lowest score was 5, what is the lowest value which his highest score could have been?

- (A) 9 (B) 10 (C) 11 (D) 12 (E) 13

24. On a 3×5 chessboard, a counter can move one square at a time along a row or a column, but not along any diagonal. Starting from some squares, it can visit each of the other 14 squares exactly once, without returning to its starting square. Of the 15 squares, how many could be the counter's starting square?
- (A) 5 (B) 6 (C) 7 (D) 8 (E) 9
-

25. Each of Andrew, Bill, Clair, Daniel and Eva either always lies or is always truthful, and they know which each of them is.

Andrew says that Bill is a liar.

Bill says that Clair is a liar.

Clair says that Daniel is a liar.

Daniel says that Eva is a liar.

The largest possible number of liars among them can be

- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
-

For questions 26 to 30, shade the answer as an integer from 0 to 999 in the space provided on the answer sheet.

Question 26 is 6 marks, question 27 is 7 marks, question 28 is 8 marks, question 29 is 9 marks and question 30 is 10 marks.

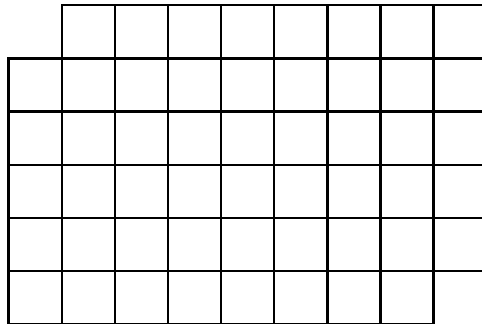
26. Find the sum of all the two-digit integers, XY , between 10 and 99, which have the property that

$$\begin{array}{r} X \ Y \\ \times X \ Y \\ \hline \dots X \ Y \end{array}$$

27. A rectangular area measuring 3 units by 4 units on a wall is to be covered with 6 tiles each measuring 1 unit by 2 units. In how many ways can this be done?
-

28. There are four lifts in a building. Each makes three stops, which do not have to be on consecutive floors or include the ground floor. For any two floors, there is at least one lift which stops on both of them. What is the maximum number of floors that this building can have?
-

29. A grid of squares measuring 9 units by 6 units has the two corners removed as shown:



How many squares of any size are contained within this grid?

-
30. For any positive integer N , consider the digits which occur either in N or in $7 \times N$. Let m be the smallest digit among those digits. What is the largest possible value of m ?
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