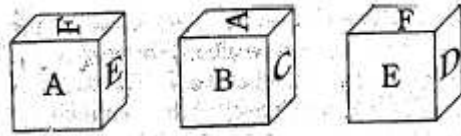


2010 MathEdge+ Int and Adv Contest

Grades 4-5 (I) do problems 1-20. Grades 6-8 (A) do problems 1-25. Please box the answer. Only correct answer counts. No partial credit will be given. No Calculator. 45 mins. The higher # (harder) problems will be used for tiebreak.

- 1) How many 4-digit numbers, with no digits being the same, can be made using the digits: 1, 2, 3, 4, 7, 8, and 9?
- 2) How to add any “(”, “+”, “-“, “x”, “÷”, “)” operators to numbers: 2, 4, 10, 10 to make it equal to 24?
- 3) The three figures below show the same object from different views. Pick a pair of letters that appear on the opposite sides on this cube.



- (A) A and D (B) B and F (C) B and D (D) C and E (E) none of these

- 4) The big rectangle shown below is divided into four smaller rectangles A, B, C, and D. The area of rectangles A, B, and D are given. What is the area of rectangle C?

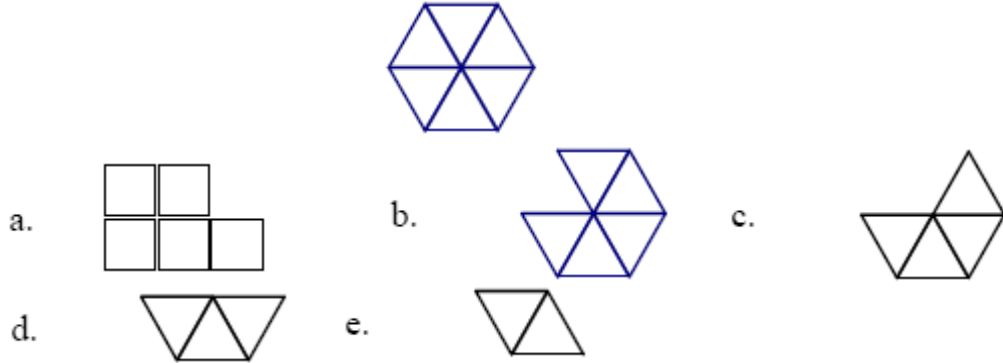
A 20	B 8
C?	D 24

- 5) If A is increased by 10% and B is decreased by 10%, the resulting numbers will be equal. What is the ratio of A to B?
- 6) Suppose you arrive late at a pizza party, just as the pizzas are being served to your friends at two tables. One table has four large pizzas for five people and the other table has seven large pizzas for nine people. You are invited by your friends at both tables to share their pizzas. If you like both groups of friends equally well but want to share the most pizza, which table (with 5 people or with 9 people) would you join?
- 7) A painter has finished painting $\frac{2}{3}$ of a room by 2:00 PM and $\frac{3}{4}$ of the same room by 2:30 PM. At this rate, when does he finish painting the room?

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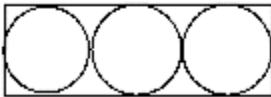
- 8) If the hexagon shown here represents $\frac{3}{2}$, which of the figures would represent $\frac{5}{4}$?



- 9) The integer x has 12 positive integer factors. If 12 and 15 are factors of x , what is x ?

- 10) In a round robin tournament, every team plays every other team once. How many games would need to be scheduled for a ten-team league?

- 11) The area of each circle is 9π . What is the perimeter of the rectangle?



- 12) Find the coordinate of the point on the number line which is one-sixth of the way from $\frac{1}{2}$ to $\frac{7}{8}$. Express your answer as a common fraction.

- 13) Mary and Bill each worked a different number of days but earned the same amount of money. Use these clues to determine how many days did Bill work:
 Mary earned \$20 a day. Bill earned \$15 a day. Bill worked three more days than Mary.

Name _____ Grade _____ Score _____

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14) To prepare for the school's holiday party, Mrs. Party Pop buys 924 chocolate kisses and 490 candy canes. What is the largest number of classes among which she can divide the candy so that each class gets the same amount of each type of candy?

15) There are 29 people in a room. Of these 11 speak Spanish, 24 speak English and 3 speak neither Spanish nor English. How many people in the room speak both Spanish and English?

16) A prime number plus a perfect square equals 99. What is that prime number?

17) A student is writing the counting numbers starting with 1. He has written 846 digits. What is the last number he wrote? (Note: 3 is a digit in the number 432.)

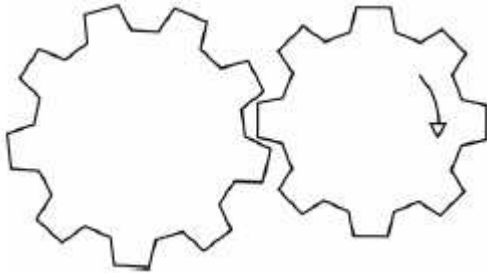
18) The area of the circle is one-sixth of the area of the square.
The area of the small rectangle is one-twelfth of the area of the square. The perimeter of the square is 24 units.
What is the area of the shaded region?



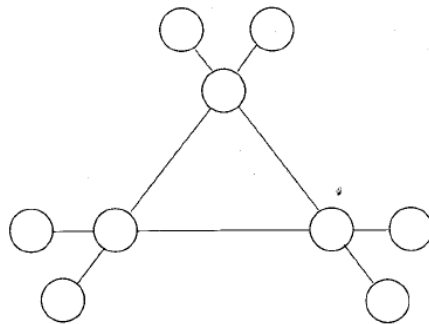
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- 19) The gear in the diagram is made of 2 cog-wheels. The one on the right has 8 teeth (or cogs) and the one on the left, 9 teeth. The wheel with 8 teeth turns in the direction of the arrow and controls the movement of the other. If the wheel with 8 cogs makes 9 complete revolutions, how many revolutions does the other wheel make?



- 20) Fill the 9 circles with numbers 1, 2, 3, 4, 5, 6, 7, 8, and 9 so that the sum of 4 numbers on a straight line is 23.



Name _____ Grade _____ Score _____

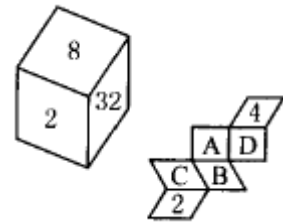
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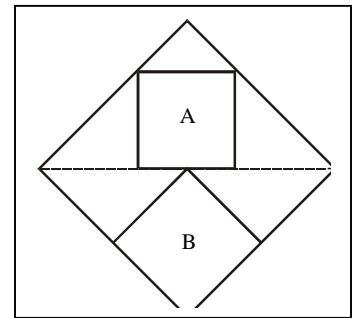
21) When the base ten number 99 is converted to base five, what is the digit in the units place?

22) How many multiples of 9^2 are greater than 9^4 and smaller than 9^5 ?

23) The six faces of a cube is labeled with a number with the property that the product of the opposite sides will equal 128. What would be the value of A, B, C, and D?



24) The diagram shows two squares A and B inside a bigger square. Find the ratio of the area of A to the area of B.



25) In year N, the 300th day of the year is a Tuesday. In year N+1, the 200th day is also a Tuesday. On what day of the week did the 100th day of year N-1 occur?