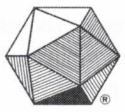
SMacLennan



# MAA AMC

*American Mathematics Competitions*

**MAA American Mathematics Competitions**

**36th Annual**

# AMC 8

**Tuesday, November 10, 2020 through Monday, November 16, 2020**

## INSTRUCTIONS

1. DO NOT OPEN THIS BOOKLET UNTIL YOUR COMPETITION MANAGER TELLS YOU TO BEGIN.
2. This is a 25-question multiple-choice competition. For each question, only one answer choice is correct.
3. Mark your answer to each problem on the answer sheet with a #2 pencil. Check blackened answers for accuracy and erase errors completely. Only answers that are properly marked on the answer sheet will be scored.
4. SCORING: You will receive 1 point for each correct answer, 0 points for each problem left unanswered, and 0 points for each incorrect answer.
5. Only blank scratch paper, rulers, and erasers are allowed as aids. Prohibited materials include calculators, smartwatches, phones, computing devices, compasses, protractors, and graph paper. No problems on the competition will require the use of a calculator.
6. Figures are not necessarily drawn to scale.
7. Before beginning the competition, your competition manager will ask you to record your name and other information on the answer sheet.
8. You will have 40 minutes to complete the competition once your competition manager tells you to begin.
9. When you finish the competition, sign your name in the space provided on the answer sheet.

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The MAA AMC Office reserves the right to disqualify scores from a school if it determines that the rules or the required security procedures were not followed.

W 18 Nov 2020 ↓

1. Luka is making lemonade to sell at a school fundraiser. His recipe requires 4 times as much water as sugar and twice as much sugar as lemon juice. He uses 3 cups of lemon juice. How many cups of water does he need?

   **(A)** 6 **(B)** 8 **(C)** 12 **(D)** 18 **(E)** 24

   $\left(\frac{4 \text{ cups water}}{1 \text{ sugar}}\right)\left(\frac{2 \text{ c sugar}}{1 \text{ c lemon juice}}\right)(3 \text{ c lemon juice})$
   $= 24 \text{ c water} \Rightarrow$ E

2. Four friends do yardwork for their neighbors over the weekend, earning \$15, \$20, \$25, and \$40, respectively. They decide to split their earnings equally among themselves. In total how much will the friend who earned \$40 give to the others?

   **(A)** \$5 **(B)** \$10 **(C)** \$15 **(D)** \$20 **(E)** \$25

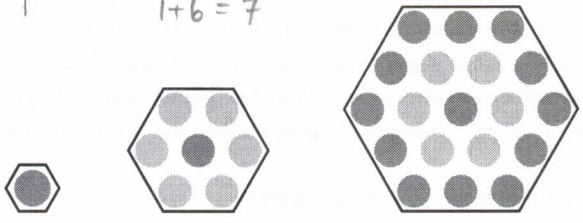
   total $= 15+20+25+40 = 100$
   avg $= \frac{100}{4} = 25$
   \$40 person gives
   $\$40 - \$25 = \$15 \Rightarrow$ C

3. Carrie has a rectangular garden that measures 6 feet by 8 feet. She plants the entire garden with strawberry plants. Carrie is able to plant 4 strawberry plants per square foot, and she harvests an average of 10 strawberries per plant. How many strawberries can she expect to harvest?

   **(A)** 560 **(B)** 960 **(C)** 1120 **(D)** 1920 **(E)** 3840

   # strawberries
   $= \left(10 \frac{\text{sb}}{\text{plant}}\right)\left(4 \frac{\text{plants}}{\text{ft}^2}\right)\left(\frac{48 \text{ ft}^2}{\text{garden}}\right)$
   $= 1920 \text{ sb} \Rightarrow$ D
   area $= 6 \cdot 8 = 48 \text{ ft}^2$

4. Three hexagons of increasing size are shown below. Suppose the dot pattern continues so that each successive hexagon contains one more band of dots. How many dots are in the next hexagon?

   **(A)** 35 **(B)** 37 **(C)** 39 **(D)** 43 **(E)** 49

   Suppose next hexagon has
   $1+6+12+18 = 37$
   $\Rightarrow$ B