2020 AMC 12 A Problems

MAA

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1 Acknowledgement

All the following problems are copyrighted by the Mathematical Association of America's American Mathematics Competitions.

2 Problems

Problem 1 Carlos took 70% of a whole pie. Maria took one third of the remainder. What portion of the whole pie was left?

(A) 10%   **(B)** 15%   **(C)** 20%   **(D)** 30%   **(E)** 35%

Problem 2 The acronym AMC is shown in the rectangular grid below with grid lines spaced 1 unit apart. In units, what is the sum of the lengths of the line segments that form the acronym AMC?

[asy] import olympiad; unitsize(25); for (int i = 0; i < 3; ++i) for (int j = 0; j < 9; ++j) pair A = (j,i);   for (int i = 0; i < 3; ++i) for (int j = 0; j < 9; ++j) if (j != 8) draw((j,i)–(j+1,i), dashed); if (i != 2) draw((j,i)–(j,i+1), dashed);   draw((0,0)–(2,2),linewidth(2)); draw((2,0)–(2,2),linewidth(2)); draw((1,1)–(2,1),linewidth(2)); draw((3,0)–(3,2),linewidth(2)); draw((5,0)–(5,2),linewidth(2)); draw((4,1)–(3,2),linewidth(2)); draw((4,1)–(5,2),linewidth(2)); draw((6,0)–(8,0),linewidth(2)); draw((6,2)–(8,2),linewidth(2)); draw((6,0)–(6,2),linewidth(2)); [/asy]

(A) 17   **(B)** $15+2\sqrt{2}$ **(C)** $13+4\sqrt{2}$ **(D)** $11+6\sqrt{2}$ **(E)** 21