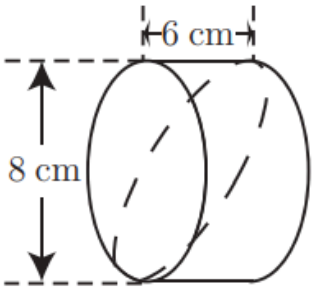
1 / 14

2008 Q21

21. Jerry cuts a wedge from a 6-cm cylinder of bologna as shown by the dashed curve. Which answer choice is closest to the volume of his wedge in cubic centimeters?

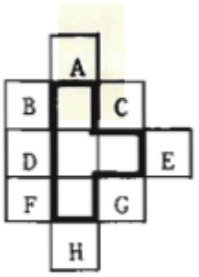


(A) 48 **(B)** 75 **(C)** 151 **(D)** 192 **(E)** 603

2 / 14

1986 Q21

21. Suppose one of the eight lettered identical squares is included with the four squares in the T-shaped figure outlined. How many of the resulting figures can be folded into a topless cubical box?



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

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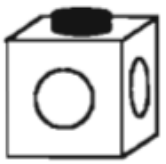
1995 Q21

21. A plastic snap-together cube has a protruding snap on one side and receptacle holes on the other five sides as shown. What is the smallest number of these cubes that can be snapped together so that only receptacle holes are showing?



(A) 3 **(B)** 4 **(C)** 5 **(D)** 6 **(E)** 8

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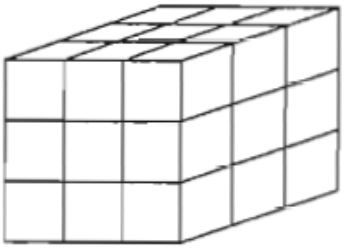
1997 Q21

21. Each corner cube is removed from this 3 cm x 3 cm x 3 cm cube. The surface area of the remaining figure is



(A) 19 sq.cm **(B)** 24 sq.cm **(C)** 30 sq.cm **(D)** 54 sq.cm **(E)** 72 sq.cm

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1998 Q21

21. A $4 \times 4 \times 4$ cubical box contains 64 identical small cubes that exactly fill the box. How many of these small cubes touch a side or the bottom of the box?

(A) 48 **(B)** 52 **(C)** 60 **(D)** 64 **(E)** 80

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2012 Q21

21. Marla has a large white cube that has an edge of 10 feet. She also has enough green paint to cover 300 square feet. Marla uses all the paint to create a white square centered on each face, surrounded by a green border. What is the area of one of the white squares, in square feet?

(A) $5\sqrt{2}$ **(B)** 10 **(C)** $10\sqrt{2}$ **(D)** 50 **(E)** $50\sqrt{2}$

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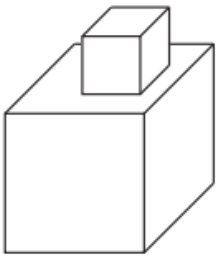
2000 Q22

22. A cube has edge length 2. Suppose that we glue a cube of edge length 1 on top of the big cube so that one of its faces rests entirely on the top face of the larger cube. The percent increase in the surface area (sides, top, and bottom) from the original cube to the new solid formed is closest to:



(A) 10 **(B)** 15 **(C)** 17 **(D)** 21 **(E)** 25

8 / 14

1997 Q22

22. A two-inch cube (2x2x2) of silver weighs 3 pounds and is worth \$200. How much is a three-inch cube of silver worth?

(A) \$300 **(B)** \$375 **(C)** \$450 **(D)** \$560 **(E)** \$675

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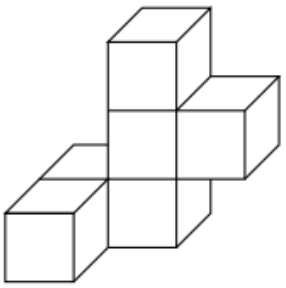
2002 Q22

22. Six cubes, each an inch on an edge, are fastened together, as shown. Find the total surface area in square inches. Include the top, bottom and sides.



(A) 18 **(B)** 24 **(C)** 26 **(D)** 30 **(E)** 36

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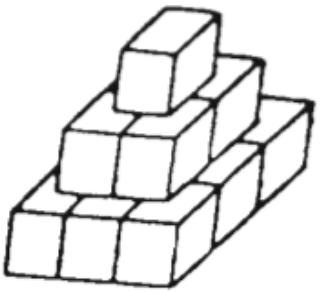
1989 Q23

23. An artist has 14 cubes, each with an edge of 1 meter. She stands them on the ground to from a sculpture as shown. She then paints the exposed surface of the sculpture. How many square meters does she paint?



A) 21 B) 24 C) 33 D) 37 E) 42

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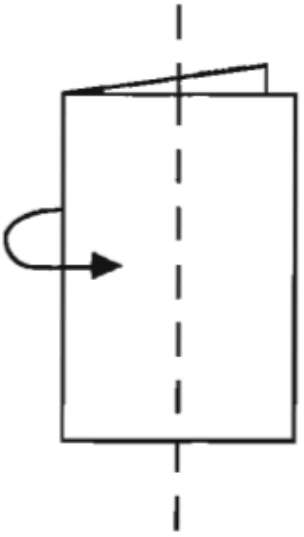
1989 Q24

24. **Suppose a square piece of paper is folded in half vertically. The folded paper is then cut in half along the dashed line. Three rectangles are formed–a large one and two small ones. What is the ratio of the perimeter of one of the small rectangles to the perimeter of the large rectangle?**



A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$ D) $\frac{4}{5}$ E) $\frac{5}{6}$

1991 Q24

24. A cube of edge 3 cm is cut into N smaller cubes, not all the same size. If the edge of each of the smaller cubes is a whole number of centimeters, then $N =$

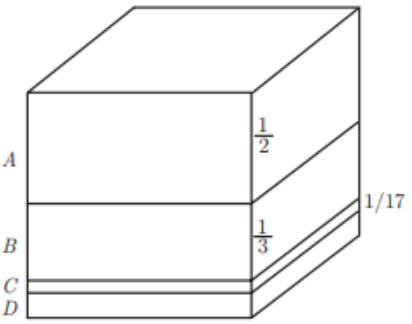
(A) 4 **(B)** 8 **(C)** 12 **(D)** 16 **(E)** 20

1994 Q24

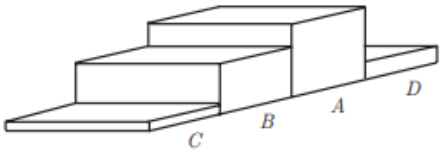
24. A 2 by 2 square is divided into four 1 by 1 squares. Each of the small squares is to be painted either green or red. In how many different ways can the painting be accomplished so that no green square shares its top or right side with any red square? There may be as few as zero or as many as four small green squares.

(A) 4 **(B)** 6 **(C)** 7 **(D)** 8 **(E)** 16

2009 Q25



25. A one-cubic-foot cube is cut into four pieces by three cuts parallel to the top face of the cube. The first cut is $\frac{1}{2}$ foot from the top face. The second cut is $\frac{1}{3}$ foot below the first cut, and the third cut is $\frac{1}{17}$ foot below the second cut. From the top to the bottom the pieces are labeled A, B, C and D. The pieces are then glued together end to end in the order C, B, A, D to make a long solid as shown below. What is the total surface area of this solid in square feet?



(A) 6 **(B)** 7 **(C)** $\frac{419}{51}$ **(D)** $\frac{158}{17}$ **(E)** 11