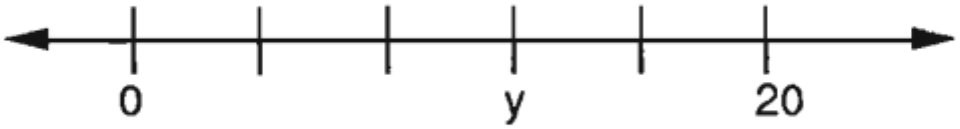
1 / 14

1989 Q6

6. If the markings on the number line are equally spaced, what is the number y?

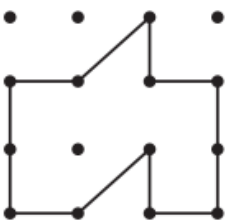


A) 3 B) 10 C) 12 D) 15 E) 16

2 / 14

1998 Q6

6. Dots are spaced one unit part, horizontally and vertically. The number of square units enclosed by the polygon is



(A) 5 **(B)** 6 **(C)** 7 **(D)** 8 **(E)** 9

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2010 Q6

6. Which of the following figures has the greatest number of lines of symmetry?

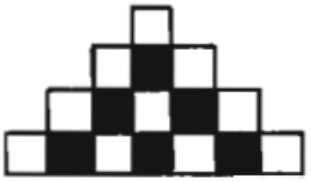
(A) equilateral triangle **(B)** non-square rhombus

(C) non-square rectangle **(D)** isosceles trapezoid **(E)** square

4 / 14

1985 Q7

7. A "stair-step" figure is made up of alternating black and white squares in each row. Rows 1 through 4 are shown. All rows begin and end with a white square. The number of black squares in the 37th row is



A) 34 B) 35 C) 36 D) 37 E)38

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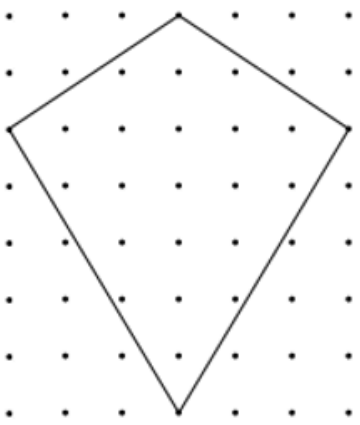
2001 Q7

To promote her school's annual Kite Olympics, Genevieve makes a small kite and a large kite for a bulletin board display. The kites look like the one in the diagram. For her small kite Genevieve draws the kite on a one-inch grid. For the large kite she triples both the height and width of the entire grid.

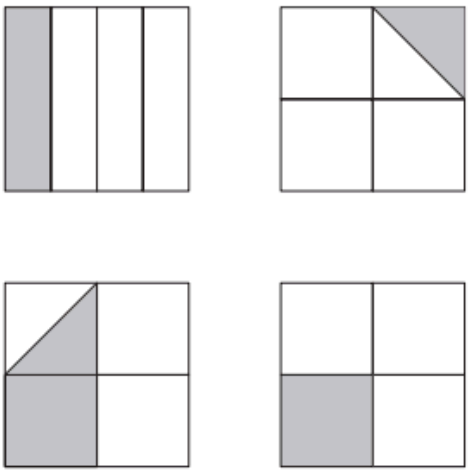


7. What is the number of square inches in the area of the small kite?

(A) 21 (B) 22 (C) 23 (D) 24 (E) 25

2011 Q7

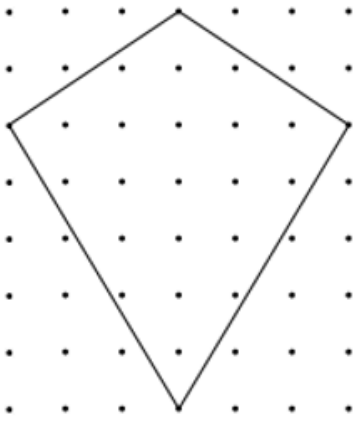
7. Each of the following four large congruent squares is subdivided into combinations of congruent triangles or rectangles and is partially shaded. What percent of the total area is partially shaded?



(A) $12\frac{1}{2}$ **(B)** 20 **(C)** 25 **(D)** $33\frac{1}{3}$ **(E)** $37\frac{1}{2}$

2001 Q8

To promote her school's annual Kite Olympics, Genevieve makes a small kite and a large kite for a bulletin board display. The kites look like the one in the diagram. For her small kite Genevieve draws the kite on a one-inch grid. For the large kite she triples both the height and width of the entire grid.



7. What is the number of square inches in the

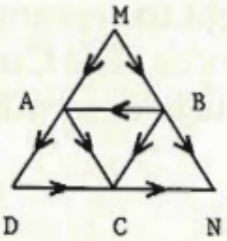
8. Genevieve puts bracing on her large kite in the form of a cross connecting opposite corners of the kite. How many inches of bracing material does she need?

(A) 30 (B) 32 (C) 35 (D) 38 (E) 39

A

1986 Q9

9. Using only the paths and the directions shown, how many different routes are there from M to N?



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

2007 Q9

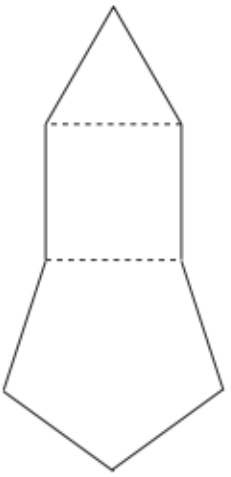
9. To complete the grid below, each of the digits 1 through 4 must occur once in each row and once in each column. What number will occupy the lower right-hand square?

1		2	
2	3		
			4

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** cannot be determined

2009 Q9

9. Construct a square on one side of an equilateral triangle. On one non-adjacent side of the square, construct a regular pentagon, as shown. On a non-adjacent side of the pentagon, construct a regular hexagon. Continue to construct regular polygons in the same way, until you construct an octagon. How many sides does the resulting polygon have?



(A) 21 **(B)** 23 **(C)** 25 **(D)** 27 **(E)** 29

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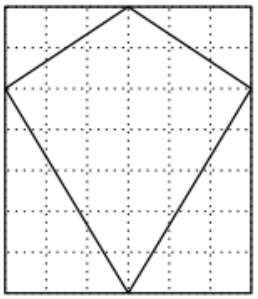
2001 Q9

9. The large kite is covered with gold foil. The foil is cut from a rectangular piece that just covers the entire grid. How many square inches of waste material are cut off from the four corners?

(A) 63 (B) 72 (C) 180 (D) 189 (E) 264



9. (D) The upper corners can be arranged to form a 6×9 rectangle and the lower corners can be arranged to form a 15×9 rectangle. The total area is $54 + 135 = 189$ square inches. (Note that the kite's area is also 189 square inches.)

OR

The area cut off equals the area of the kite. If each dimension is tripled, the area is $3 \times 3 = 9$ times as large as the original area and $21 \times 9 = 189$ square inches. In general, if one dimension is multiplied by a number x and the other by a number y, the area is multiplied by $x \times y$.

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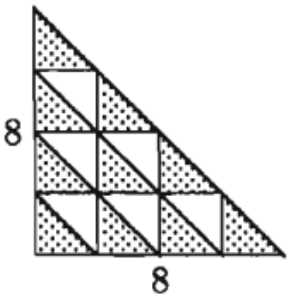
1992 Q10

10. An isosceles right triangle with legs of length 8 is partitioned into 16 congruent triangles as shown. The shaded area is

(A) 10 (B) 20 (C) 32 (D) 40 (E) 64



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1997 Q10

10. What fraction of this square region is shaded? Stripes are equal in width, and the figure is drawn to scale.

(A) $\frac{5}{12}$ (B) $\frac{1}{2}$ (C) $\frac{7}{12}$ (D) $\frac{2}{3}$ (E) $\frac{5}{6}$

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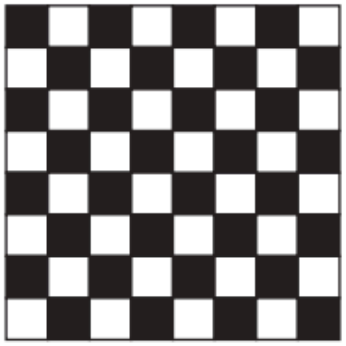
2009 Q10

10. On a checkerboard composed of 64 unit squares, what is the probability that a randomly chosen unit square does **not** touch the outer edge of the board?



(A) $\frac{1}{16}$ **(B)** $\frac{7}{16}$ **(C)** $\frac{1}{2}$ **(D)** $\frac{9}{16}$ **(E)** $\frac{49}{64}$