

**2015 Q1**

1. How many square yards of carpet are required to cover a rectangular floor that is 12 feet long and 9 feet wide? (There are 3 feet in a yard.)
- (A) 12      (B) 36      (C) 108      (D) 324      (E) 972

1. **Answer (A):** The floor is  $\frac{12}{3} = 4$  yards long and  $\frac{9}{3} = 3$  yards wide, so it will take  $4 \times 3 = 12$  square yards of carpet to cover it.

**OR**

The area of the floor is  $12 \times 9$  square feet. There are  $3^2 = 9$  square feet in a square yard, so the number of square yards required is  $\frac{12 \times 9}{9} = 12$ .

**2011 Q2**

2. Karl's rectangular vegetable garden is 20 feet by 45 feet, and Makenna's is 25 feet by 40 feet. Whose garden is larger in area?
- (A) Karl's garden is larger by 100 square feet.  
(B) Karl's garden is larger by 25 square feet.  
(C) The gardens are the same size.  
(D) Makenna's garden is larger by 25 square feet.  
(E) Makenna's garden is larger by 100 square feet.

2. **Answer (E):** Karl's garden is  $20 \times 45 = 900$  square feet. Makenna's garden is  $25 \times 40 = 1000$  square feet. Makenna's garden is larger by  $1000 - 900 = 100$  square feet.

**2005 Q4**

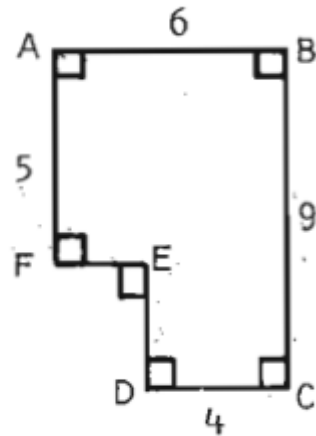
4. A square and a triangle have equal perimeters. The lengths of the three sides of the triangle are 6.1 cm, 8.2 cm and 9.7 cm. What is the area of the square in square centimeters?
- (A) 24                      (B) 25                      (C) 36                      (D) 48                      (E) 64

4. (C) The perimeter of the triangle is  $6.1 + 8.2 + 9.7 = 24$  cm. The perimeter of the square is also 24 cm. Each side of the square is  $24 \div 4 = 6$  cm. The area of the square is  $6^2 = 36$  square centimeters.

1985 Q4

4. The area of polygon ABCDEF, in square units, is

- A) 24      B) 30      C) 46  
 D) 66      E) 74



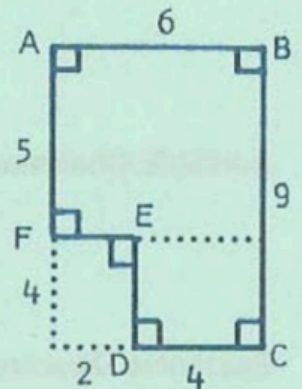
4. (C) The area is greater than  $6 \times 5 = 30$  and less than  $6 \times 9 = 54$  so (C) must be correct.

OR

Extending FE partitions the polygon into a rectangle and a square whose areas are 30 and 16 respectively.

OR

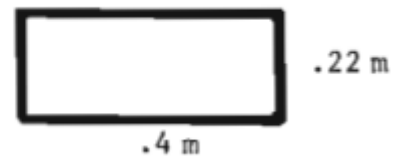
Extending AF and DC to form the large rectangle shows that area is  $(6 \times 9) - (4 \times 2) = 54 - 8 = 46$ .



1987 Q5

5. The area of the rectangular region is

- A)  $.088 \text{ m}^2$       B)  $.62 \text{ m}^2$       C)  $.88 \text{ m}^2$   
 D)  $1.24 \text{ m}^2$       E)  $4.22 \text{ m}^2$



5. A The area is  $(.4 \text{ m})(.22 \text{ m}) = .088 \text{ m}^2$ .

## 1987 Q4

4. Martians measure angles in clerts. There are 500 clerts in a full circle. How many clerts are there in a right angle?

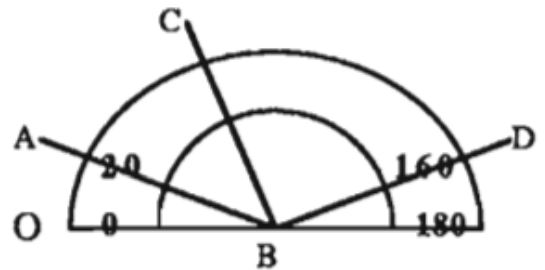
- A) 90    B) 100    C) 125    D) 180    E) 250

4. C A right angle is  $\frac{1}{4}$  of a full circle, so there are  $\frac{1}{4}(500) = 125$  clerts in a right angle.

## 1988 Q5

5. If  $\angle CBD$  is a right angle, then this protractor indicates that the measure of  $\angle ABC$  is approximately

- A)  $20^\circ$     B)  $40^\circ$     C)  $50^\circ$   
 D)  $70^\circ$     E)  $120^\circ$



5. C Since  $\angle CBD$  is a right angle, side BC must cross the protractor at  $70^\circ$ . Thus the measure of  $\angle ABC$  is  $70^\circ - 20^\circ = 50^\circ$ .

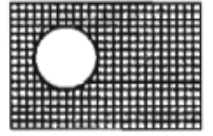
OR

$$\angle ABC = \angle ABD - \angle CBD = (\angle OBD - \angle OBA) - \angle CBD = (160^\circ - 20^\circ) - 90^\circ = 50^\circ.$$

## 1992 Q5

5. A circle of diameter 1 is removed from a  $2 \times 3$  rectangle, as shown. Which whole number is closest to the area of the shaded region?

(A) 1      (B) 2      (C) 3      (D) 4      (E) 5



5. (E) The area of the circle is between  $1/2$  and 1. To see this, draw squares around and inside the circle. The area of the large square is 1, the area of the small square is  $1/2$ , and the circle fits between the two squares. The area of the rectangle with the circle removed is therefore between 5 and 5.5, so the whole number closest to this area is 5.



OR

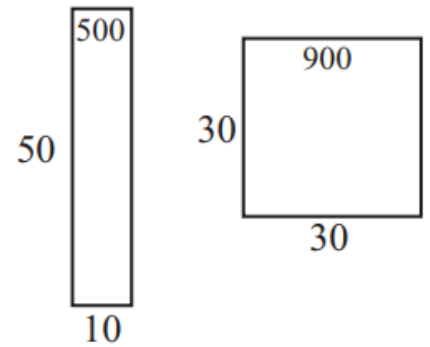
The area of the rectangle is  $2 \times 3 = 6$ , and the area of the circle with radius  $\frac{1}{2}$  is  $\pi \left(\frac{1}{2}\right)^2 = \frac{\pi}{4}$ , which is slightly larger than  $\frac{3}{4}$ . Thus the area of the resulting figure is slightly smaller than  $6 - \frac{3}{4}$ , so it is closest to 5.

## 1999 Q5

5. A rectangular garden 50 feet long and 10 feet wide is enclosed by a fence. To make the garden larger, while using the same fence, its shape is changed to a square. By how many square feet does this enlarge the garden?

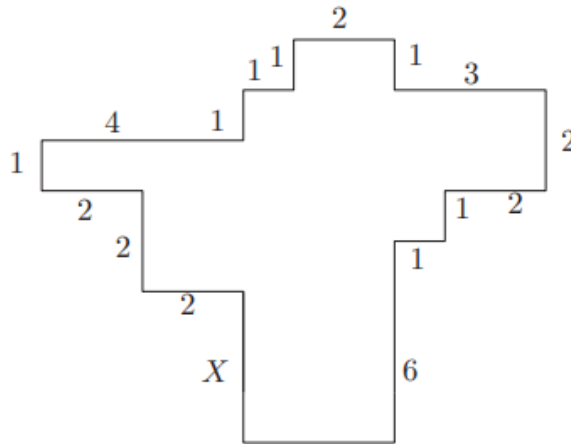
(A) 100      (B) 200      (C) 300      (D) 400      (E) 500

5. **Answer (D):** The area of the garden was 500 square feet ( $50 \times 10$ ) and its perimeter was 120 feet,  $2 \times (50 + 10)$ . The square garden is also enclosed by 120 feet of fence so its sides are each 30 feet long. The square garden's area is 900 square feet ( $30 \times 30$ ), and this has increased the garden area by 400 square feet.



**2012 Q5**

5. In the diagram, all angles are right angles and the lengths of the sides are given in centimeters. Note the diagram is not drawn to scale. What is  $X$ , in centimeters?



- (A) 1      (B) 2      (C) 3      (D) 4      (E) 5

5. **Answer (E):** The vertical sides on the left add up to  $5 + X$  while the vertical sides on the right add up to 10. Therefore  $X = 5$ .