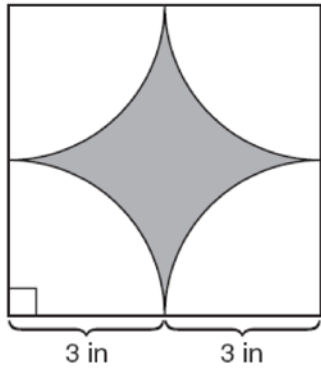


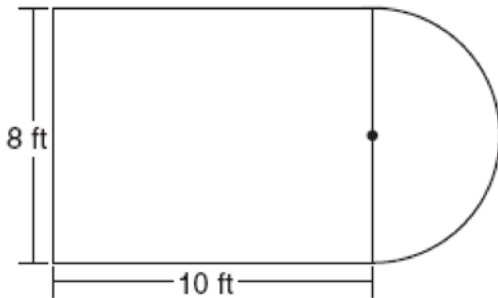
G.MG.A.3: Compositions of Polygons and Circles 2

- 1 A designer created the logo shown below. The logo consists of a square and four quarter-circles of equal size.



Express, in terms of π , the exact area, in square inches, of the shaded region.

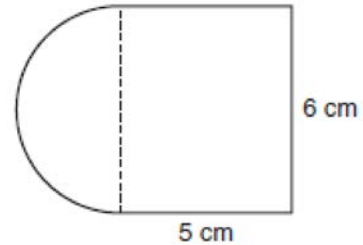
- 2 Luis is going to paint a basketball court on his driveway, as shown in the diagram below. This basketball court consists of a rectangle and a semicircle.



Which expression represents the area of this basketball court, in square feet?

- 1) 80
- 2) $80 + 8\pi$
- 3) $80 + 16\pi$
- 4) $80 + 64\pi$

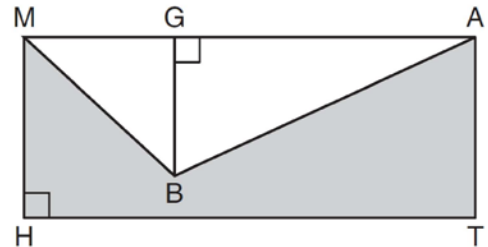
- 3 A figure is made up of a rectangle and a semicircle as shown in the diagram below.



What is the area of the figure, to the nearest tenth of a square centimeter?

- 1) 39.4
- 2) 44.1
- 3) 48.8
- 4) 58.3

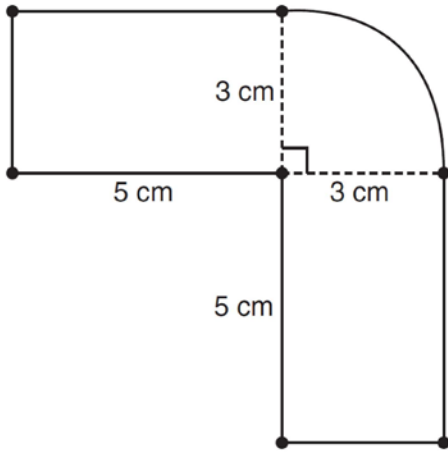
- 4 In the diagram below, $MATH$ is a rectangle, $GB = 4.6$, $MH = 6$, and $HT = 15$.



What is the area of polygon $MBATH$?

- 1) 34.5
- 2) 55.5
- 3) 90.0
- 4) 124.5

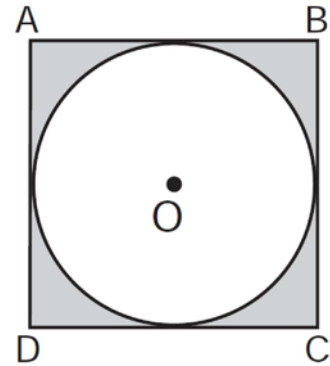
- 5 The figure shown below is composed of two rectangles and a quarter circle.



What is the area of this figure, to the *nearest square centimeter*?

- 1) 33
- 2) 37
- 3) 44
- 4) 58

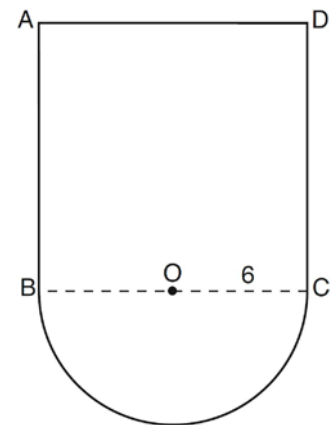
- 6 In the diagram below, circle O is inscribed in square $ABCD$. The square has an area of 36.



What is the area of the circle?

- 1) 9π
- 2) 6π
- 3) 3π
- 4) 36π

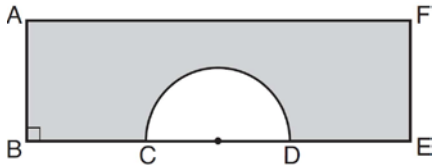
- 7 In the figure below, $ABCD$ is a square and semicircle O has a radius of 6.



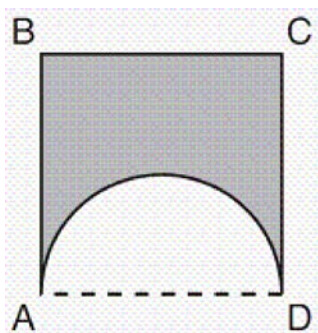
What is the area of the figure?

- 1) $36 + 6\pi$
- 2) $36 + 18\pi$
- 3) $144 + 18\pi$
- 4) $144 + 36\pi$

- 8 In the diagram below of rectangle $AFEB$ and a semicircle with diameter \overline{CD} , $AB = 5$ inches, $AB = BC = DE = FE$, and $CD = 6$ inches. Find the area of the shaded region, to the *nearest hundredth of a square inch*.



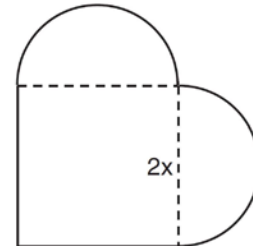
- 9 A figure consists of a square and a semicircle, as shown in the diagram below.



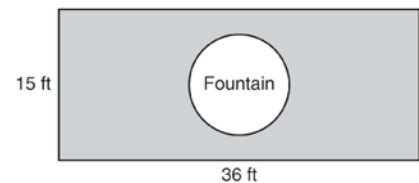
If the length of a side of the square is 6, what is the area of the shaded region?

- 1) $36 - 3\pi$
- 2) $36 - 4.5\pi$
- 3) $36 - 6\pi$
- 4) $36 - 9\pi$

- 10 A patio consisting of two semicircles and a square is shown in the diagram below. The length of each side of the square region is represented by $2x$. Write an expression for the area of the entire patio, in terms of x and π .



- 11 The Rock Solid Concrete Company has been asked to pave a rectangular area surrounding a circular fountain with a diameter of 8 feet, as shown in the diagram.



Find the area, to the *nearest square foot*, that must be paved. Find the cost, *in dollars*, of paving the area if the Rock Solid Concrete Company charges \$8.95 per square foot.

G.MG.A.3: Compositions of Polygons and Circles 2

Answer Section

1 ANS:

Area of square—area of 4 quarter circles. $(3 + 3)^2 - 3^2 \pi = 36 - 9\pi$

REF: 060832ia

2 ANS: 2 REF: 080815ia

3 ANS: 2

$$A = lw + \frac{\pi r^2}{2} = 6 \cdot 5 + \frac{\pi \cdot 3^2}{2} \approx 44.1$$

REF: 061029ia

4 ANS: 2

shaded = whole – unshaded

= rectangle-triangle

$$= lw - \frac{1}{2}bh$$

$$= 15 \times 6 - \frac{1}{2} \times 15 \times 4.6$$

$$= 90 - 34.5$$

$$= 55.5$$

REF: 081019ia

5 ANS: 2

$$A = lw + lw + \frac{\pi r^2}{4} = 5 \cdot 3 + 5 \cdot 3 + \frac{\pi \cdot 3^2}{4} \approx 37$$

REF: 011123ia

6 ANS: 1

If the area of the square is 36, a side is 6, the diameter of the circle is 6, and its radius is 3. $A = \pi r^2 = 3^2 \pi = 9\pi$

REF: 011217ia

7 ANS: 3 REF: 011315ia

8 ANS:

$$\text{Area of rectangle minus area of semicircle: } (5 + 6 + 5) \times 5 - \frac{\pi \times 3^2}{2} \approx 65.86$$

REF: 061339ia

9 ANS: 2

$$6^2 - \frac{(3)^2 \pi}{2}$$

REF: 011407ia

10 ANS:

$$(2x)^2 + \pi x^2 = 4x^2 + \pi x^2$$

REF: 061431ia

11 ANS:

$$(15 \times 36) - (\pi \cdot 4^2) \approx 490 \quad 490 \times 8.95 = 4385.50$$

REF: 011537ia