G.GMD.A.1: Area of Circles

1 If the circumference of a circle is 10π inches, what is the area, in square inches, of the circle?
1) 10π
2) 25π
3) 50π
4) 100π

2 The circumference of a circle measures 22π units. Find the number of square units in the area of the circle. Express your answer in terms of π.

3 A dog is tied with a rope to a stake in the ground. The length of the rope is 5 yards. What is the area, in square yards, in which the dog can roam?
1) 25π
2) 10π
3) 25
4) 20

4 A circular garden has a diameter of 12 feet. How many bags of topsoil must Linda buy to cover the garden if one bag covers an area of 3 square feet?
1) 13
2) 38
3) 40
4) 151

5 The circumference of a circular plot of land is increased by 10%. What is the best estimate of the total percentage that the area of the plot increased?
1) 10%
2) 21%
3) 25%
4) 31%

6 If an arc of 60° on circle *A* has the same length as an arc of 45° on circle *B*, what is the ratio of the area of circle *B* to the area of circle *A*?

G.GMD.A.1: Area of Circles
Answer Section

1 ANS: 2

$$\begin{aligned} C &= \pi d \\ 10\pi &= \pi d \\ d &= 10 \\ r &= 5 \end{aligned} \quad . \quad \begin{aligned} A &= \pi r^2 \\ &= 5^2\pi \\ &= 25\pi \end{aligned}$$

REF: 010012a

2 ANS:

121π.

$$\begin{aligned} C &= \pi d \\ 22\pi &= \pi d \\ d &= 22 \\ r &= 11 \end{aligned} \quad . \quad \begin{aligned} A &= \pi r^2 \\ &= 11^2\pi \\ &= 121\pi \end{aligned}$$

REF: 010831a

3 ANS: 1

$A = \pi r^2 = 5^2\pi = 25\pi$

REF: 010617a

4 ANS: 2

$$\begin{aligned} A &= \pi r^2 \\ &= 6^2\pi \\ &= 36\pi \end{aligned} \quad . \quad \frac{36\pi}{3} \approx 38$$

REF: 010717a

5 ANS: 2

If the circumference is increased by 10%, radius is also increased by 10%. $1.1^2 = 1.21$

REF: 060106b

6 ANS:

$\frac{16}{9}$. $\theta_A = 60° = \frac{\pi}{3}$ $\theta_B = 45° = \frac{\pi}{4}$. $\frac{\pi}{3} r_A = \frac{\pi}{4} r_B$. If the ratio of the radii of circle *A* and *B* is $\frac{4}{3}$, the ratio of their areas is $\frac{16}{9}$.

$$s_A = s_B$$
$$\theta_A r_A = \theta_B r_B$$
$$\frac{r_B}{r_A} = \frac{\frac{\pi}{3}}{\frac{\pi}{4}}$$
$$\frac{r_B}{r_A} = \frac{4}{3}$$

REF: fall9932b