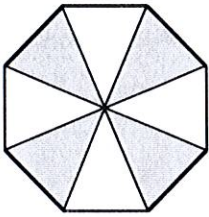


Geometric Probability – Area Problems Worksheet

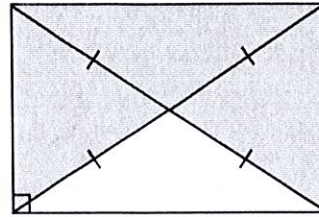
Find the probability that a randomly chosen point in the figure lies in the shaded region. Give all answers in fraction and percent forms.

1.



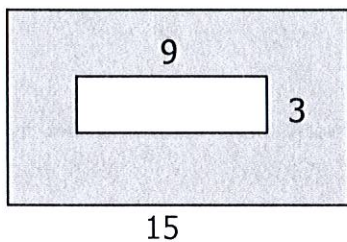
$$\frac{1}{2}, 50\%$$

2.



$$\frac{3}{4}, 75\%$$

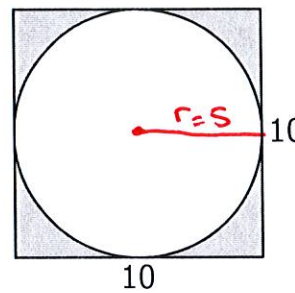
3.



$$9 \frac{108}{135} = \frac{4}{5}, 80\%$$

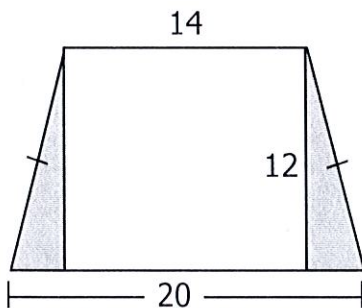
$$\begin{array}{r} \text{Big A} = 135 \\ \text{Sm A} = -27 \\ \hline 108 \end{array}$$

4.



$$\frac{100 - \pi r^2}{100} = \frac{21.46}{100}, 21.46\%$$

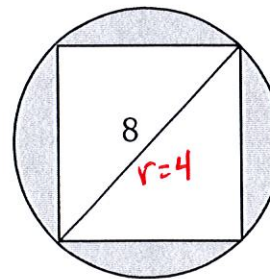
5.



$$\frac{36}{204} = \frac{3}{17}, 17.65\%$$

$$\begin{array}{r} \text{Big A} = 204 \\ \text{Sm A} = -168 \\ \hline 36 \end{array}$$

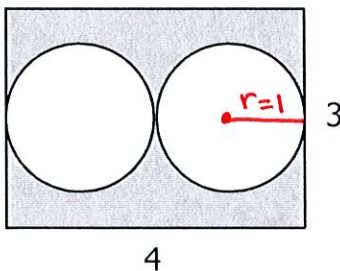
6.



$$\frac{50.27 - 32}{50.27} = \frac{18.27}{50.27} = 36.34\%$$

$$\begin{array}{l} \text{Big A} = \pi(4^2) = 50.27 \\ \text{Sm A} = \frac{1}{2}(8)(8) = 32 \\ \text{(Rhombus)} \end{array}$$

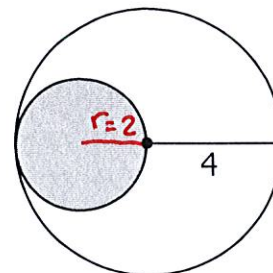
7.



$$\frac{5.72}{12}, 47.64\%$$

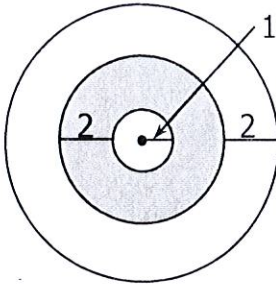
$$12 - 2\pi(1^2) = 5.72$$

8.



$$\frac{\pi(4^2) - \pi(2^2)}{\pi(4^2)} = \frac{3}{4}, 75\%$$

9.



$$\text{Big } A = \pi(5^2) = 25\pi$$

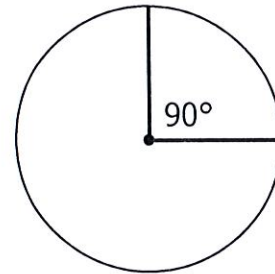
$$\text{Shaded} = \pi(3^2) - \pi(1^2) = 8\pi$$

$$P(\text{shaded}) = \frac{8\pi}{25\pi} = \frac{8}{25}, 32\%$$

10. The figure shows a circle that intercepts an arc of 90° .

- a. Find the probability that a randomly chosen point on the circle lies on the arc.

$$\left. \begin{array}{l} \text{whole circle: } \pi d \\ \text{arc: } \frac{90}{360} \pi d = \frac{1}{4} \pi d \end{array} \right\} \frac{\frac{1}{4} \pi d}{\pi d} = \frac{1}{4}$$



- b. Find the probability that a randomly chosen point in the circle lies in the 90° sector.

$$\left. \begin{array}{l} \text{Whole circle: } \pi r^2 \\ \text{sector: } \frac{1}{4} \pi r^2 \end{array} \right\} \frac{\frac{1}{4} \pi r^2}{\pi r^2} = \frac{1}{4}$$

11. Find the probability for each outcome on the game spinner shown at the right.

- a. Receive a free turn $\frac{90}{360} = \frac{1}{4}$

- b. Lose a turn $\frac{140}{360} = \frac{7}{18}$

- c. Receive 10 bonus points $\frac{30}{360} = \frac{1}{12}$

- d. Move forward 2 spaces $\frac{70}{360} = \frac{7}{36}$

- e. Lose 5 points $\frac{1}{12}$

