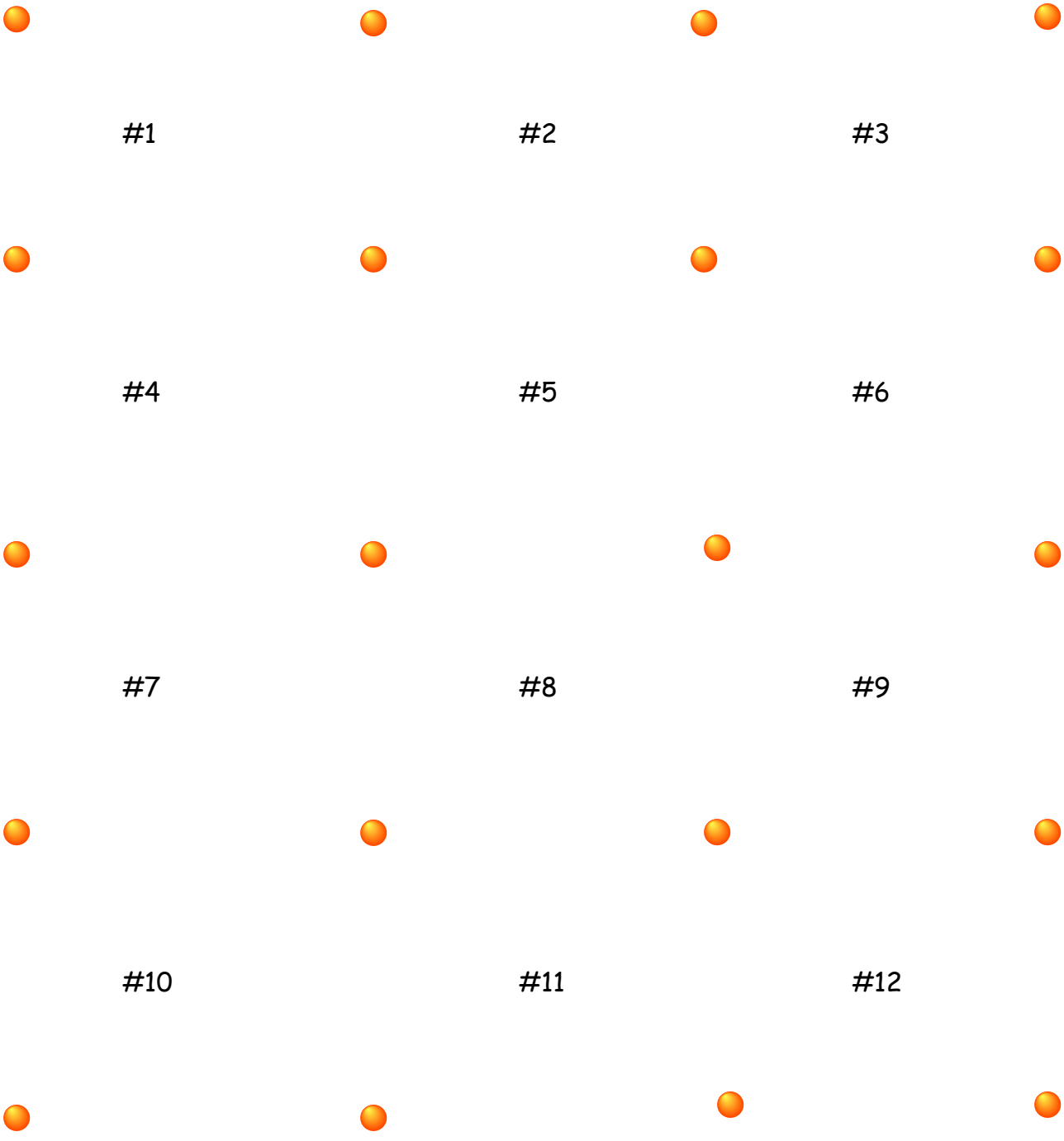
Geometry
12.3 Dot Game

Names: _____

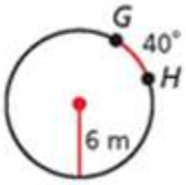
Directions: Each player takes turns connecting two dots with a line. If a player fills in a square AND completes the problem correctly, then they earn that square. The answer is incorrect the other player can steal the square. The player with the most squares wins!



Final Score: _____'s Score: ____ _____'s Score: ____

Names: Key
12.3 Dot Game

1. Find the length of arc GH.



$2\pi r\left(\frac{m}{360}\right)$

$2\pi(6)\left(\frac{40}{360}\right)$

$12\pi\left(\frac{40}{360}\right) = \boxed{\frac{4}{3}\pi}$

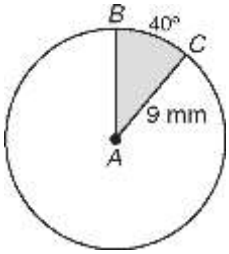
2. Find the length of an arc with measure 135° in a circle with a radius of 4 cm.

$2\pi r\left(\frac{m}{360}\right) = 2\pi(4)\left(\frac{135}{360}\right)$

$= 8\pi\left(\frac{135}{360}\right)$

$= \boxed{3\pi}$

3. Find the area of sector BAC.



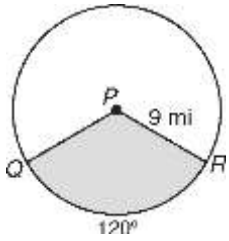
$A = \pi r^2\left(\frac{m}{360}\right)$

$= \pi(9)^2\left(\frac{40}{360}\right)$

$= 81\pi\left(\frac{40}{360}\right)$

$= \boxed{9\pi}$

4. Find the area of sector QPR.



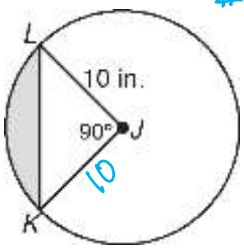
$A = \pi r^2\left(\frac{m}{360}\right)$

$= \pi(9)^2\left(\frac{120}{360}\right)$

$= 81\pi\left(\frac{120}{360}\right)$

$= \boxed{27\pi}$

5. Find the area of segment KJL.



#1 Area of Sector

$10^2\pi\left(\frac{90}{360}\right) = 25\pi$

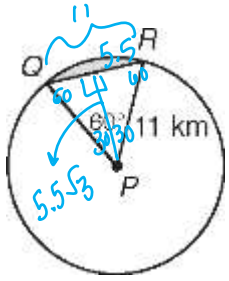
#2 Area of $\triangle$

$\frac{1}{2}(10)(10) = 50$

#3 Sector $-$ $\triangle$

$\boxed{25\pi - 50\ \text{in}^2}$

6. Find the area of segment QPR.



#1 Area of Sector

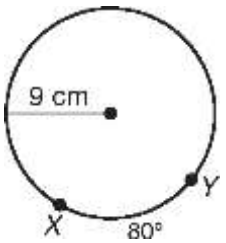
$11^2\pi\left(\frac{60}{360}\right) = \frac{121}{6}\pi$

#2 Area of $\triangle$

$\frac{1}{2}(11)(5.5\sqrt{3}) = \frac{121}{4}\sqrt{3}$

#3 $\boxed{\left(\frac{121}{6}\pi - \frac{121}{4}\sqrt{3}\right)\text{km}^2}$

7. Find the length of arc XY.



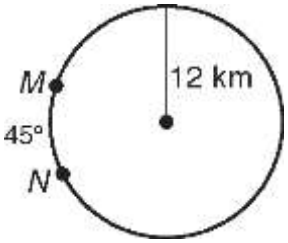
$2\pi r\left(\frac{m}{360}\right)$

$2\pi(9)\left(\frac{80}{360}\right)$

$18\pi\left(\frac{80}{360}\right)$

$\boxed{4\pi}$

8. Find the length of arc MN



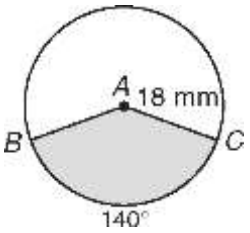
$2\pi r\left(\frac{m}{360}\right)$

$2\pi(12)\left(\frac{45}{360}\right)$

$24\pi\left(\frac{45}{360}\right)$

$\boxed{3\pi}$

9. Find the area of sector BAC.



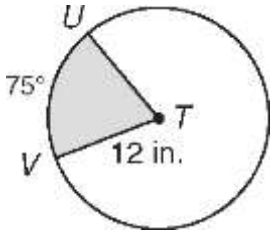
$A = \pi r^2 \left(\frac{m}{360}\right)$

$18^2\pi \left(\frac{140}{360}\right)$

$324\pi \left(\frac{140}{360}\right)$

126π

10. Find the area of sector UTV.

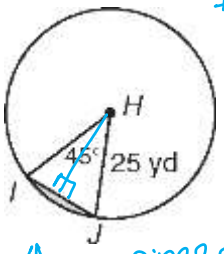


$A = 12^2\pi \left(\frac{75}{360}\right)$

$= 144\pi \left(\frac{75}{360}\right)$

30π

11. Find the area of the segment.



#1 Area Sector

$25^2\pi \left(\frac{45}{360}\right) \approx 245.4$

#2 Area of Δ

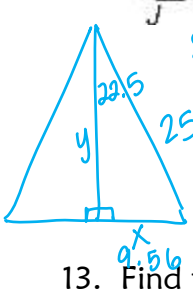
$\frac{1}{2}(23.1)(19.12)$

$= 220.8$

#3 Sector $-$ Δ

$245.4 - 220.8$

24.6



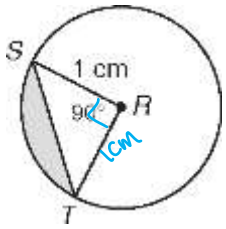
$\sin 22.5 = \frac{x}{25}$

$x = 9.56$

$\cos 22.5 = \frac{y}{25}$

$y = 23.1$

12. Find the area of the segment.



#1 Area Sector

$1^2\pi \left(\frac{90}{360}\right) = \frac{1}{4}\pi$

#2 Area of Δ

$\frac{1}{2}(1)(1) = \frac{1}{2}$

#3 Area of Segment

$\left(\frac{1}{4}\pi - \frac{1}{2}\right) cm^2$

13. Find the length of an arc with a measure of 45° in a circle with radius of 2 mi.

$2\pi r \left(\frac{m}{360}\right) = 2\pi(2)\left(\frac{45}{360}\right)$

$= 4\pi \left(\frac{45}{360}\right)$

$= \frac{1}{2}\pi$

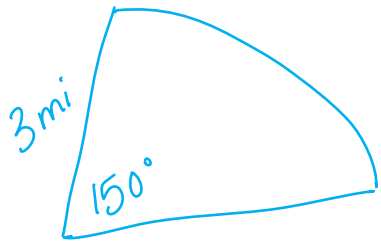
14. Find the length of arc with a measure of 120° in a circle with radius of 15 mm.

$2\pi r \left(\frac{m}{360}\right) = 2\pi(15)\left(\frac{120}{360}\right)$

$= 30\pi \left(\frac{120}{360}\right)$

$= 10\pi$

15. The beam of a lighthouse is visible from a distance of 3 mi. To the nearest square mile, what is the area covered by the beam as it sweeps in an arc of 150 degrees?



Area of sector

$A = \pi r^2 \left(\frac{m}{360}\right)$

$3^2\pi \left(\frac{150}{360}\right)$

$9\pi \left(\frac{150}{360}\right) = 3.75\pi \approx 12 \text{ mi}^2$