Circles – Circumference & Area

Geometry

Mr. Bower

BowerPower.net

Circles - Circumference

- The perimeter (distance around) a circle is called its CIRCUMFERENCE.

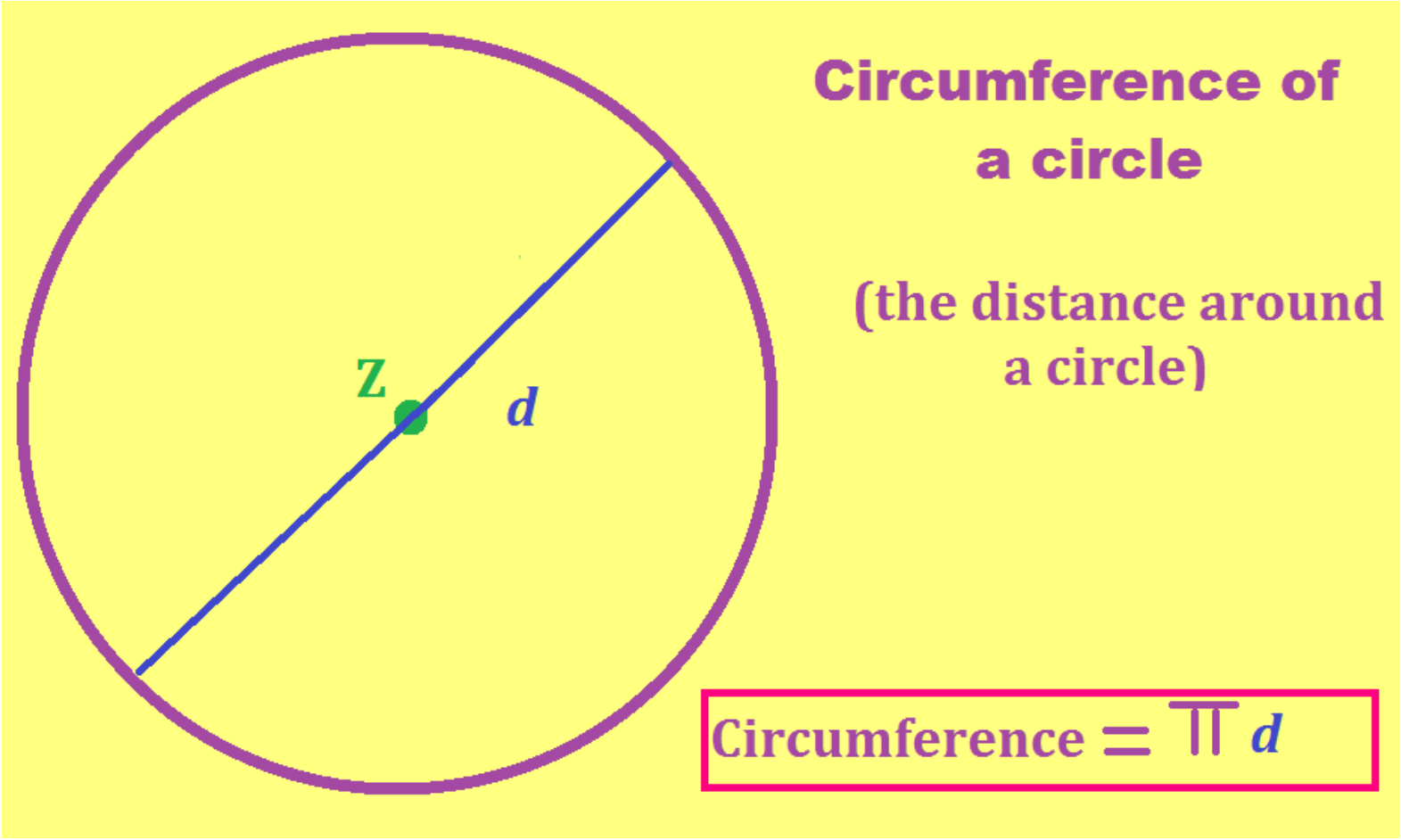
Circles - Circumference

- The perimeter (distance around) a circle is called its CIRCUMFERENCE.

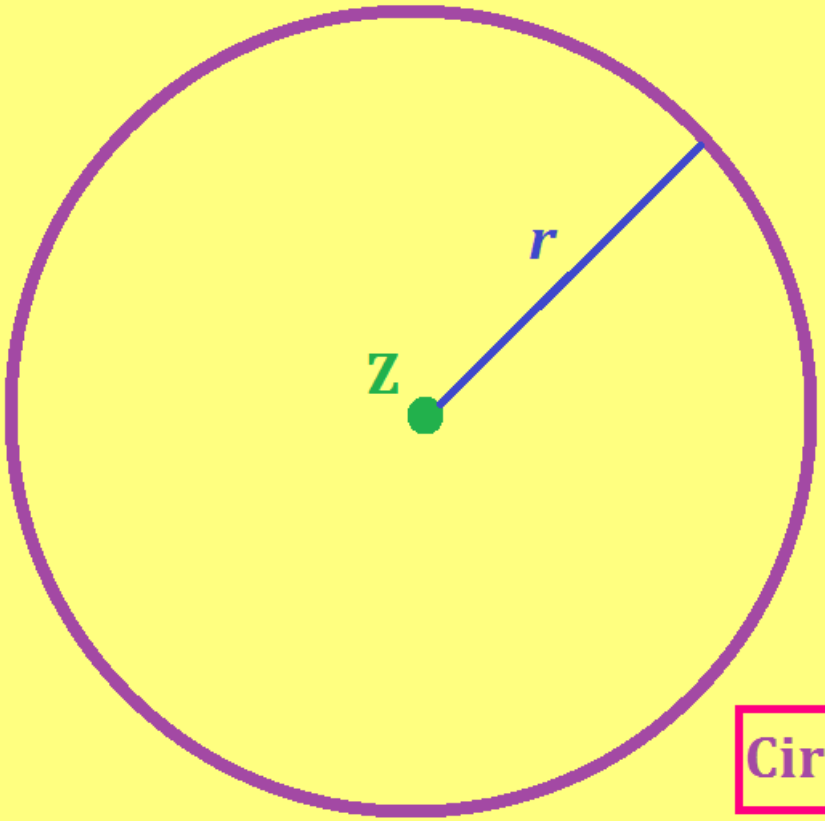
- $$\pi = \frac{\text{circumference}}{\text{diameter}}$$

- That's how we get the circumference formula!

Circles- Circumference (using diameter)



Circles- Circumference (using radius)



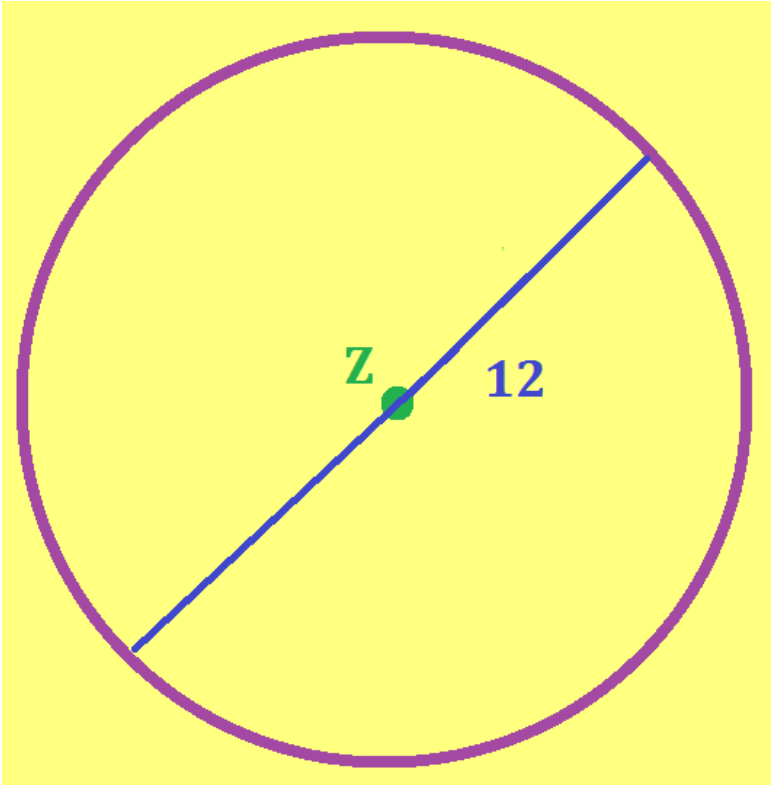
Circumference of a circle

(the distance around a circle)

$$\text{Circumference} = 2\pi r$$

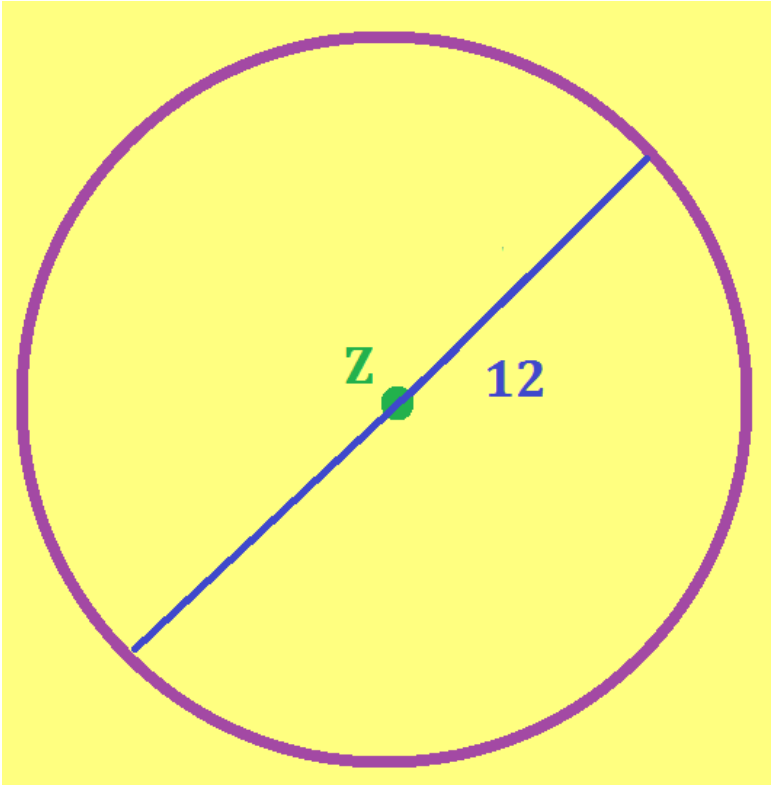
Circles- Circumference (using diameter) – Example 1

- Find the CIRCUMFERENCE of a circle with diameter of 12 cm



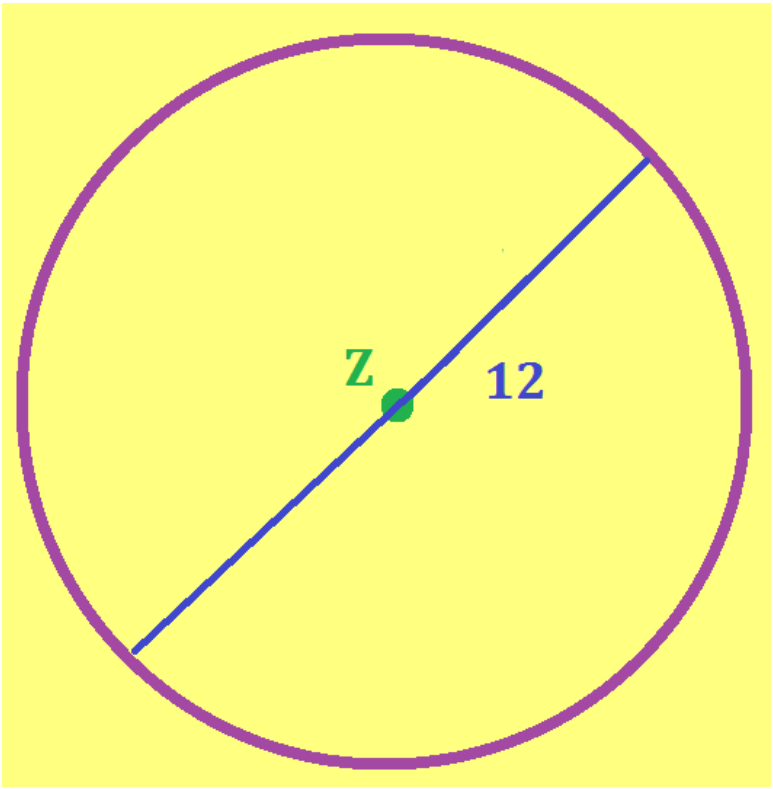
Circles- Circumference (using diameter) – Example 1

- Find the CIRCUMFERENCE of a circle with diameter of 12 cm
- $C = \pi \bullet d$



Circles- Circumference (using diameter) – Example 1

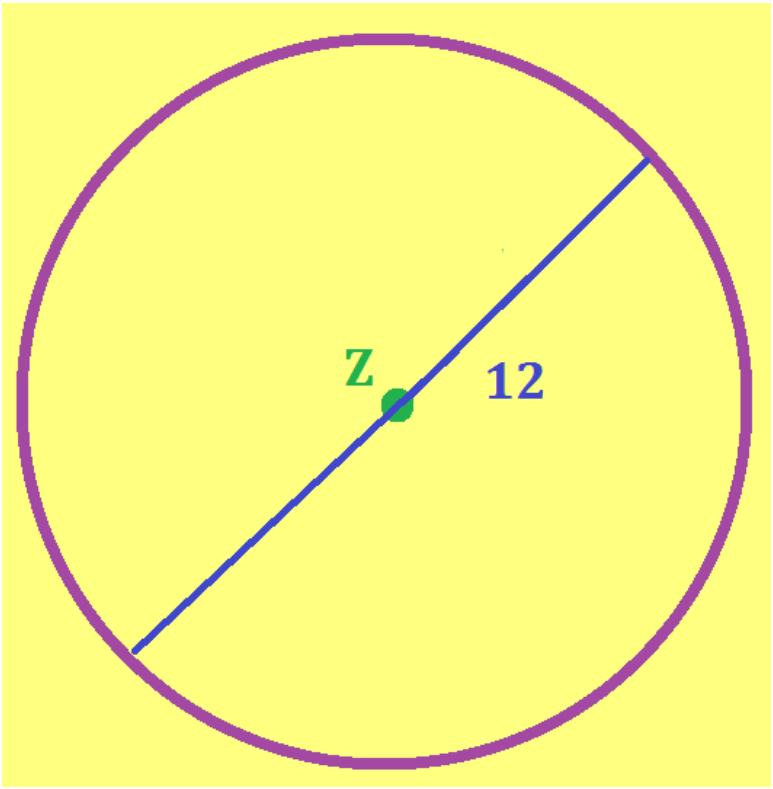
- Find the CIRCUMFERENCE of a circle with diameter of 12 cm
- $C = \pi \bullet (\mathbf{12})$



Circles- Circumference (using diameter) – Example 1

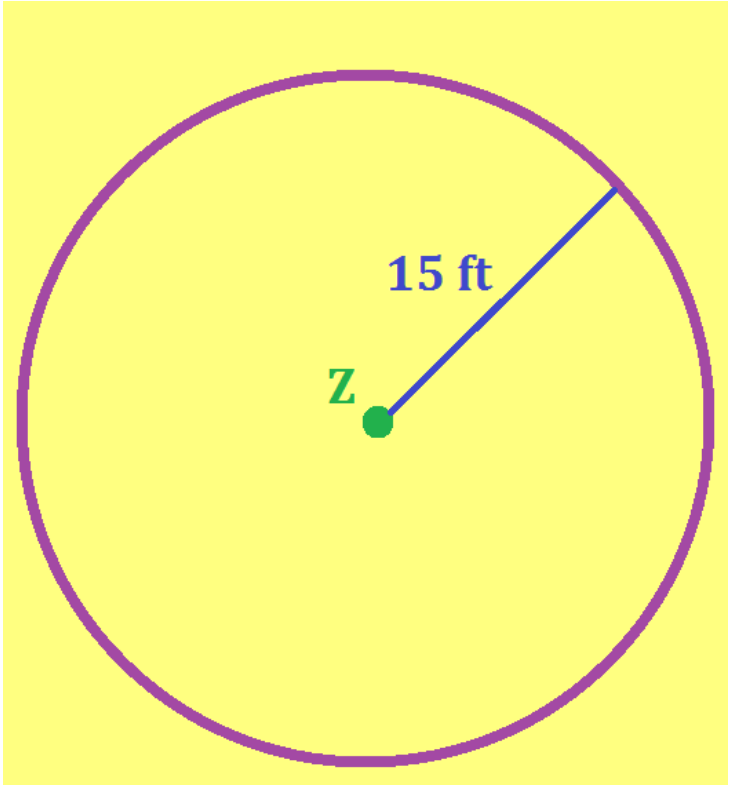
- Find the CIRCUMFERENCE of a circle with diameter of 12 cm
- $C = \pi \bullet (12)$
- $C = 12\pi$

12π cm



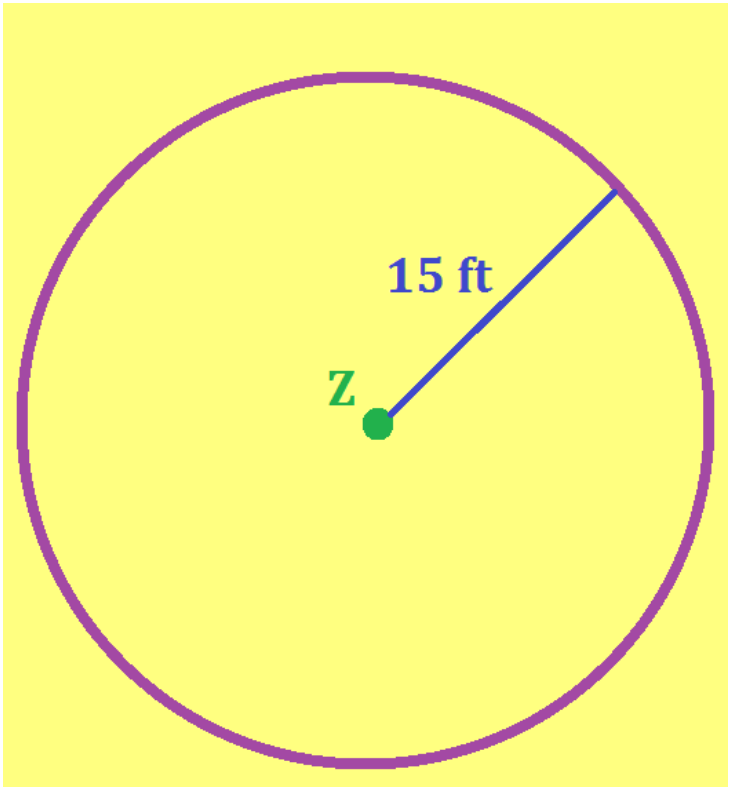
Circles- Circumference (using radius) – Example 2

- Find the CIRCUMFERENCE of a circle with radius of 15 ft



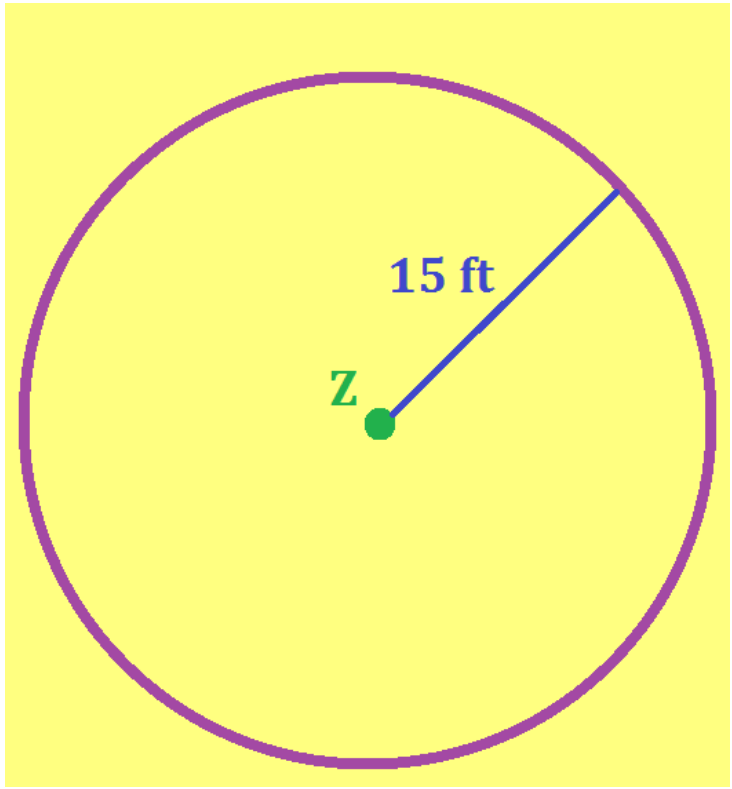
Circles- Circumference (using radius) – Example 2

- Find the CIRCUMFERENCE of a circle with radius of 15 ft
- $C = 2 \bullet \pi \bullet r$



Circles- Circumference (using radius) – Example 2

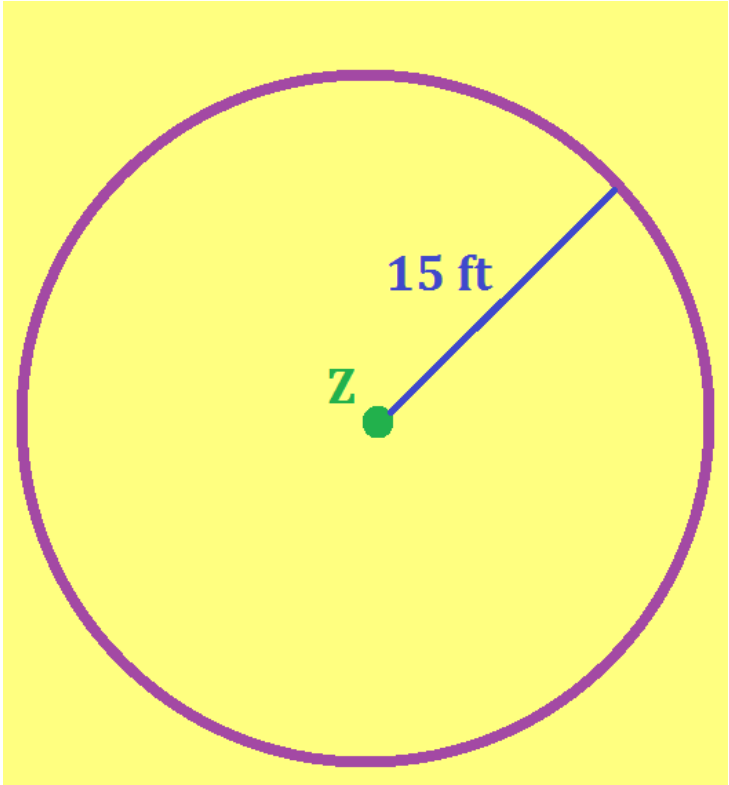
- Find the CIRCUMFERENCE of a circle with radius of 15 ft
- $C = 2 \bullet \pi \bullet r$
- $C = 2 \bullet \pi \bullet (\mathbf{15})$



Circles- Circumference (using radius) – Example 2

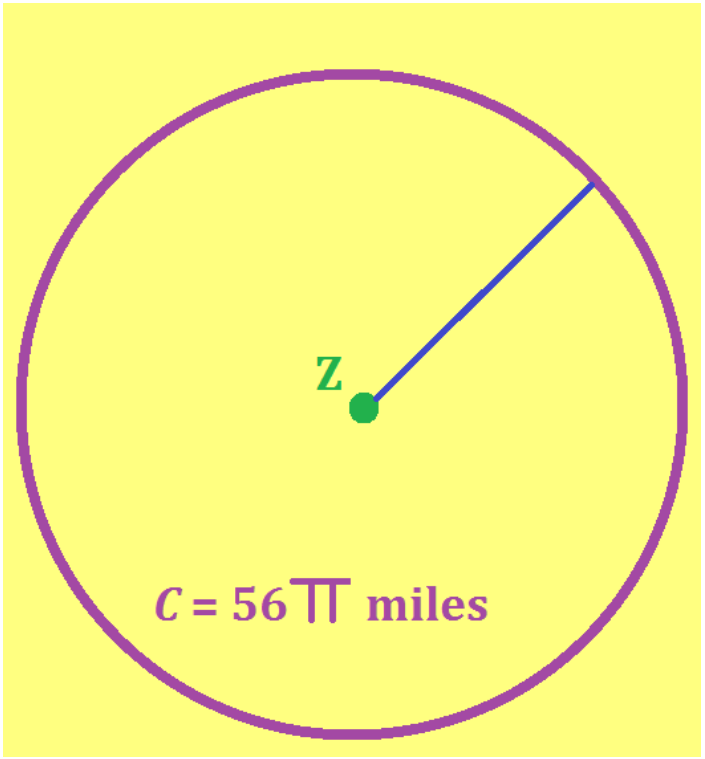
- Find the CIRCUMFERENCE of a circle with radius of 15 ft
- $C = 2 \bullet \pi \bullet r$
- $C = 2 \bullet \pi \bullet (\mathbf{15})$
- $C = 30\,\pi$

30 π ft



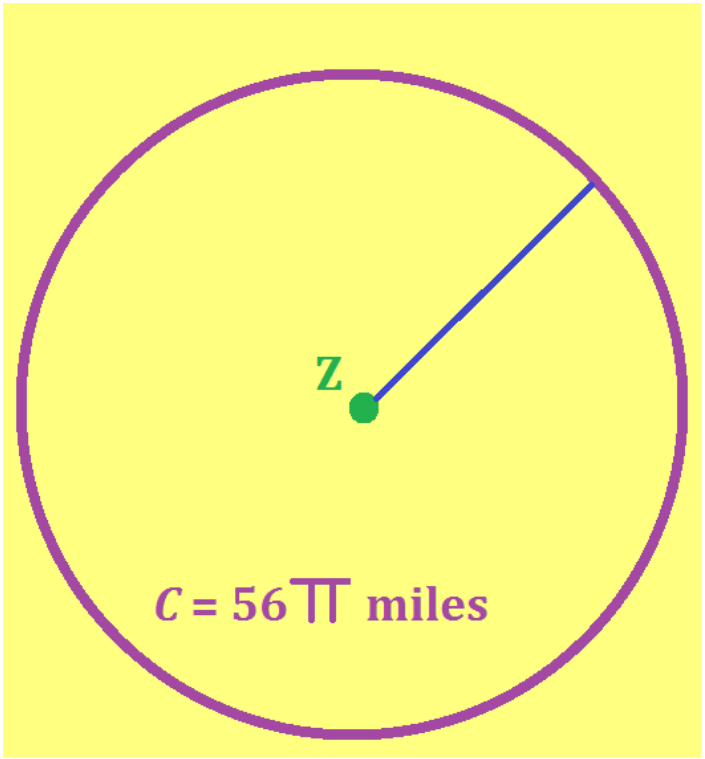
Circles- Circumference– Example 3

- Find the RADIUS of a circle with a circumference of 56π miles



Circles- Circumference– Example 3

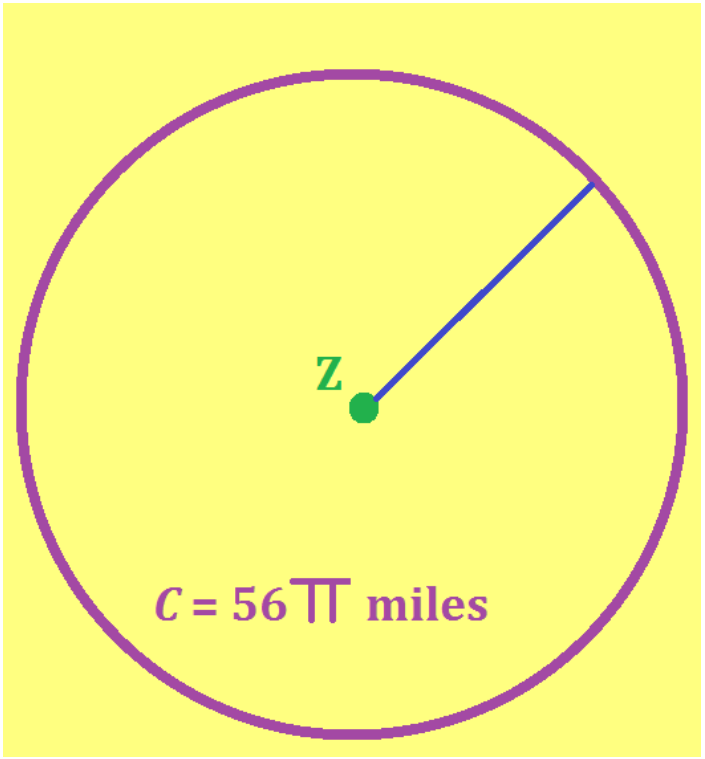
- Find the RADIUS of a circle with a circumference of 56π miles
- $C = 2 \bullet \pi \bullet r$



Circles- Circumference– Example 3

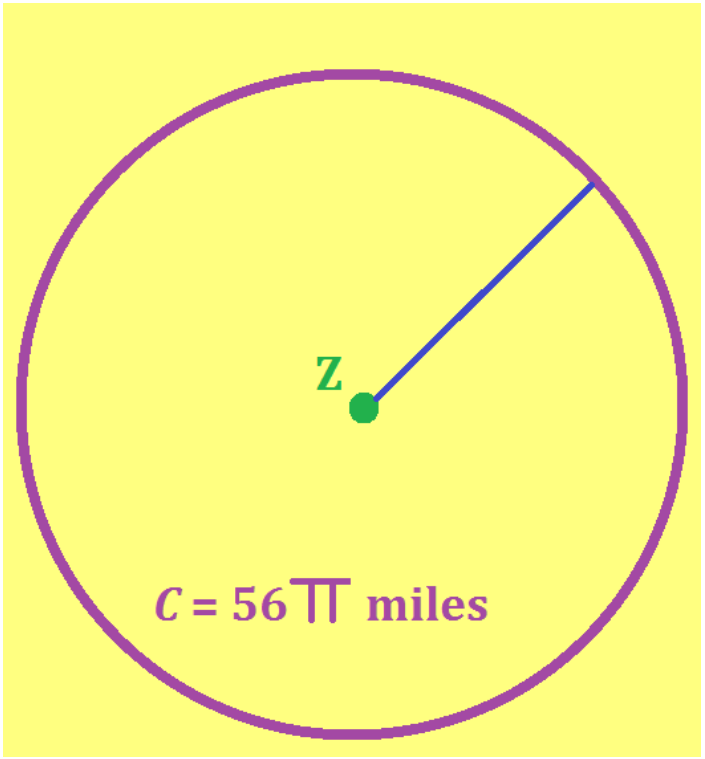
- Find the RADIUS of a circle with a circumference of 56π miles
- $C = 2 \bullet \pi \bullet r$
- $56\pi = 2 \bullet \pi \bullet r$

- Divide both sides by π
- $\frac{56\pi}{\pi} = \frac{2 \bullet \pi \bullet r}{\pi}$



Circles- Circumference– Example 3

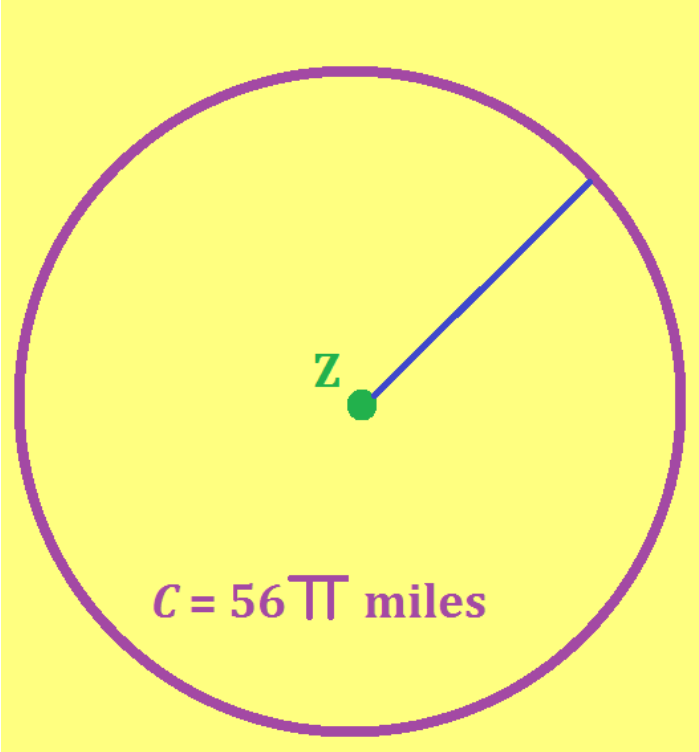
- Find the RADIUS of a circle with a circumference of 56π miles
- $C = 2 \bullet \pi \bullet r$
- $56\pi = 2 \bullet \pi \bullet r$
- Divide both sides by π
- $56 = 2r$



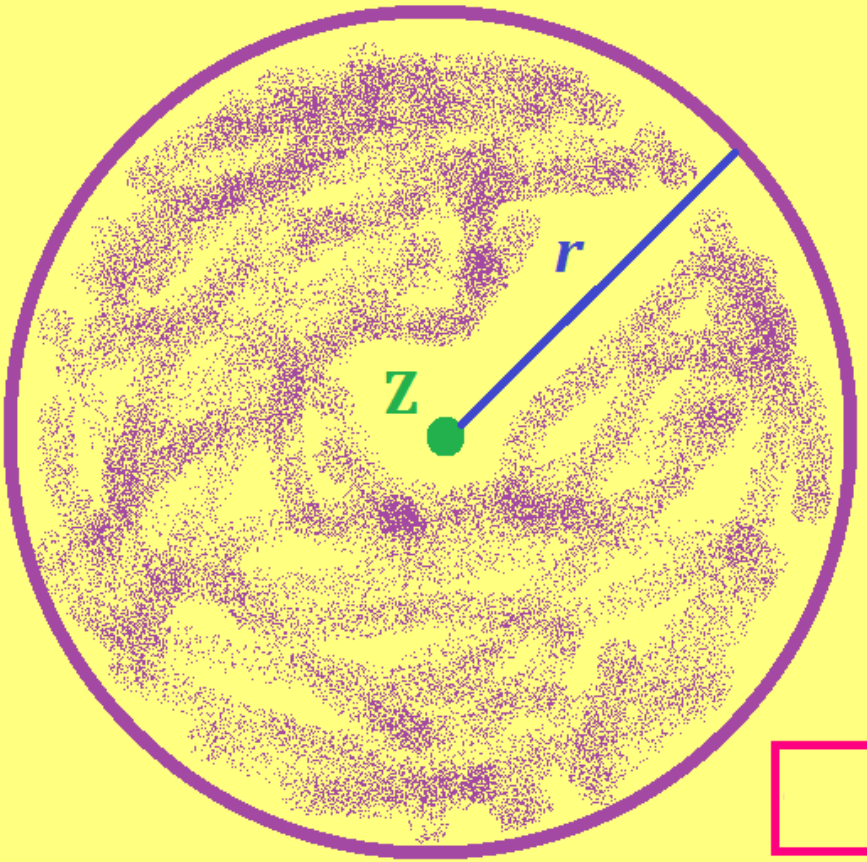
Circles- Circumference– Example 3

- Find the RADIUS of a circle with a circumference of 56π miles
- $C = 2 \bullet \pi \bullet r$
- $56\pi = 2 \bullet \pi \bullet r$
- $28 = r$

28 miles



Circles- Area



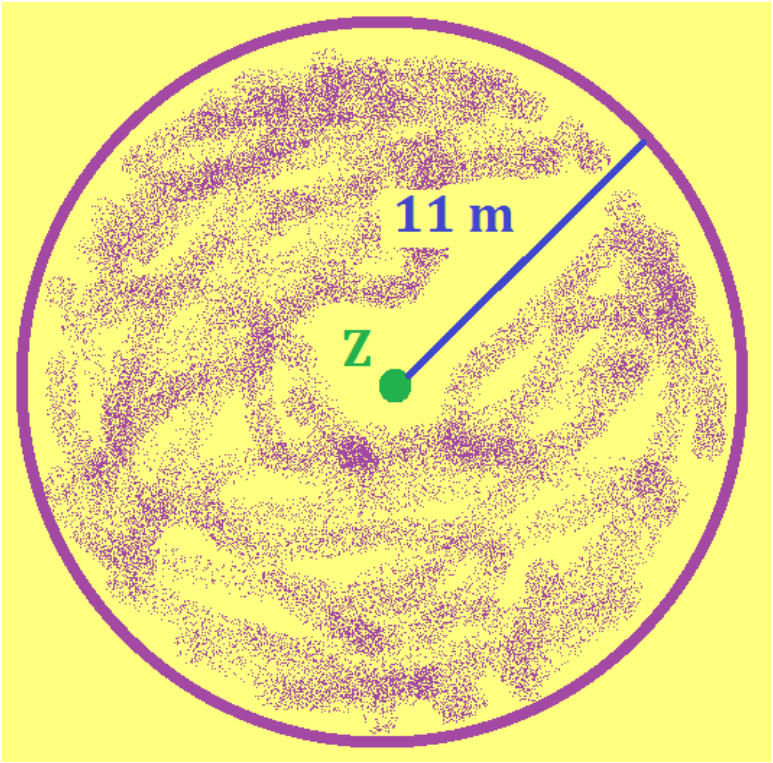
Area of a circle

(the amount of space inside a circle)

$$\text{Area} = \pi r^2$$

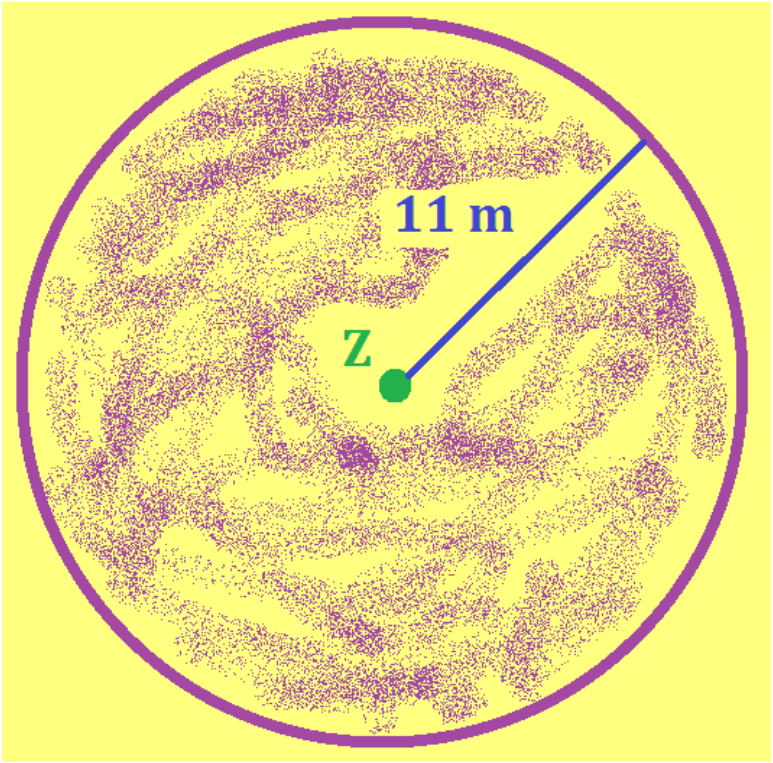
Circles – Area – Example 4

- Find the AREA of a circle with radius of 11 m



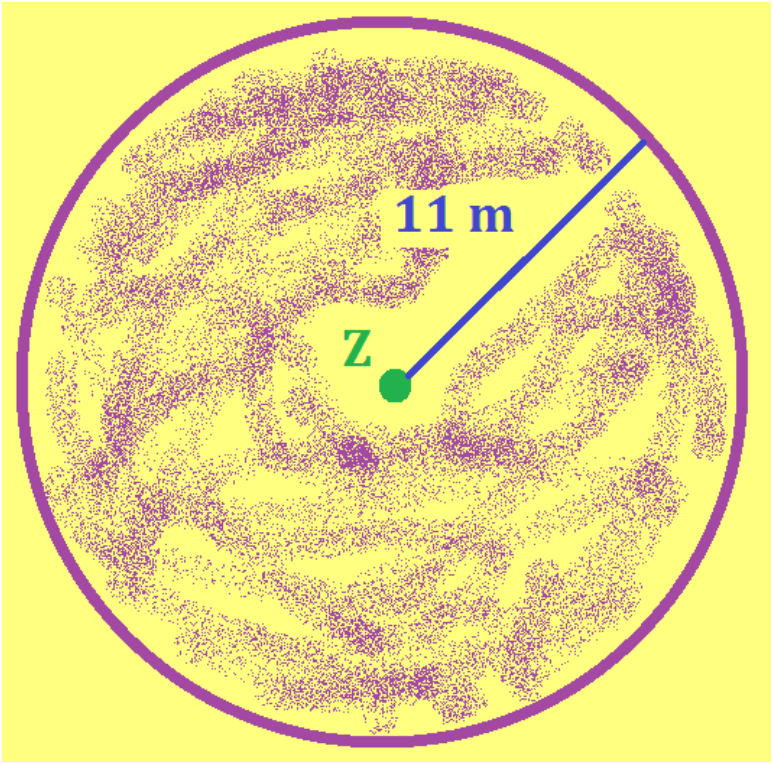
Circles – Area – Example 4

- Find the AREA of a circle with radius of 11 m
- $A = \pi r^2$



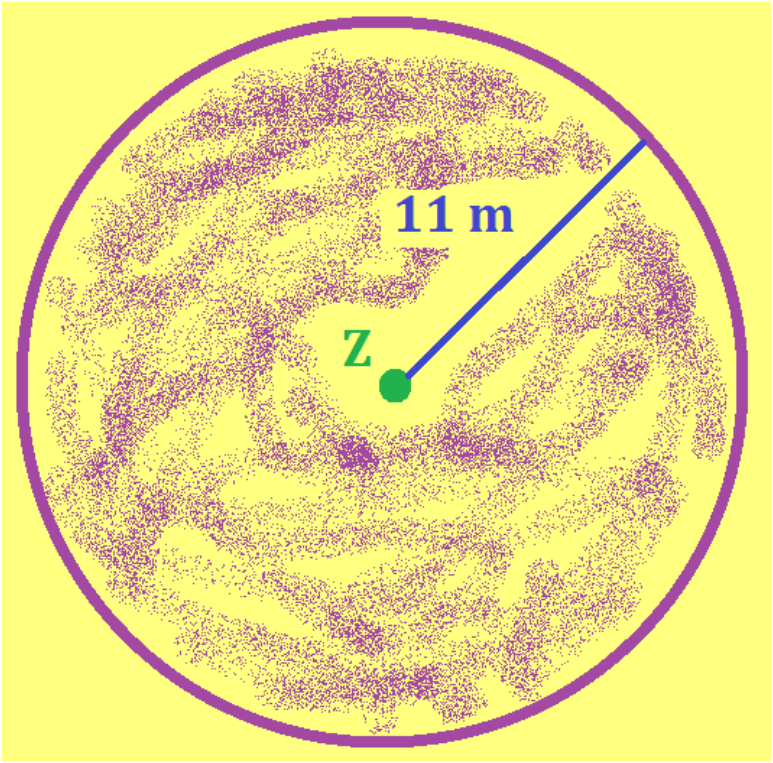
Circles – Area – Example 4

- Find the AREA of a circle with radius of 11 m
- $A = \pi r^2$
- $A = \pi(\mathbf{11})^2$



Circles – Area – Example 4

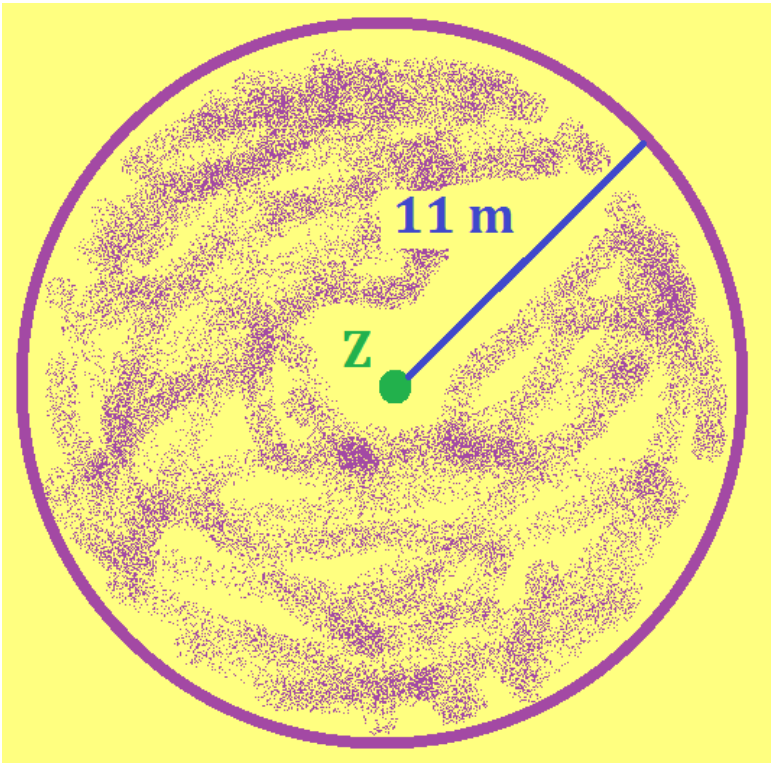
- Find the AREA of a circle with radius of 11 m
- $A = \pi r^2$
- $A = \pi(\mathbf{11})^2$
- $A = \pi(121)$



Circles – Area – Example 4

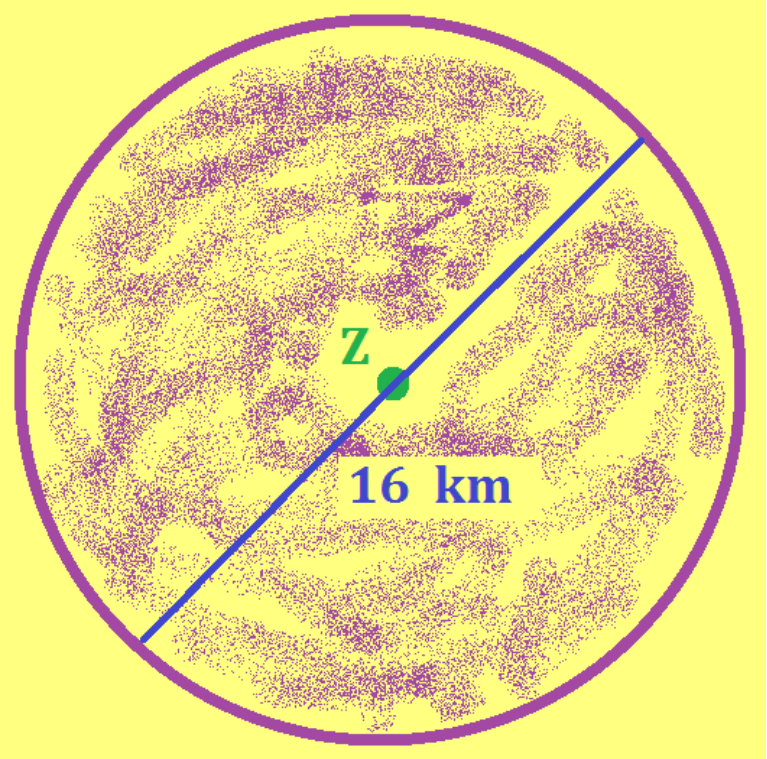
- Find the AREA of a circle with radius of 11 m
- $A = \pi r^2$
- $A = \pi(\mathbf{11})^2$
- $A = \pi(121)$
- $A = 121\pi$

121π m^2



Circles – Area – Example 5

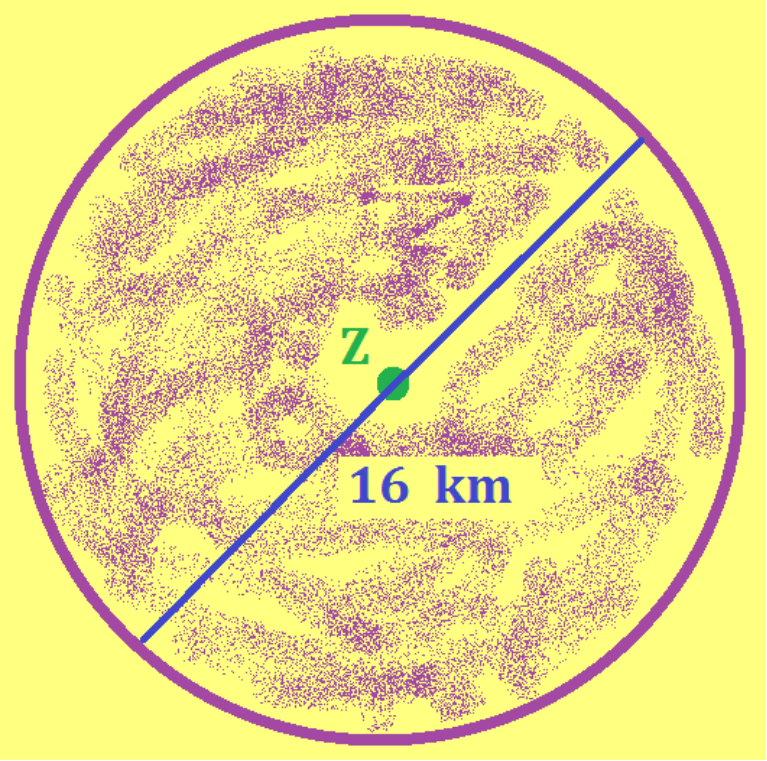
- Find the AREA of a circle with diameter of 16 km



Circles – Area – Example 5

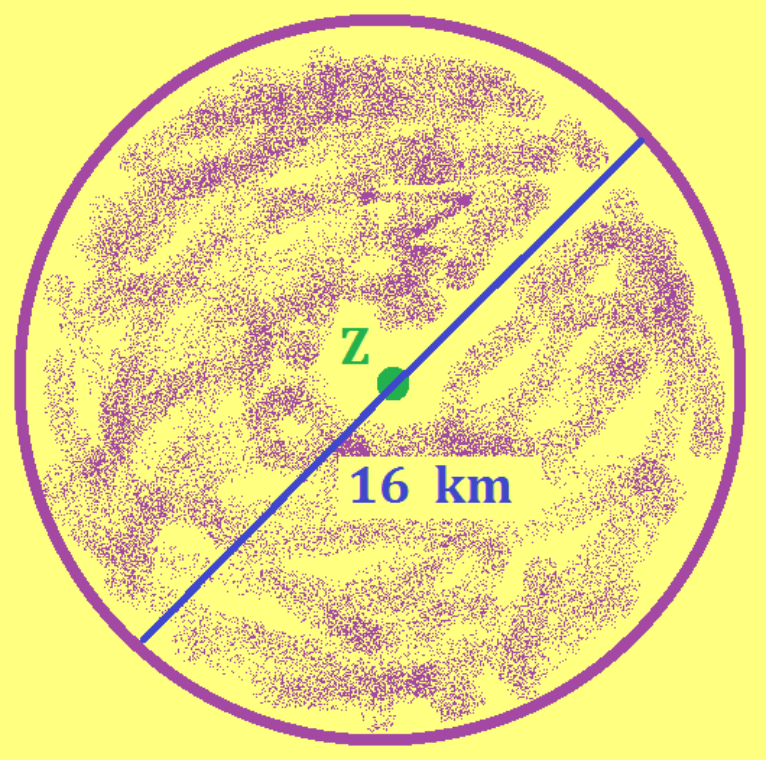
- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$

- The area formula uses a RADIUS, but we know a DIAMETER



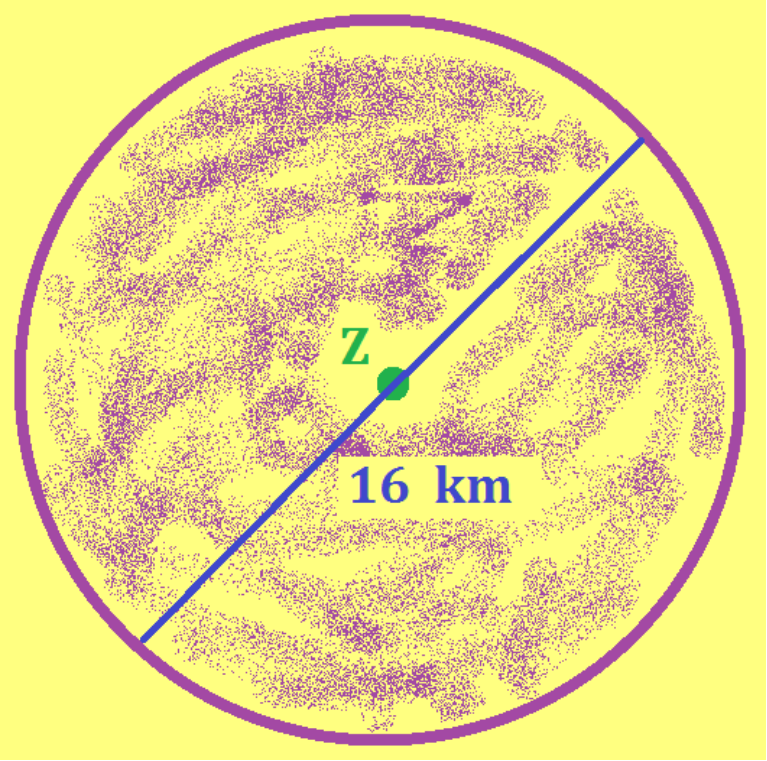
Circles – Area – Example 5

- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$
- The area formula uses a RADIUS, but we know a DIAMETER
- radius $= \frac{\text{diameter}}{2}$



Circles – Area – Example 5

- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$
- The area formula uses a RADIUS, but we know a DIAMETER
- radius $= \frac{16 \text{ km}}{2}$

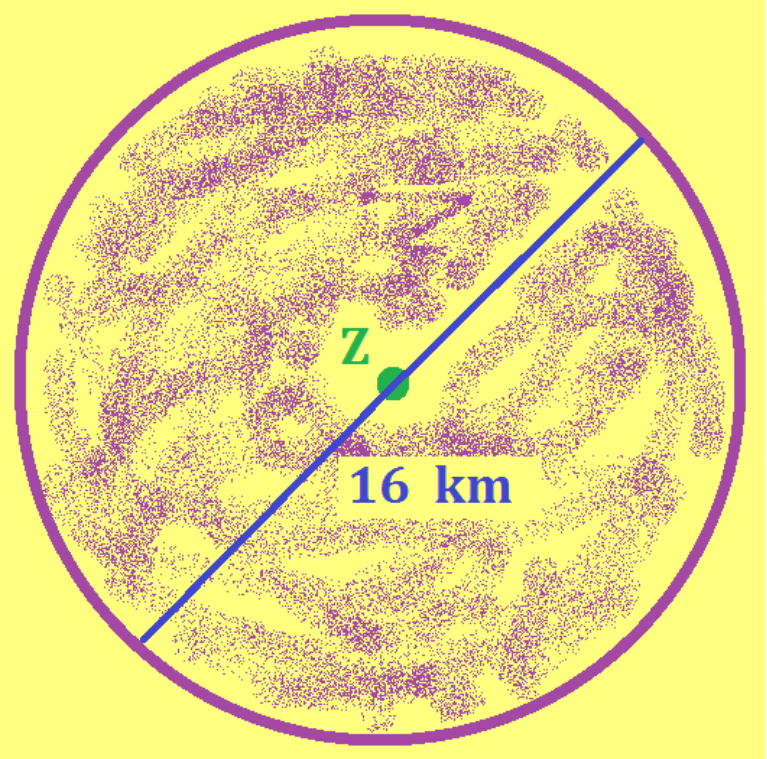


Circles – Area – Example 5

- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$

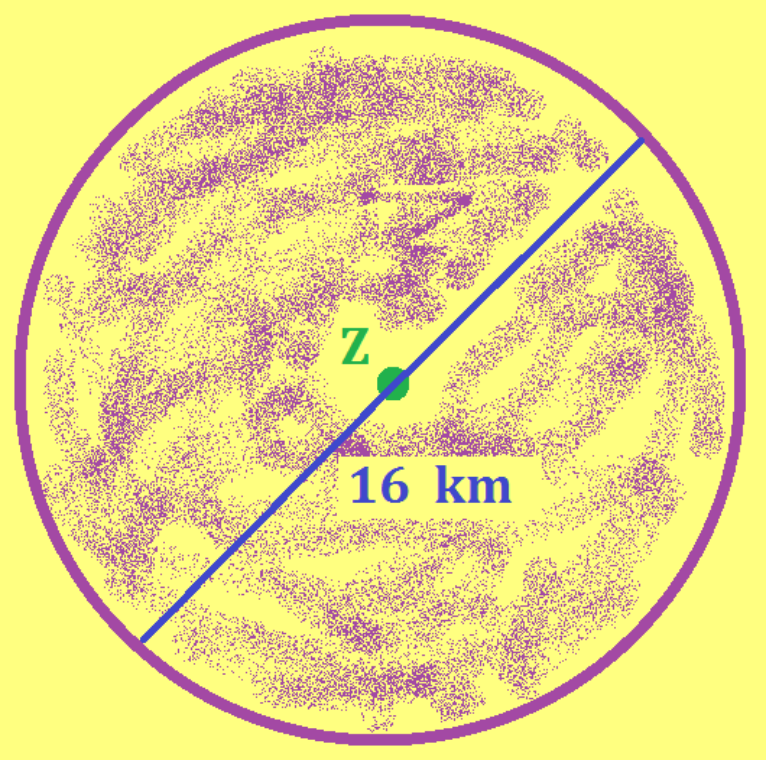
- The area formula uses a RADIUS, but we know a DIAMETER

- radius = **8 km**



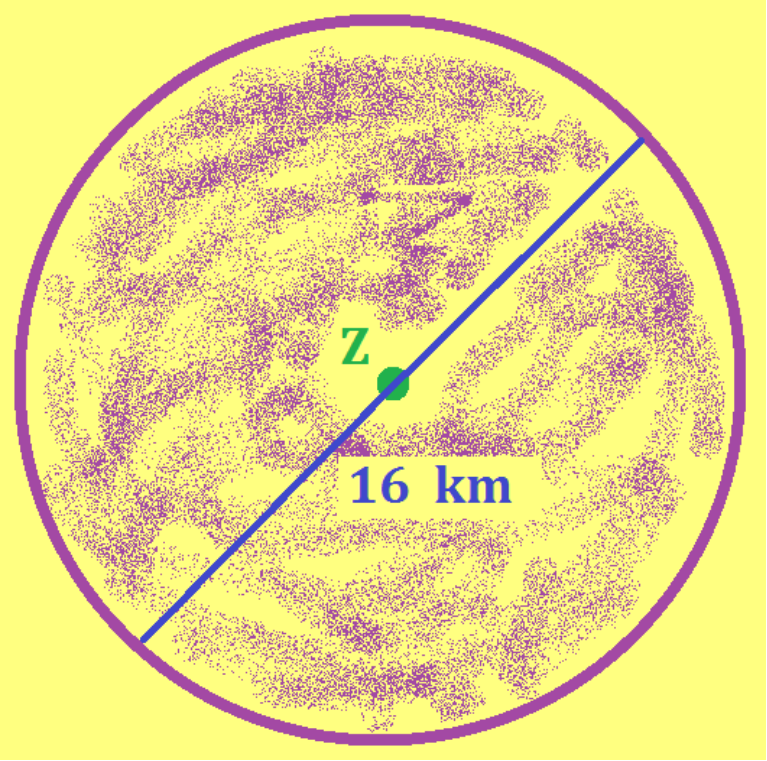
Circles – Area – Example 5

- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$
- $A = \pi(\mathbf{8})^2$



Circles – Area – Example 5

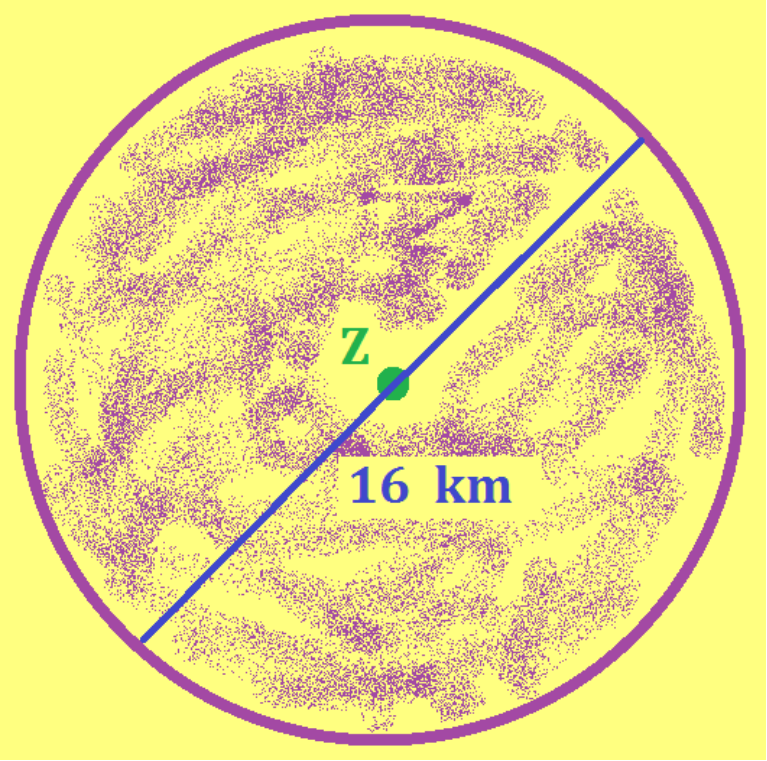
- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$
- $A = \pi(\mathbf{8})^2$
- $A = \pi(64)$



Circles – Area – Example 5

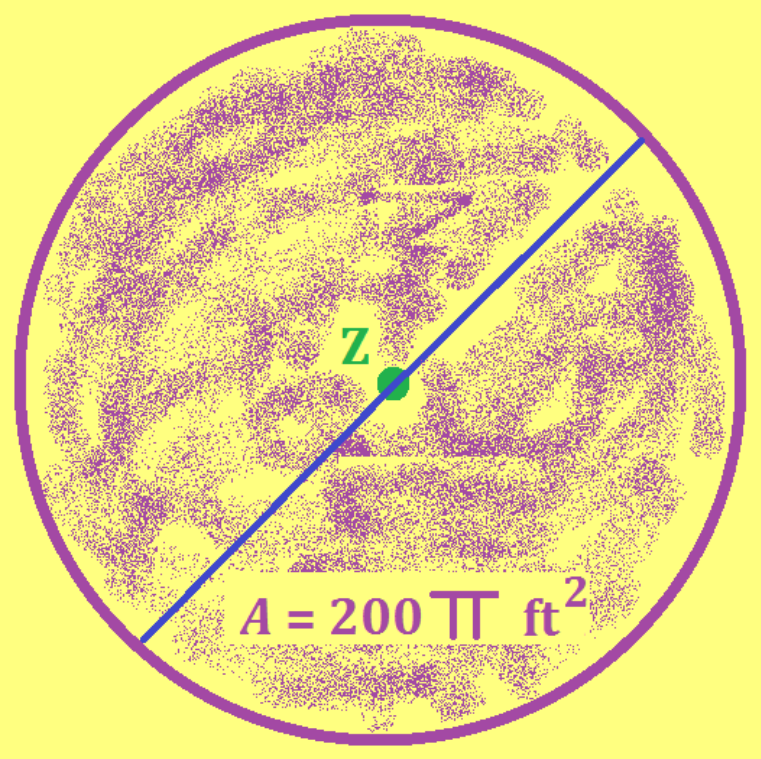
- Find the AREA of a circle with diameter of 16 km
- $A = \pi r^2$
- $A = \pi(8)^2$
- $A = \pi(64)$
- $A = 64\pi$

64π km^2



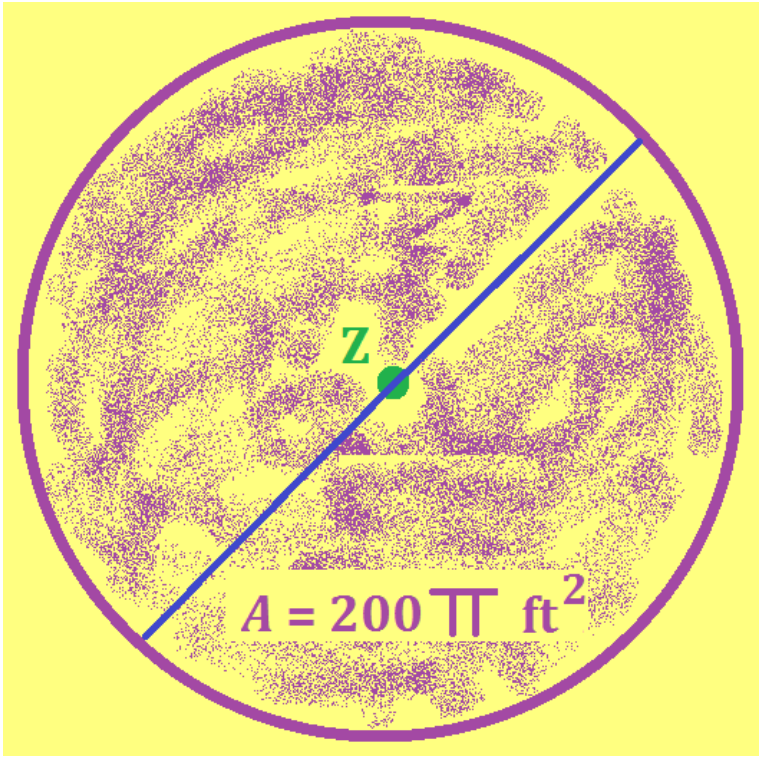
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2



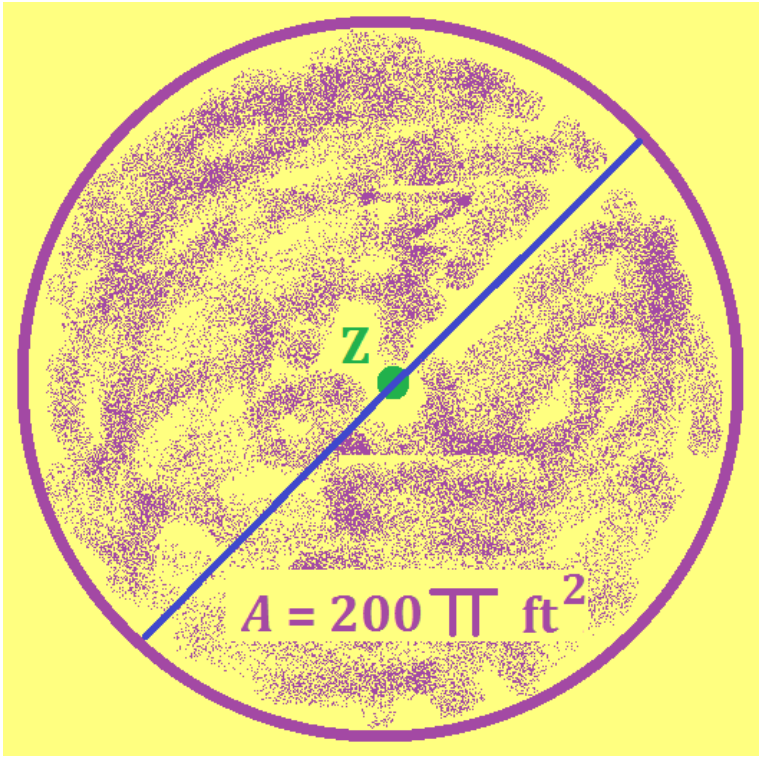
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$



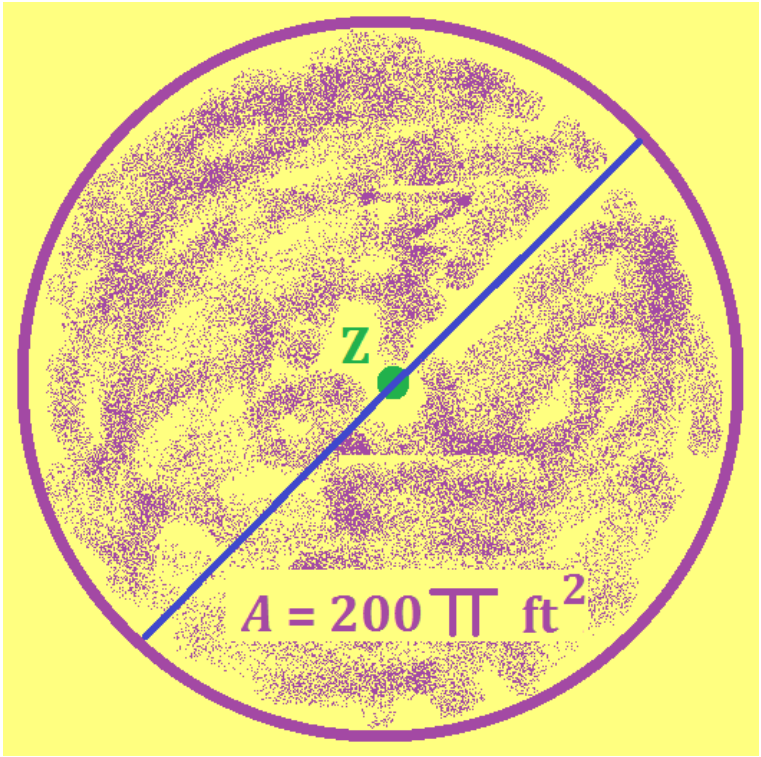
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$



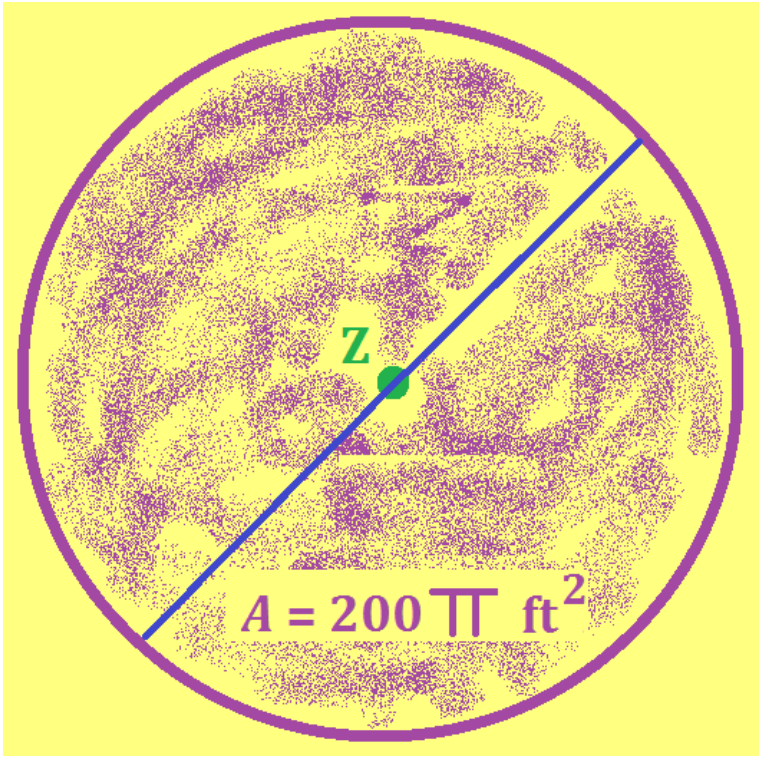
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- Divide both sides by π
- $\frac{200\pi}{\pi} = \frac{\pi r^2}{\pi}$



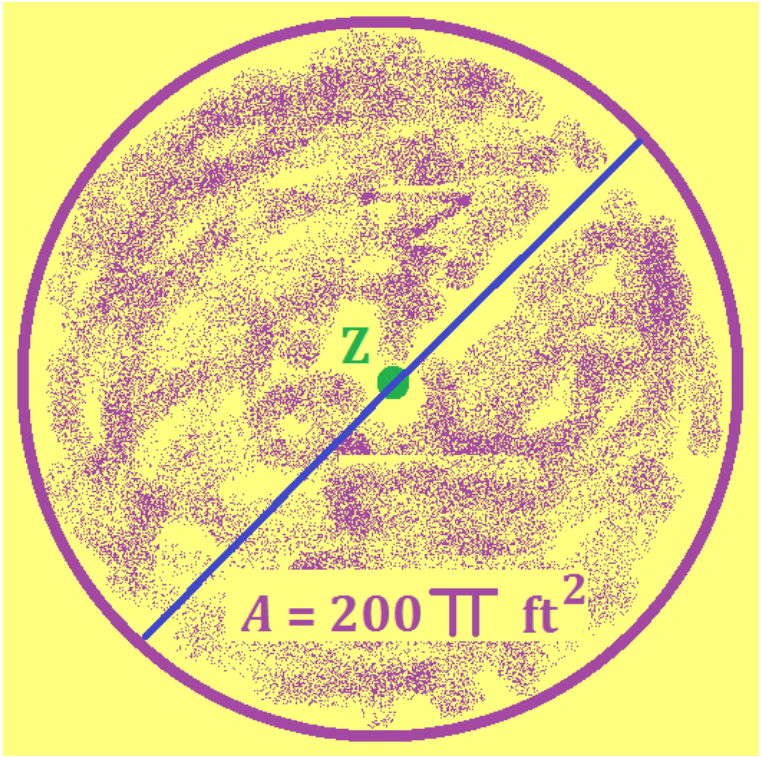
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- $200 = r^2$



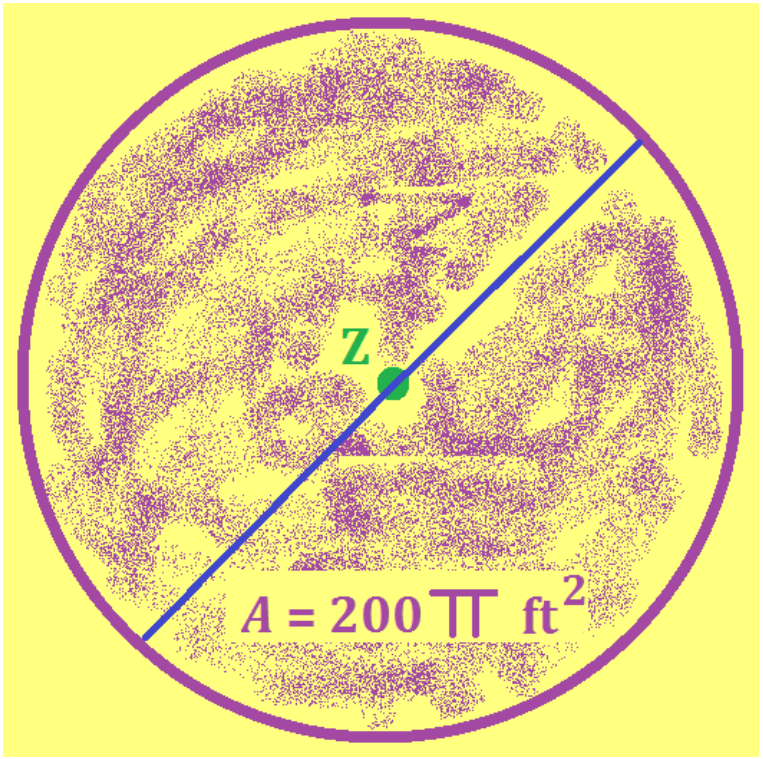
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- Take the square root of both sides
- $\sqrt{200} = \sqrt{r^2}$



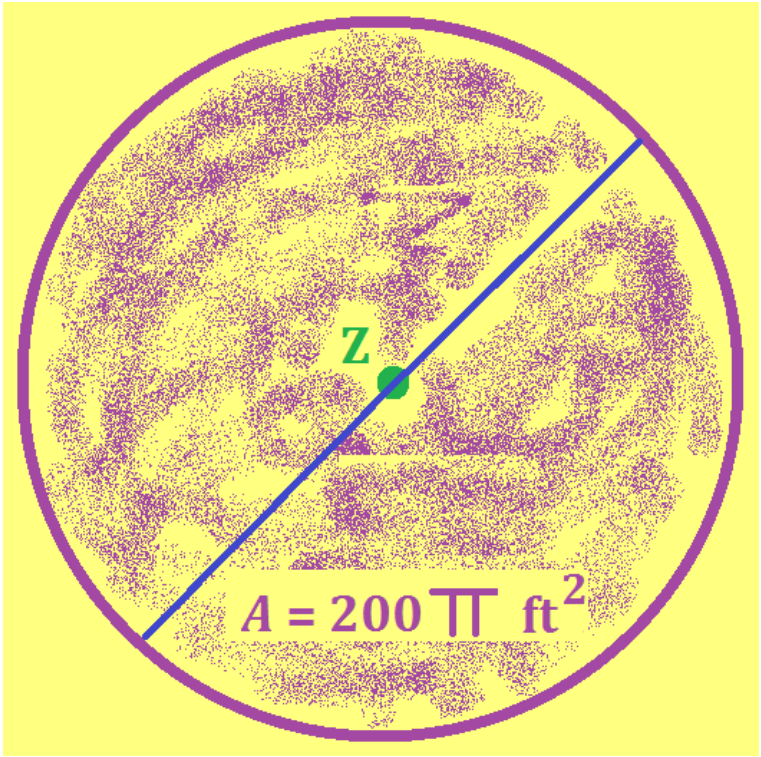
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- $\sqrt{200} = r$



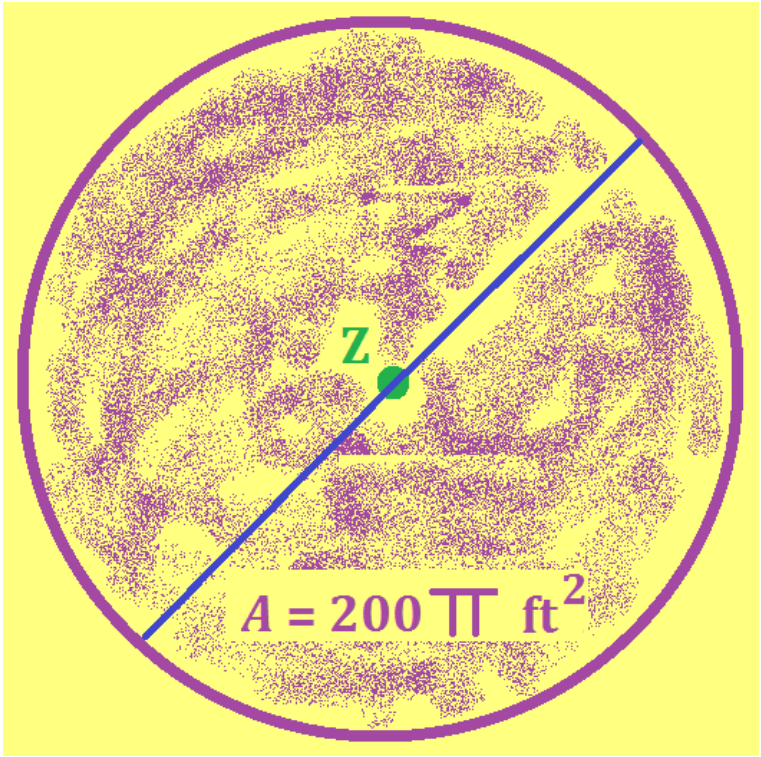
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- Simplify radical
- $\sqrt{200} = r$



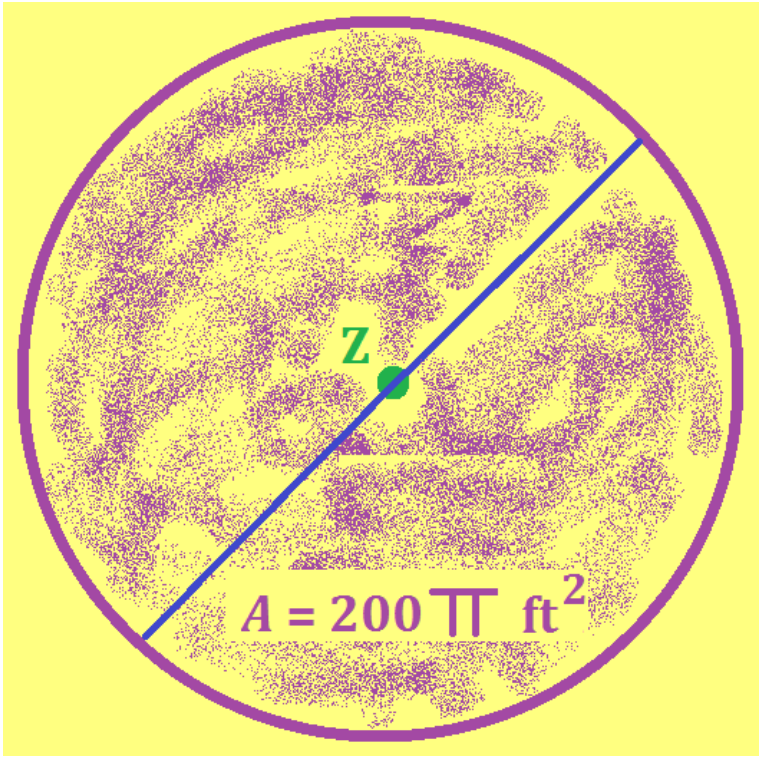
Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- Simplify radical
- $\sqrt{100} \bullet \sqrt{2} = r$



Circles – Area – Example 6

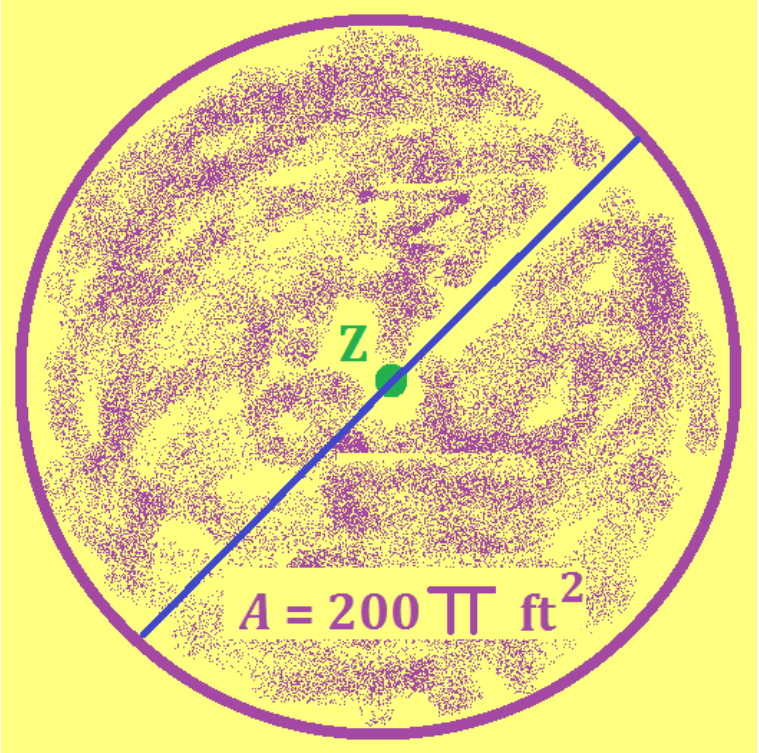
- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- Simplify radical
- $10\sqrt{2} = r$



Circles – Area – Example 6

- Find the RADIUS of a circle with an area of 200π ft^2
- $A = \pi r^2$
- $200\pi = \pi r^2$
- $10\sqrt{2} = r$

$10\sqrt{2}$ ft



BowerPower.net