Area of Circles - Notes

Area Formula $A = \pi r^2$

- you can find the area of a circle if given the radius or diameter.

What do you have to do if given the diameter? Divide by 2 to get the radius.

Note: the radius is squared NOT multiplied by 2. Avoid making this error.

If the area of a circle is known, you can use the area formula to find the radius, diameter, and circumference.
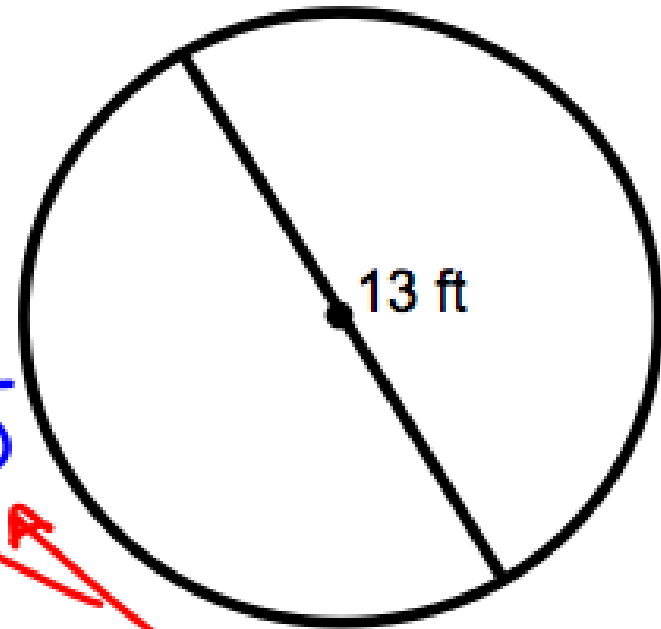
Steps to solving for the radius:
1) Substitute the area amount for "A".
2) Divide by pi on each side.
3) Undo square of radius by taking the square root of each side.
4) Use the radius to find diameter and circumference.

Find the area of the circle.
Round to the nearest tenth.

$$A = \pi r^2$$

$$= \pi \times 7 \times 7$$

$$= 153.9 \ yd^2$$

sq. yd.

7 yd
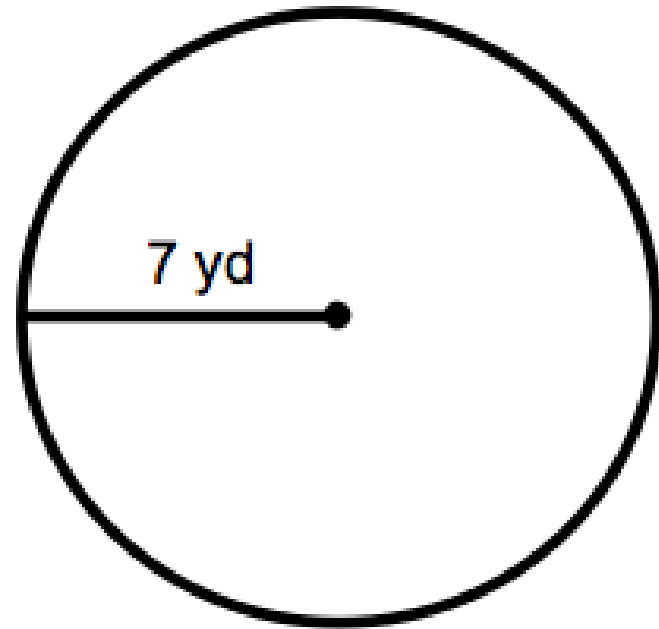
Find the area of the circle.
Round to the nearest tenth.

$$A = \pi r^2$$

$$= \pi \times 6.5 \times 6.5$$

$$= 132.7 \ ft^2$$

13 ft

$$13 \div 2 =$$

$$6.5$$

Find the area of the quarter circle.
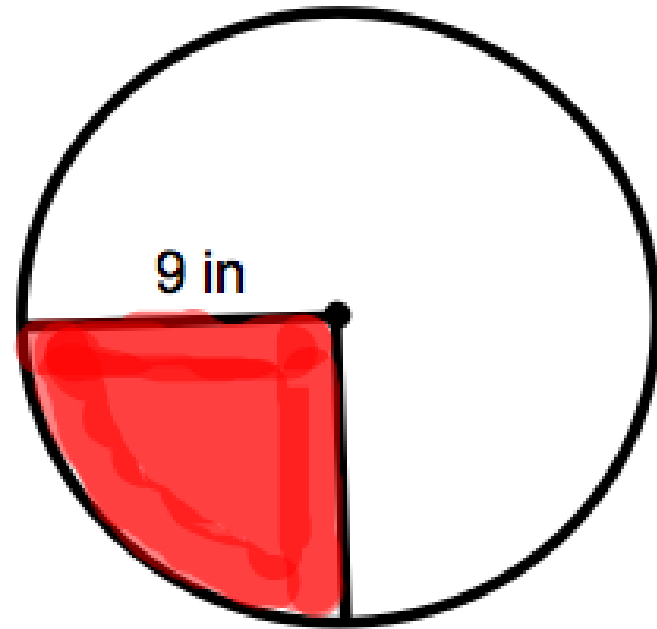Round to the nearest tenth.
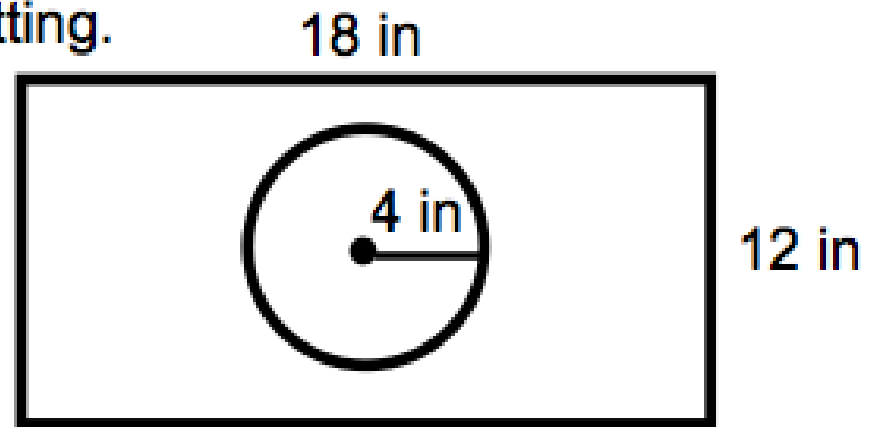
$$A = \pi r^2$$

$$= \pi \times 9 \times 9$$

$$= 254.5$$

$$\div 4$$

$$63.6 \text{ in}^2$$

9 in

Find the area of the rectangular photo matting.
Round to the nearest tenth.

18 in

4 in

12 in

Rectangle $-$ Circle
Area   Area

Rect. $\ell \times w$
    18×12
     216

Circle $A = \pi r^2$
      $= \pi \times 4 \times 4$
      $= 50.3$

$216 - 50.3$
$165.7 \ in^2$

The area of a circle is 520 square inches. Find the radius, diameter, and circumference of the circle. Round each to the nearest tenth.

$$A = \pi r^2$$

$$520 = \pi r^2$$

$$\frac{520}{\pi} = \frac{\pi r^2}{\pi}$$

$$165.5 = r^2$$

$$\sqrt{165.5} = \sqrt{r^2}$$

$$12.9 = r$$

radius = 12.9 in

diameter = 25.8 in
(r × 2)

Circumference C = πd
π × 25.8
81.1 in

If the circumference of a circle is 75 feet, what is the area of the circle? Round to the nearest tenth.

$$C = 2\pi r \quad \text{(need to find radius)}$$

$$\frac{75}{2} = \frac{2\pi r}{2}$$

$$A = \pi r^2$$

$$\frac{37.5}{\pi} = \frac{\pi r}{\pi}$$

$$= \pi \times 11.9 \times 11.9$$

$$11.9 = r$$

$$= 444.9 \; ft^2$$

Find the (distance around) and the (area) of the figure. Round to
the nearest tenth.

Distance Around

6 mm

$$C = \pi d$$
$$= \pi \times 6$$
$$= 18.8$$

Area

$$A = \pi r^2$$
$$= \pi \times 3 \times 3$$
$$= 28.3$$
$$\div 2 \text{ half circle}$$
$$= 14.2 \text{ mm}^2$$

$$\div 2 \text{ half circle}$$
$$= 9.4 \text{ Half Circle Part}$$
$$+ 6 \text{ Straight Line Part}$$
$$\overline{15.4 \text{ mm}}$$