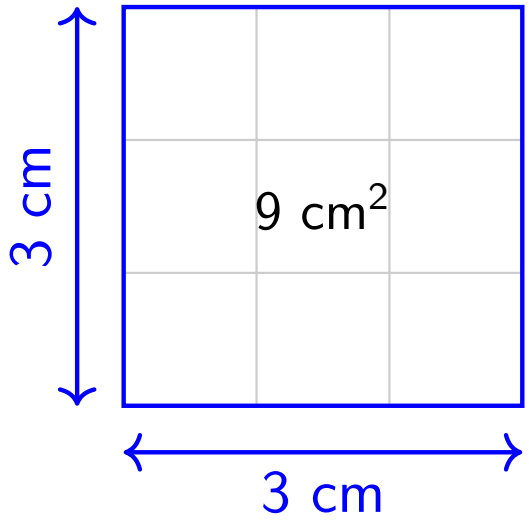
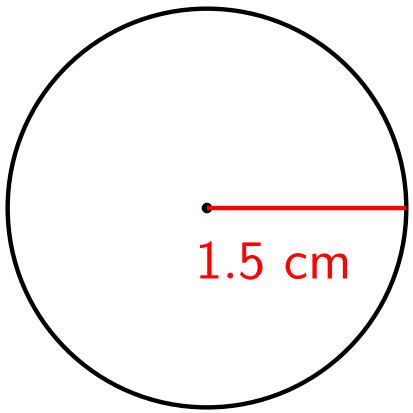
Circles: Area, Squaring & Pi — Solutions

Starter — Solutions





1. $4 \times 4 = 16$
2. $7 \times 7 = 49$
3. $10^2 = 100$
4. $3^2 = 9$
5. No. $2 \times 6 = 12$ but $6^2 = 36$. Squaring means multiplying by itself.
6. $3.14 \times 9 = 28.26$
7. $3.14 \times 25 = 78.5$
7. (a) radius $= 7$ cm (b) $C = \pi d \approx 3.14 \times 14 = 43.96$ cm
8. (a) $C = \pi d \approx 3.14 \times 10 = 31.4$ cm
9. Less than 9 cm^2. The circle doesn't fill all four corners of the square.

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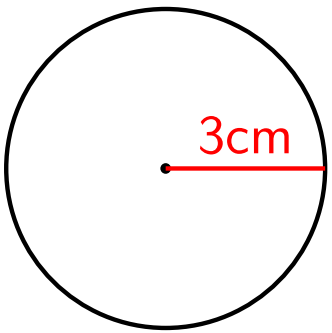
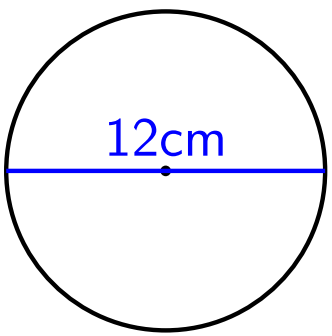


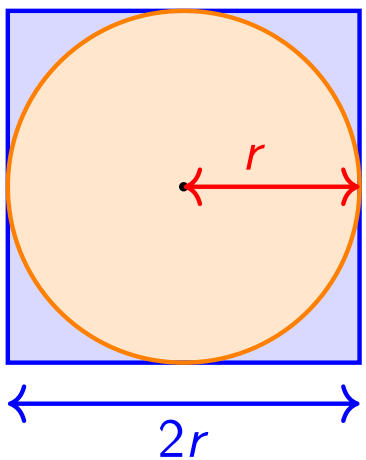
Circle A



Circle B

1. Halve 12: 6 cm
2. Halve 9.4: 4.7 cm
3. $6^2 = 36$
4. $1.5^2 = 2.25$
5. $3 \times 4^2 = 48$
6. True.
   $\pi \times 2r = 2\pi r$.
7. Circle A, $r = 3$ cm:
   (a) $C = 2\pi r \approx 2 \times 3.14 \times 3 = 18.84$ cm
   (b) $A = \pi r^2 \approx 3.14 \times 9 = 28.26$ cm^2
8. Circle B, $d = 12$ cm so $r = 6$ cm:
   (a) $C = \pi d \approx 3.14 \times 12 = 37.68$ cm
   (b) $A = \pi r^2 \approx 3.14 \times 36 = 113.04$ cm^2
9. Circumference ratio: $\frac{37.68}{18.84} = 2$. Yes, double.
   Area ratio: $\frac{113.04}{28.26} = 4$. No — area is $\times 4$, not $\times 2$!

Starter — Solutions



1. $5 \times 5 = 25$
2. $8^2 = 64$
3. $2.5^2 = 6.25$
4. $3.14 \times 9 = 28.26$
5. $7 \times 4 = 28$ cm^2
6. $\frac{1}{4}$ of 360°
7. Area of circle $= \pi r^2$
8. Shaded area = area of square − area of circle $= (2r)^2 - \pi r^2 = 4r^2 - \pi r^2$
9. Perimeter 48 cm $\Rightarrow$ side = 12 cm
   $\Rightarrow r = 6$ cm.
   Square area $= 12^2 = 144$ cm^2
   Circle area $= \pi \times 6^2 \approx 3.14 \times 36 =$ 113.04 cm^2
   Shaded area $\approx 144 - 113.04 = 30.96$ cm^2