Worksheet: Parts of Areas and Circumferences of Circles

Mathematics / Middle School / Expressions and Equations / Use Equations and Inequalities to Solve Geometry Problems / Parts of Areas and Circumferences of Circles
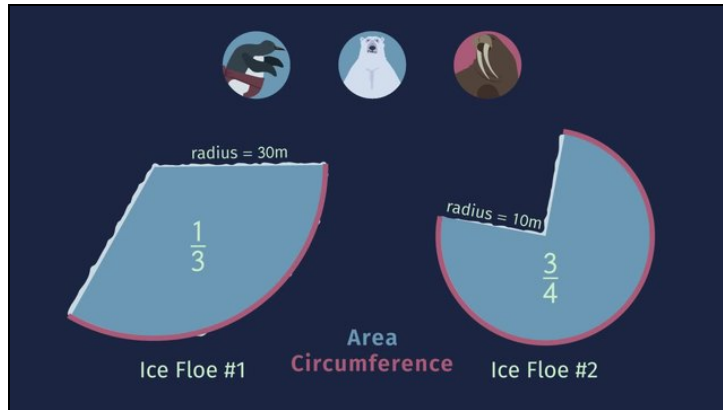
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Parts of Areas and Circumferences of Circles

1. **Recall the formulas for the area and circumference of both a circle and a sector of a circle.**

2. Find the area of the sectors.

3. Find the circumferences of the sectors.

4. Decide which ice floe has enough area to house the Polar Games Village.

5. Calculate the area of the stadium seating.

6. Solve for the circumference of the ice floe for the Dolphin sprint.

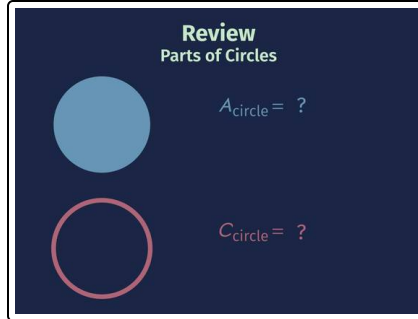+ with lots of tips, answer keys, and detailed answer explanations for all of the problems.

⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

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Recall the formulas for the area and circumference of both a circle and a sector of a circle.

Match the elements.

Review
Parts of Circles

$A_{\text{circle}} = \ ?$

$C_{\text{circle}} = \ ?$

1 $\quad \frac{1}{3}\,\pi\,r^2$

$A_{\text{circle}} =$ **A**

2 $\quad \pi\,d^2$

$C_{\text{circle}} =$ **B**

3 $\quad \frac{4}{3}\left(2\,\pi\,r\right)$

The area of a third of a circle
$A_{\text{sector of a circle}} =$ **C**

4 $\quad \pi\,r^2$

The circumference of three quarters of a circle $C_{\text{sector of a circle}} =$ **D**

5 $\quad \frac{3}{4}\left(2\,\pi\,r\right)$

6 $\quad 2\,\pi\,r$

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Hints for solving these problems

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Recall the formulas for the area and circumference of both a circle and a sector of a circle.

Hint #1

A is the symbol for the area while C stands for the circumference.

Hint #2

Pay attention to the meaning of the values

- r is the radius of the circle.
- $d = 2r$ is the diameter of the circle.
- $\pi \approx 3.14$

Hint #3

For area we can use units such as m^2 and for circumference we can use units such as m.
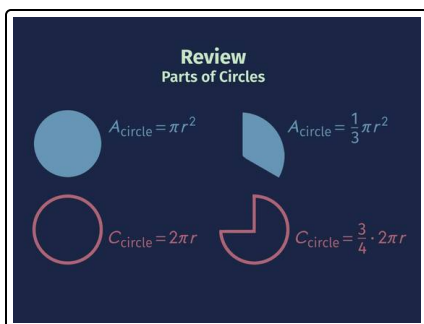
Hint #4

r^2 leads to the unit m^2.

Answers and detailed answer explanations for these problems

1 of 6   **Recall the formulas for the area and circumference of both a circle and a sector of a circle.**

Answer key: A—4 // B—6 // C—1 // D—5

Here are all the formulas you need.
- r is the radius of the circle.
- $d = 2r$ is the diameter of the circle.
- $\pi \approx 3.14$

Let's start with the whole circles.

- The area is given by $A_{\text{circle}} = \pi\, r^2$ The units for the area are m^2 or ...

- The circumference is given by $C_{\text{circle}} = 2\,\pi\, r = \pi\, d$ The units for the circumference are m or ...

If we want to determine the area or circumference of part of a circle, we have to multiply those formulas by the corresponding fraction.

For the given examples we get:

- The area of a third of a circle $A_{\text{sector of a circle}} = \frac{1}{3}\,\pi\, r^2$
- The circumference of three quarters of a circle $C_{\text{sector of a circle}} = \frac{3}{4}\, 2\,\pi\, r$