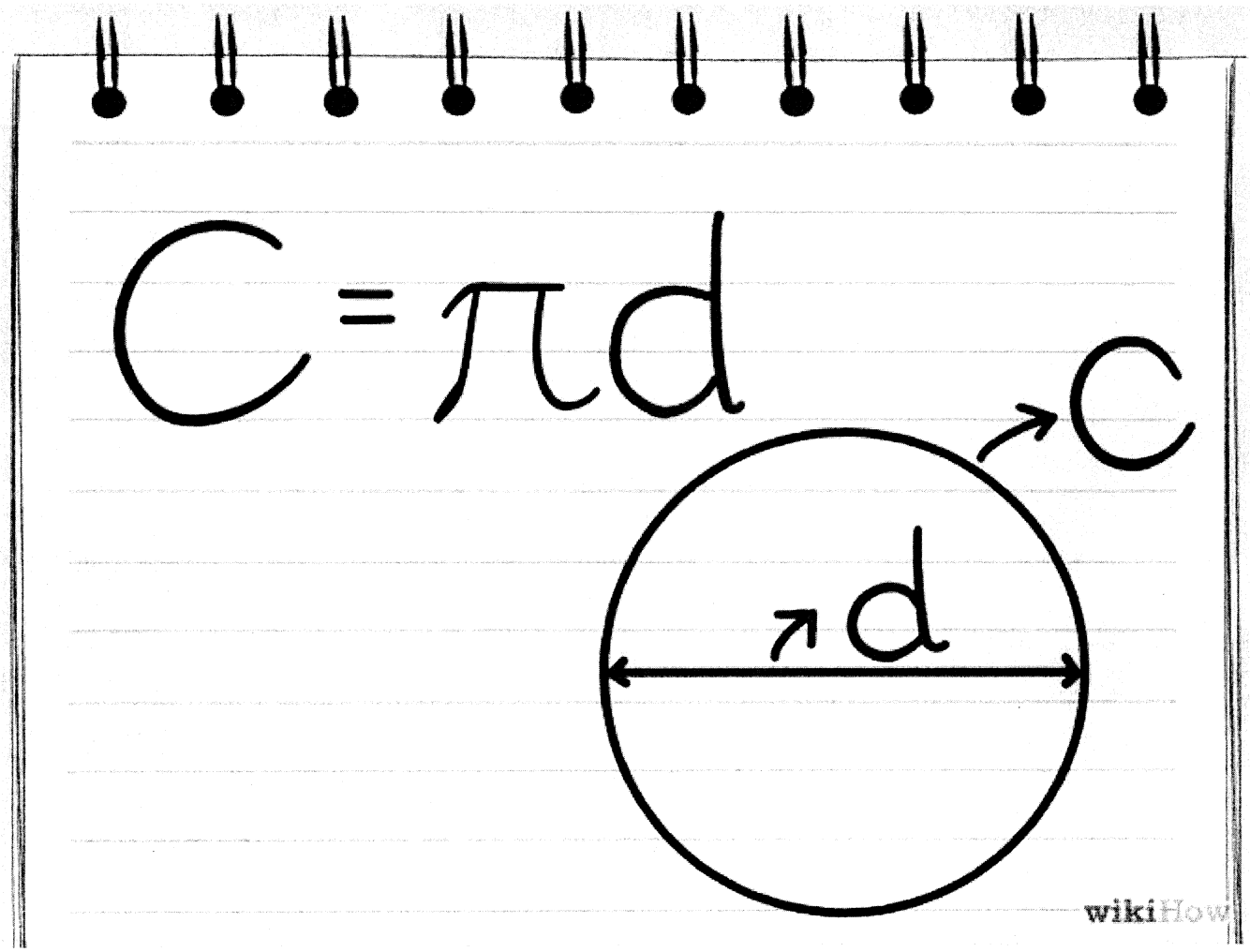
Key

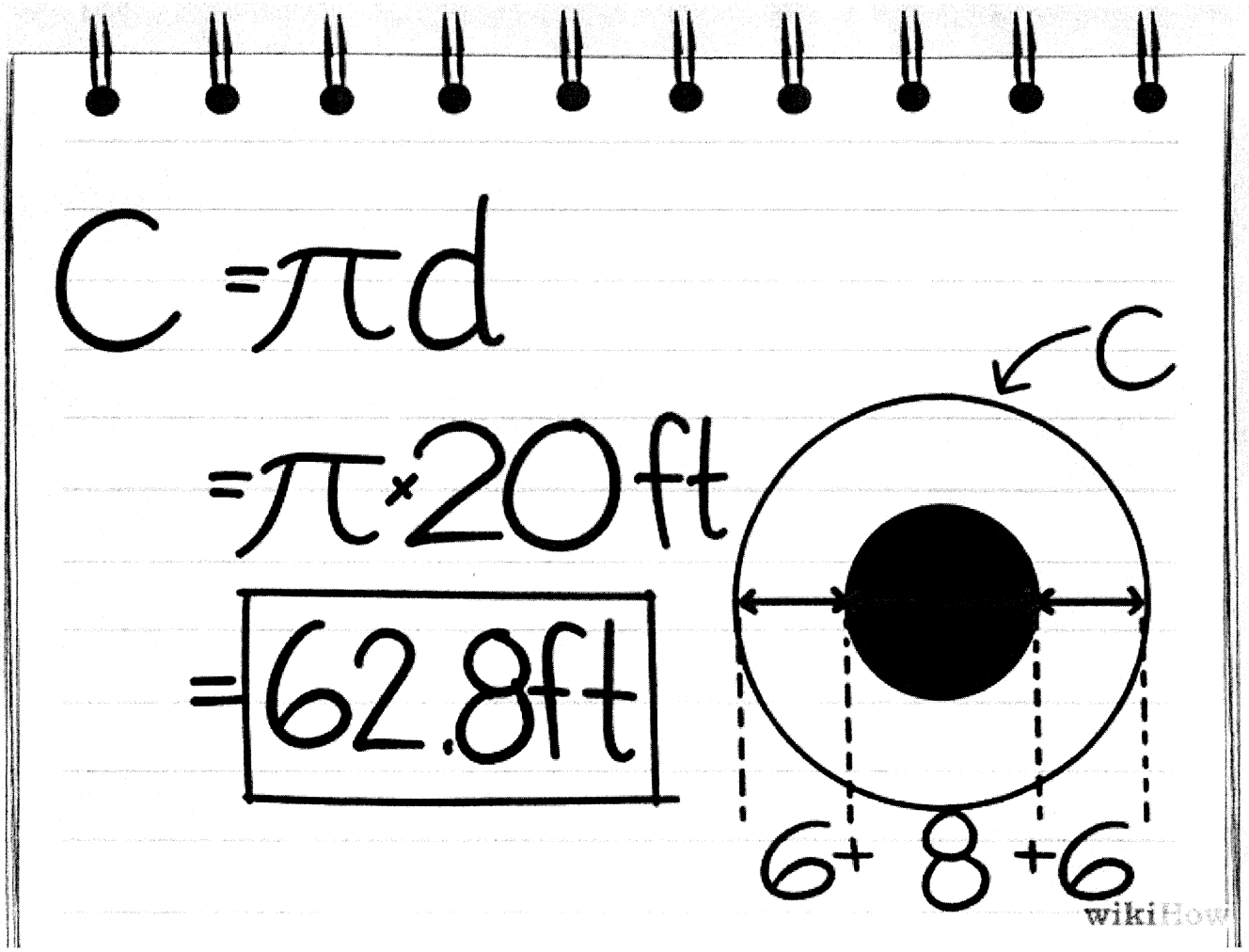
Circumference of a Circle

The circumference of a circle is the edge or rim of a circle itself. It is the equivalent of the perimeter for a circle.

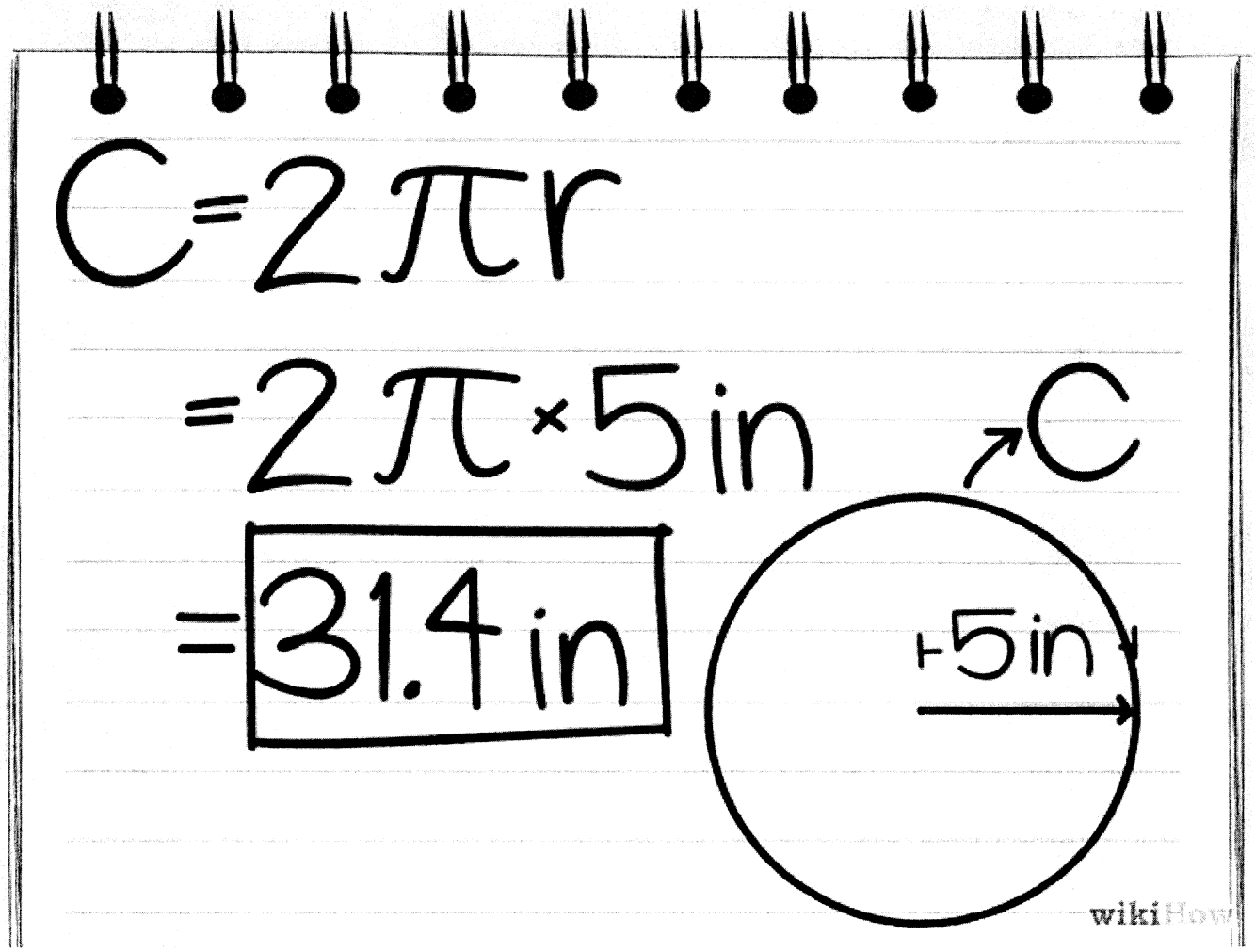


The formula is simply this: $C = \pi d$. In this equation, "C" represents the circumference of the circle, and "d" represents its diameter. That is to say, you can find the circumference of a circle just by multiplying the diameter by pi. Plugging π into your calculator will give you its numerical value, which is a closer approximation than 3.14.

The example below used 3.14 as an approximation of π. Let's say you're solving this problem: you have a hot tub with a diameter of 8 feet, and you want to build a fence that creates a 6-foot wide space around the tub. To find the circumference of the fence that has to be created, you should first find the diameter of the tub and the fence which will be 8 feet + 6 feet + 6 feet, which will account for the entire diameter of the tub and fence. The diameter is 8 + 6 + 6, or 20 feet. Now substitute it into the formula, plug π into your calculator for its numerical value, and solve for the circumference:

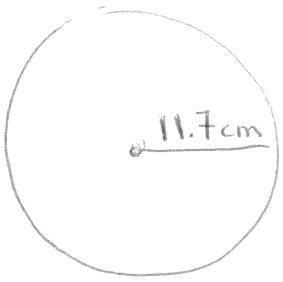


Here is another example. Let's say you're cutting out a decorative strip of paper to wrap around the edge of a pie you've just made. The radius of the pie is 5 inches (12.7 cm). To find the circumference that you need, just plug the radius into the equation. The formula uses the radius. Remember that the diameter is twice the radius, so $C = \pi d$ and $C = 2\pi r$ are really the same formula. Again, the work uses 3.14 as an approximation for π.



Let's try some other examples.

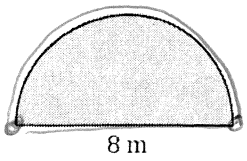
1. The radius of a paper plate is 11.7 cm. Find the circumference to the nearest hundredth. (Use the π button on your calculator as an approximation for π.)



$C = 2\pi r$
$C = 2\pi(11.7)$
$C = 23.4\pi$
$C \approx 73.51\text{ cm}$

$2 \times 11.7 = 23.4$
$C = \pi d$
$C = \pi(23.4)$
$C \approx 73.51\text{ cm}$

2. The figure below is in the shape of a semicircle. A semicircle is an arc that is "half" of a circle. Find the perimeter of the shape to the nearest tenth of a meter. (Use the π button on your calculator as an approximation for π.)



Perimeter = 8m (C of semicircle) + 8m (diameter)

πd

$\pi(8)$

Now take $\frac{1}{2}$

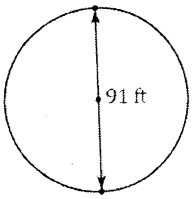
$\frac{1}{2}(8\pi) = 4\pi$

8

Perimeter $= 4\pi + 8$

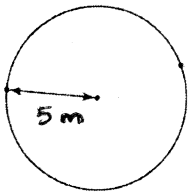
$= 20.6$ meters

3. Find the circumference (a.k.a. perimeter) of the circles below. Leave your answers in terms of π this time!



$C = \pi d$

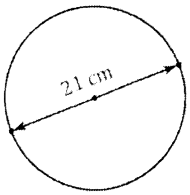
$C = 91\pi$ ft



$C = 2\pi r$

$C = 2(\pi)(5)$

$C = 10\pi$ meters



$C = \pi d$

$C = 21\pi$ cm