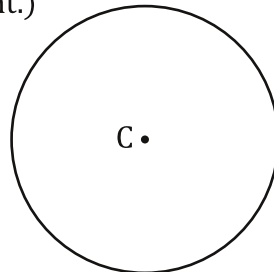


Circles

Round and round we go, and where we'll stop? Well, we won't stop I guess...

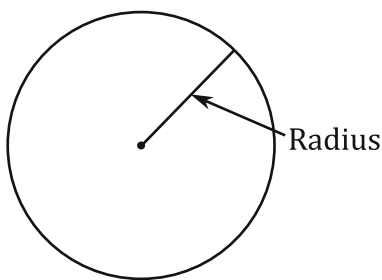
A Circle: We all know what they look like, but what is it? Well, the overly technical definition of a circle is the set of points equidistant from a single point. Huh? In other words, that nice round shape you see is a bunch of points that are all exactly the same distance away from the center. This is circle C. (You name circles by their center point.)



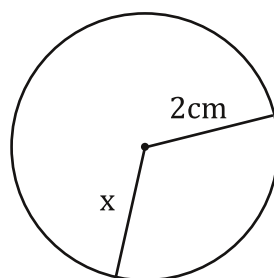
Circle C, $\odot C$
This symbol means "circle."

Pretty cool huh? Let's look at some more properties of circles....

Radius: The radius is the distance that is from the center of the circle to the edge. It is the same length everywhere in the circle, because it is that distance from the center that makes the circle from its definition above. (The radius is also half the length of the diameter.) All radii (plural form...more than one...not radiuses) from the same circle are equal.



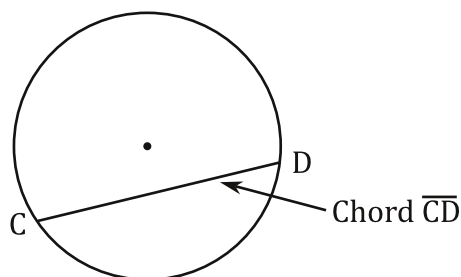
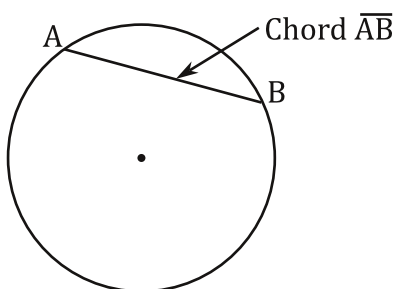
Ex. 1. Find the value of x.



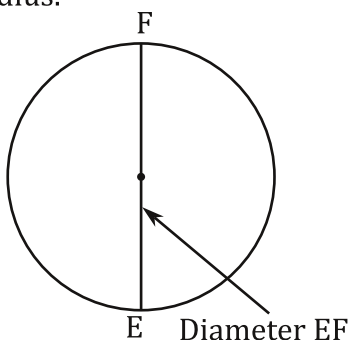
Answer:

$x = 2\text{cm}$ because all radii in a circle are equal.

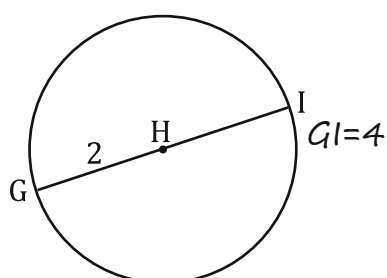
Chord: A chord is a line drawn inside the circle that touches the circle at its endpoints.



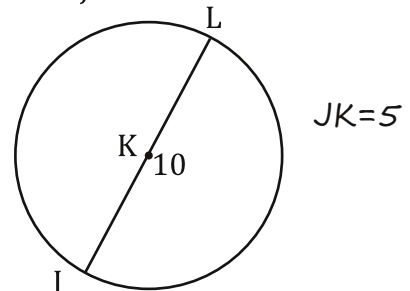
A Diameter is a special chord that goes through the center of the circle. It is also twice as long as the radius.



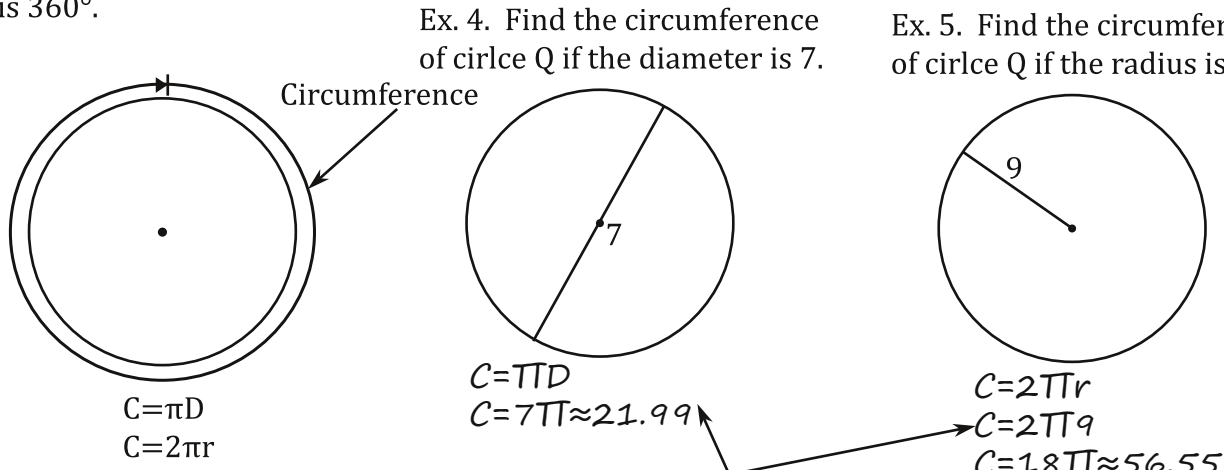
Ex. 2. Find the length of diameter GI if $GH = 2$.



Ex. 3. Find the length of radius JK if $KL = 10$.



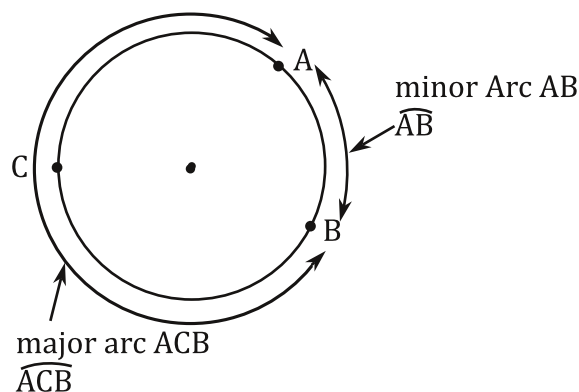
Circumference: Ah pie, delicious apple or cherry, hot out of the oven. No wait, not that kind of pie! This one has no "e". The circumference is the distance around the circle. Its distance is πD and because $D=2r$ then $2\pi r$ is also very popular for the distance of the circumference. Its measurement is 360° .



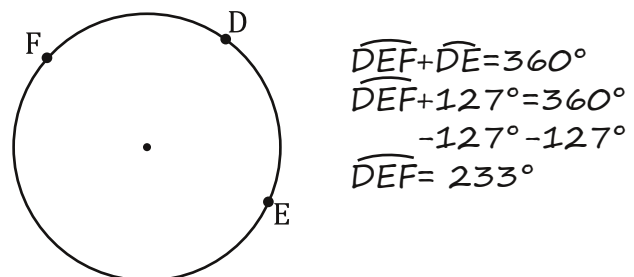
These steps seem to be out of order. Don't worry, multiplication is commutative. This is how it's usually done.

A note about π "pi." π is actually the ratio of the circumference to the diameter C/D and is approximately equal to 3.1415926535897923846264338327950288419716939937...and never ever ends. Very interesting... Some people have memorized this out thousands of digits, (Get a job, right?) and I think there is a super computer still working on it to see if it will ever end. Some texts and places don't even want you to multiply by pi, hence " 7π " as in the answer to example 4. This is called "in terms of pi". Some people want you to write it out. For the exercises that follow you should do both so you are used to both. For pi, just round to 3.14159. That's usually plenty accurate unless you're measuring amoeba's or splitting atoms.

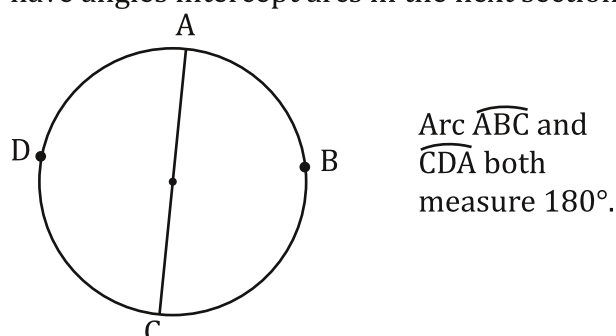
An Arc is simply part of the circumference. A Minor Arc is the short one. The Major Arc is the long one. Always use 3 points when naming a major arc to separate it from the minor arc.



Ex. 6. Find DEF if $\widehat{DE} = 127^\circ$.



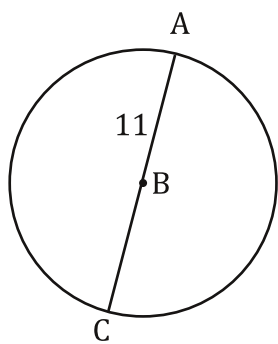
A Semi-Circle is an arc that intercepts a diameter. The diameter actually cuts the circle in half so the semi-circle is always $360^\circ/2$ or 180° . By the way, "intercept" is a funny word. All it means is that the ends of the arc are the same as the ends of the diameter or whatever is intercepting the arc. (We'll have angles intercept arcs in the next section. Won't that be fun!)



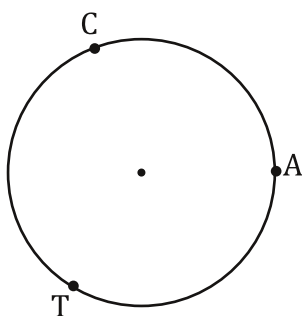
Okay, get your wheels and let's practice!

Answer the questions and give a reason for your answer...

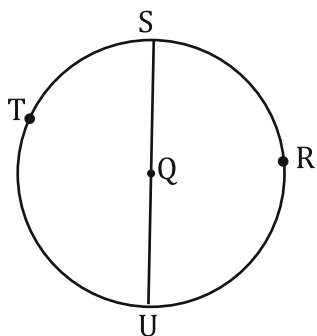
1. The radius of circle B is 11. Find the diameter.



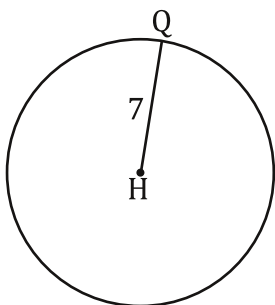
3. $m\widehat{ATC} = 276^\circ$. Find $m\widehat{AC}$.



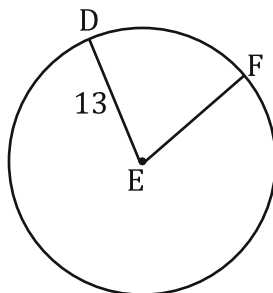
5. Find $m\widehat{SRU}$ and $m\widehat{STU}$.



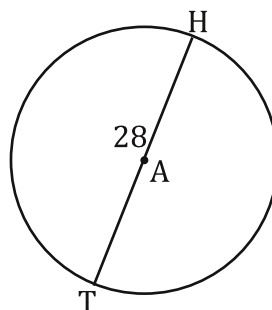
7. $HQ = 7$. Find the circumference of $\odot H$.



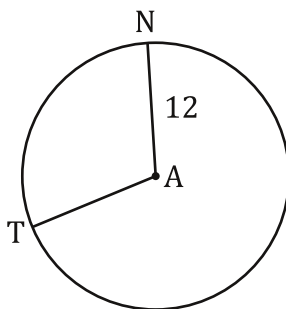
2. $ED = 13$. Find EF .



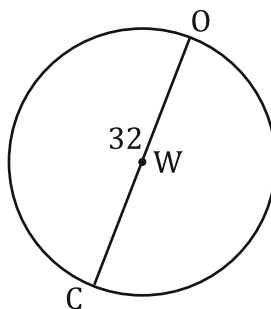
4. $HT = 24$. Find AH .



6. $AN = 12$. Find TA .



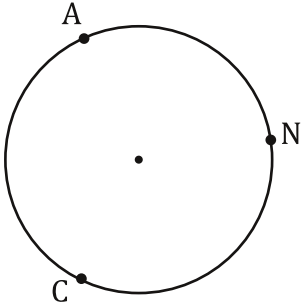
8. $CO = 32$. Find the circumference of $\odot W$.



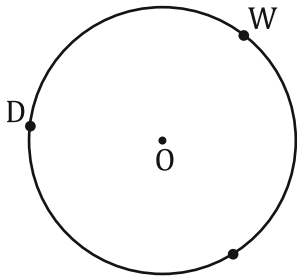
Bubble all the correct answers from above. Don't bubble incorrect answers.

☐ 13 ☐ 14 ☐ 21.99 ☐ 12 ☐ 100.53 ☐ 43.98 ☐ 201.06 ☐ 360 ☐ 180 ☐ 84 ☐ 22 ☐ 24 ☐ 26 ☐ 18

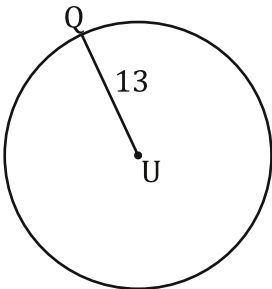
9. $m\widehat{CAN}=226^\circ$. Find $m\widehat{CN}$.



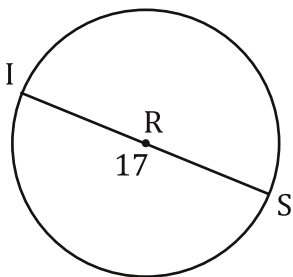
11. $m\widehat{DOW}=294^\circ$. Find $m\widehat{DW}$.



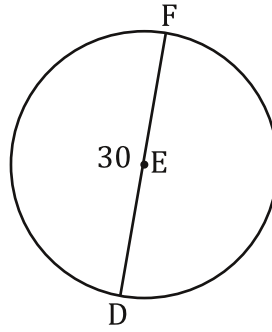
13. $UQ=13$. Find the circumference of $\odot U$.



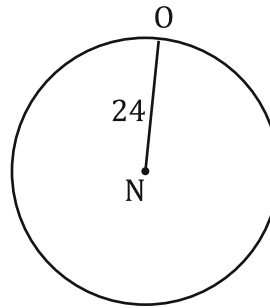
15. $IS=17$. Find the circumference of $\odot R$.



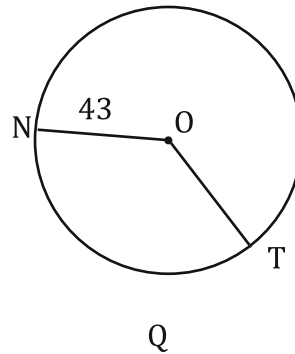
10. $DF=30$. Find the circumference of $\odot E$.



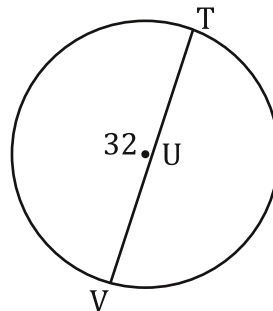
12. $NO=24$. Find the circumference of $\odot N$.



14. $ON=43$. Find OT .



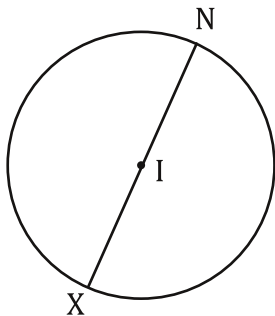
16. $TV=32$. Find UV .



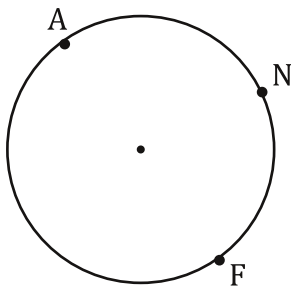
Bubble all the correct answers from above. Don't bubble incorrect answers.

☐ 106.81 ☐ 16 ☐ 13 ☐ 81.68 ☐ 40.84 ☐ 150.8 ☐ 86 ☐ 114 ☐ 32 ☐ 53.41 ☐ 94.25 ☐ 66 ☐ 134 ☐ 43.98

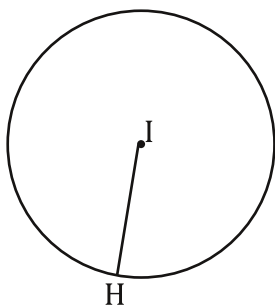
17. The circumference of $\odot I$ is 21π . Find NX .



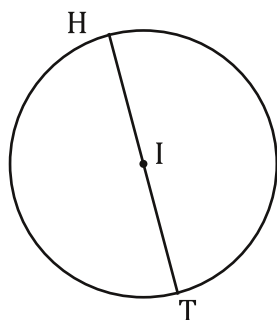
19. $m\widehat{AN}=32^\circ$ and $m\widehat{NF}=94^\circ$. Find $m\widehat{AF}$.



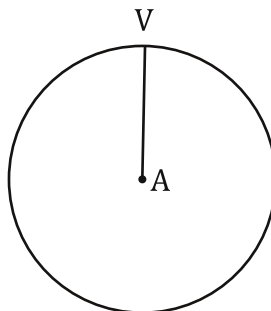
21. The circumference of $\odot I$ is 22π . Find IH .



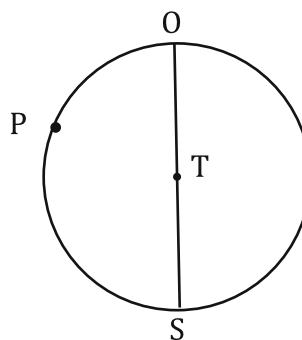
23. The circumference of $\odot I$ is 16π . Find HT .



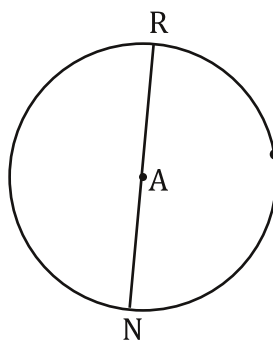
18. The circumference of $\odot A$ is 36π . Find VA .



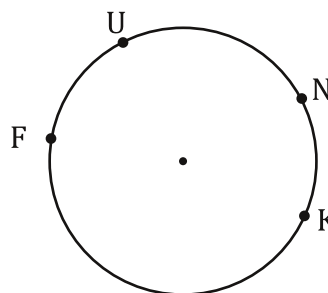
20. $m\widehat{OP}=37^\circ$. Find $m\widehat{PS}$.



22. $RN=18$. Find RA .



24. $m\widehat{FKN}=168^\circ$ $m\widehat{UF}=34^\circ$. Find $m\widehat{UN}$.



Bubble all the correct answers from above. Don't bubble incorrect answers.

☐16 ☐8 ☐11 ☐234 ☐22 ☐21 ☐192 ☐18 ☐143 ☐9 ☐9 ☐266 ☐158 ☐323