SM2 9.5: Central Angles
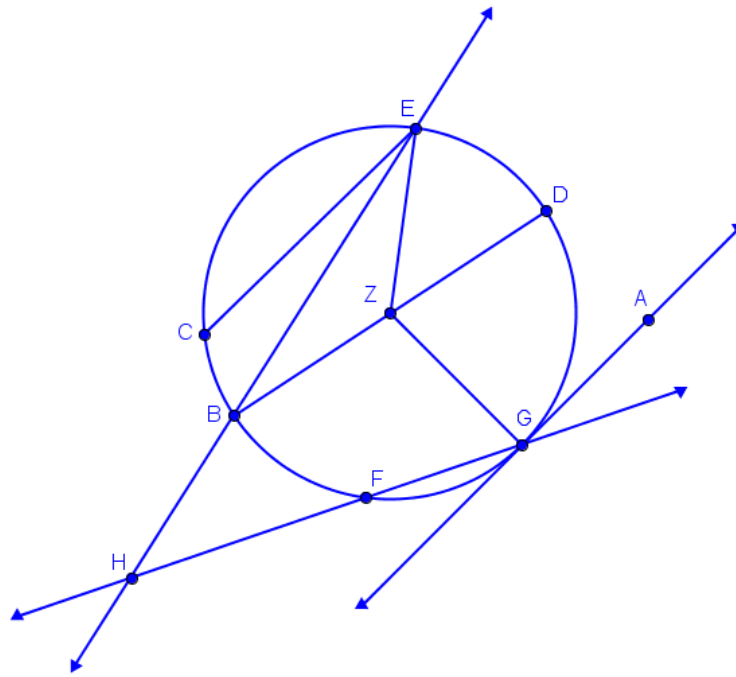
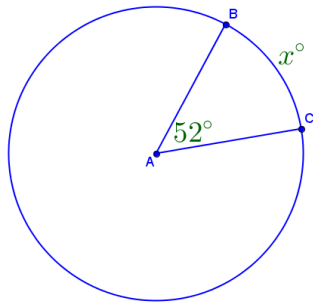*Problems:*
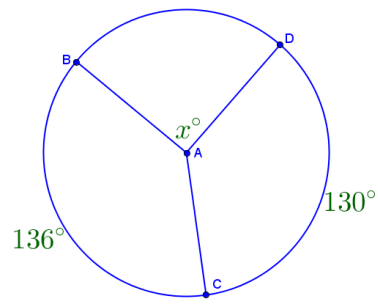

Use the figure above to answer questions 1 through 10:

1) What is the name of the circle?

2) What is the name of each radius of the circle shown in the figure?

3) What is the name of each secant line of the circle shown in the figure?

4) What is the name of each chord of the circle shown in the figure?

5) What is the name of each diameter of the circle shown in the figure?

6) What is the name of each tangent line of the circle shown in the figure?

7) List each vocabulary term that $\overline{ZG}$ is an example of.

8) List each vocabulary term that $\overline{DB}$ is an example of.

9) List each vocabulary term that point G is an example of.

10) List each vocabulary term that $\overleftrightarrow{BH}$ is an example of.
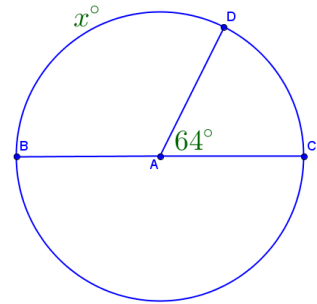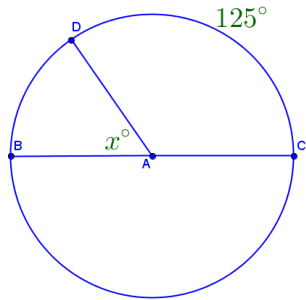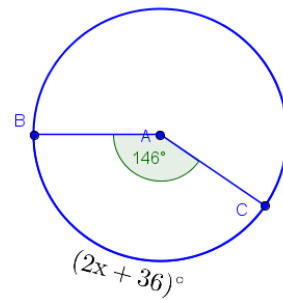
Find the value of x:

11)

$x°$

$52°$

B, C, A

12)

$x°$

$130°$

$136°$

B, D, A, C

13)

$x°$

$64°$

D, B, A, C

14)

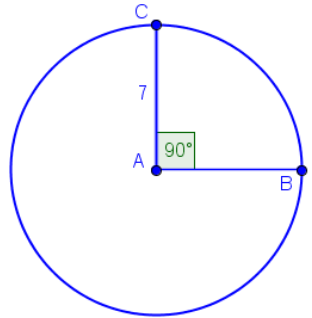
$125°$

$x°$

D, B, A, C
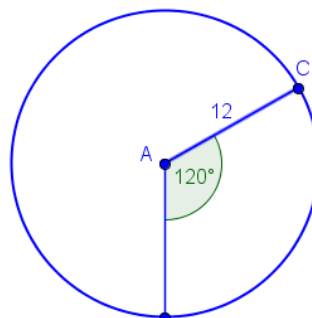
15)

$146°$

$(2x + 36)°$

B, A, C

Find the a) indicated arc length in terms of π, b) approximate the arc length to the nearest tenth, and c) circle the correct classification of the arc. **All lengths are in *in*.**

16) Length of $\overarc{BC}$ =

a)
b)
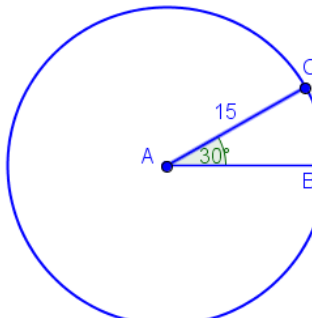
minor   semicircle   major

17) Length of $\overarc{CB}$ =

a)
b)

minor   semicircle   major

18) Length of $\overarc{BC}$ =

a)
b)

minor   semicircle   major

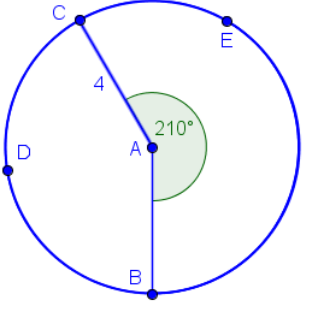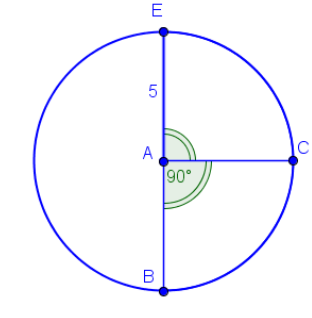19) Length of $\overarc{BEC}$ =

a)
b)
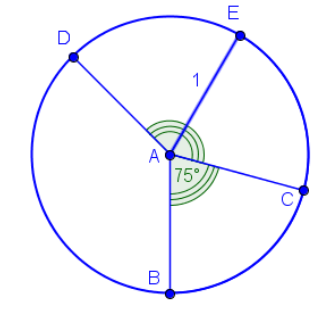
minor   semicircle   major

20) Length of $\overarc{BCE}$ =

a)
b)

minor   semicircle   major

21) Length of $\overarc{BED}$ =

a)
b)

minor   semicircle   major

Find a) the exact area of the shaded sector and b) the approximate area of the sector to the nearest tenth. **All lengths are in *in*.**

22)	23)	24)
A 2 C B θ = 110°	C B 6 θ = 36° A	C θ = 180° A 5 B
a) b)	a) b)	a) b)

25)	26) For b) round to the nearest hundredth.	27)
θ = 333° A 3 B C	A θ = 1° 1 B C	θ = 40° A C 4 B
a) b)	a) b)	a) b)
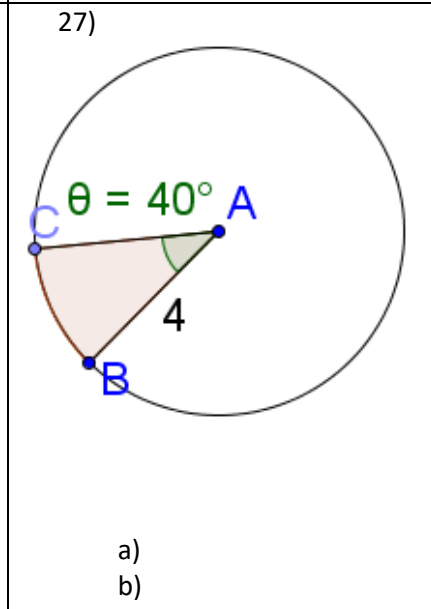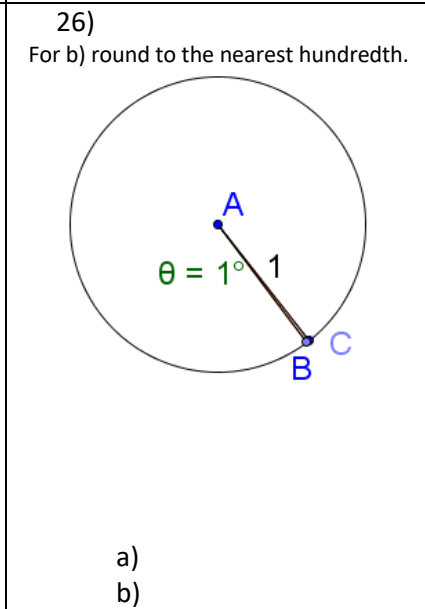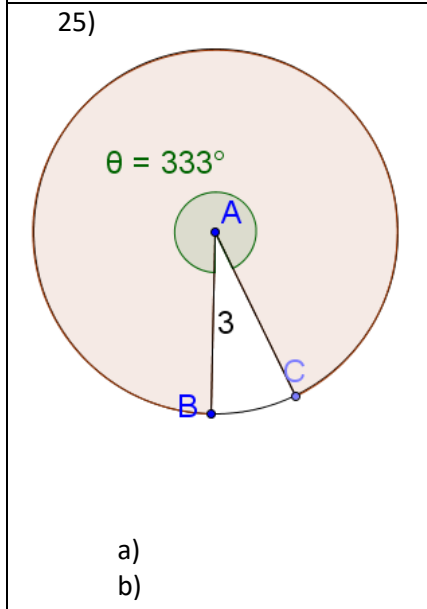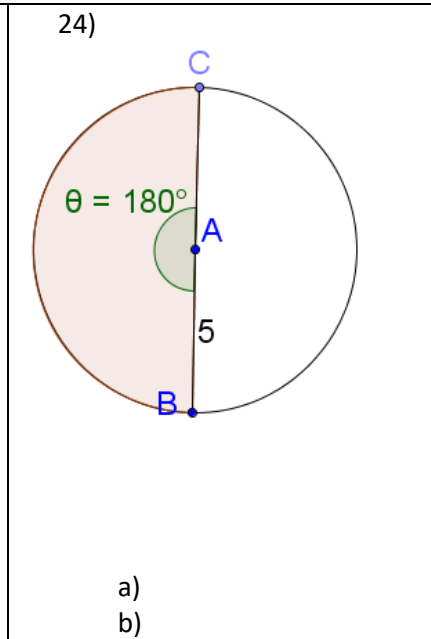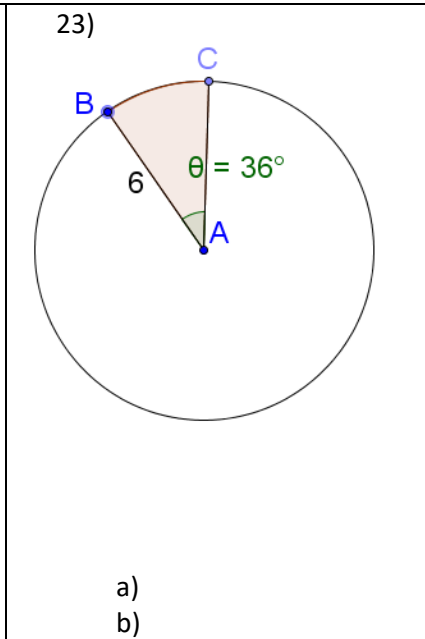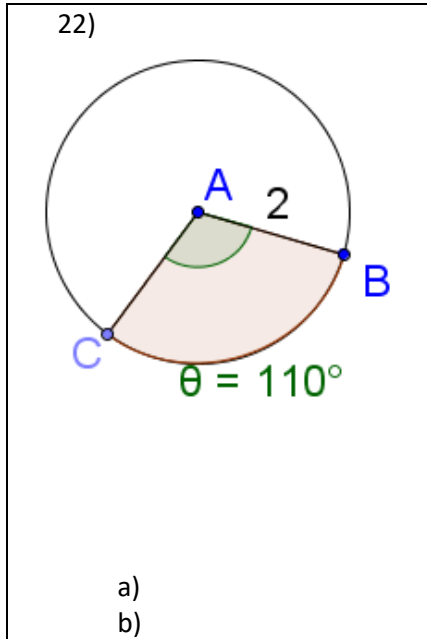
28) You and some friends are going out to lunch. After much discussion, you decide to go to the best pizza place in town, Orem π Pizza. You have three options for lunch, all three cost the same, and you can put as many toppings as you want on any of them. (Pizza sizes are given in diameters.)
    a. A personal 6" pizza
    b. Two slices that come from a 14" pizza that was cut into 12 slices
    c. Share a 10" pizza equally with two friends

    In which option, will you get the most pizza and why? Show your work for credit.

Because of an overactive fault, an earthquake swallows up Superman's love interest, Lois Lane. Ignoring the fact that he'd likely kill everyone on the planet, Superman decides to use his ability to fly to zoom around the planet. He figures he can turn back time and prevent the death of his girlfriend by flying concentric circles around the planet, reversing the spin of Earth, making time move backwards (this would not work and would be a stupid plot for a movie).

The radius of Earth is about 3959 miles. Assume that Superman flies to a height where the atmospheric pressure is weak enough to consider it the start of "outer space", which is roughly 50 miles above the surface of the planet.

29) Approximate the distance Superman flies around the planet to the nearest whole mile.

30) Suppose Superman flies around the planet 30 times before the Earth came to a stop. How far did Superman travel to the nearest mile?

31) Suppose Superman drops his girlfriend off at Quito, Ecuador, which is located on the equator, to cover an important story for her newspaper. Then he flies to the north pole to stop Lex Luthor from melting the ice caps in an attempt to drown the residents of all coastal cities on the planet. Because it is important for him to get there quickly, assume that he flies along the surface of the planet to minimize the distance he has to travel. How far does he fly on his trip from Quito to the north pole to the nearest tenth of a mile?

While deployed in a combat zone, your tank drives over a small mine, destroying your tread, immobilizing you at point A. Knowing you are not able to move and being aware of your firing capacities, 3 enemy Jackal Armored Vehicles at point B, which is the direction you are currently aimed at, set up a circular perimeter of about 2 kilometers, at points B, C, and D, assuming they are outside of your range of fire.
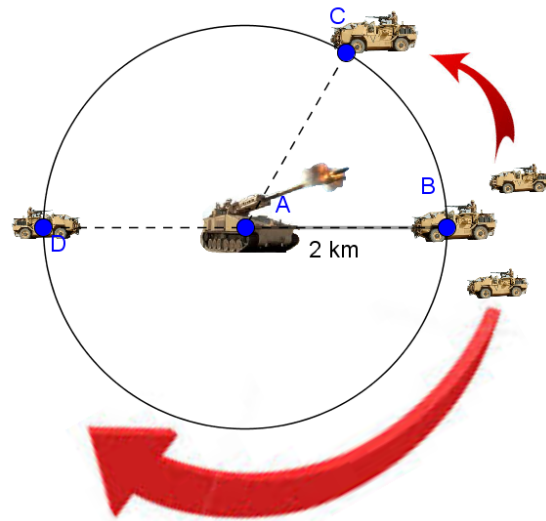
The jackal that moves from point B to point C takes 5 minutes to get there. The jackal that moves from point B to point D, which is directly behind you, takes 15 minutes to get there.

Fortunately for you, your tank is also equipped with a 3 missile firing system giving you an effective range of 5km with three shots!

32) After launching your first missile into the vehicle at point B, what angle do you turn your turret to strike the Jackal at point C?

33) After launching your first missile into the vehicle at point C, what angle do you turn your turret to strike the Jackal at point D?

34) How far to the nearest tenth did the jackal that moved from point B to point C travel?

35) How far to the nearest tenth did the jackal that moved from point B to point D travel?