Simplifying Radicals

Hw Section 8.1

Simplify.

1. $\sqrt{27}$

2. $\sqrt{98}$

3. $3\sqrt{18}$

4. $\sqrt{54}$

5. $\sqrt{8^2}$

6. $\sqrt{k^7}$

7. $\sqrt{2} \cdot \sqrt{2}$

8. $-\left(\sqrt{5}\right)^2$

9. $\left(-\sqrt{7}\right)^2$

10. $\sqrt{8^2}$

11. $\sqrt{9} \cdot \sqrt{2}$

12. $\sqrt{121} \cdot \sqrt{169}$

13. $\frac{\sqrt{32}}{\sqrt{2}}$

14. $\frac{\sqrt{50}}{\sqrt{2}}$

15. $\frac{8\sqrt{15}}{3\sqrt{5}}$

16. $\frac{7\sqrt{28}}{\sqrt{7}}$

17. $\frac{3}{\sqrt{3}}$

18. $\frac{2}{\sqrt{2}}$

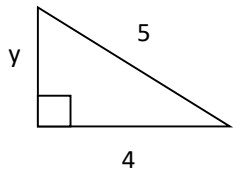
19. $\frac{\sqrt{8}}{\sqrt{64}}$

20. $\frac{\sqrt{11}}{\sqrt{44}}$

Pythagorean Theorem

Use the Pythagorean Theorem to find the missing measure. Give exact answers and rounded answers (if needed) to one decimal place.

#1)



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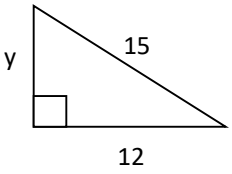

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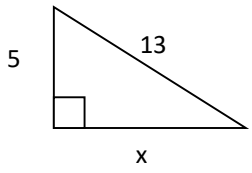

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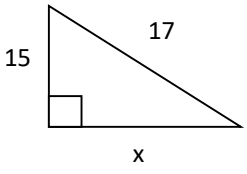
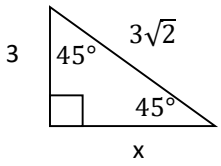


Hw Section 8.2

#5)



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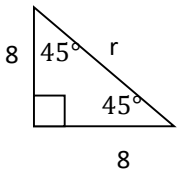

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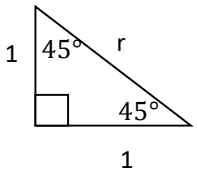

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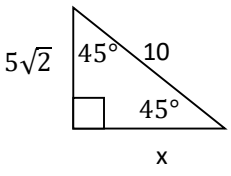

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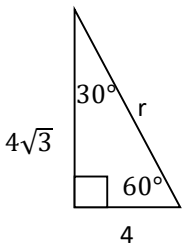

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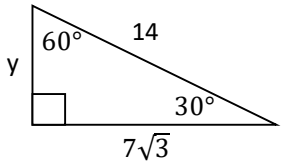

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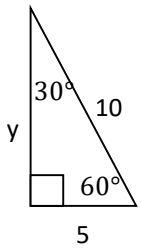
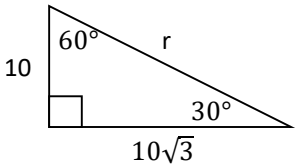


#12)



Determine if the following measures can form a right triangle.

#13) 18, 24, 30

#14) 21, 29, 20

#15) 6, 8, 10

#16) 1, 2, 3

You must draw a picture for each of following problems, then answer the questions.

#17) Draw a right triangle with vertices A(0, a), C(0, 0), and B (b, 0) on a coordinate plane. Use the Pythagorean Theorem to derive a formula for the distance between A and B.

#18) Herbert is making a ramp to try out his car for the Gnaden derby. The ramp support forms a right angle. The base is 12 feet long and the height is 5 feet. What length of plywood does he need to complete the ramp?

#19) The diagonal of a rhombus is 48 cm long, and a side of the rhombus is 26 cm long. Find the length of the other diagonal.

#20) The diagonals of a rhombus measure 10 cm and 8 cm. Use the properties of a rhombus and the Pythagorean Theorem to find the perimeter of the rhombus.

#21) In a right triangle, the measures of the legs are 12 and x + 12, and the measure of the hypotenuse is x + 16. Find the value of x.

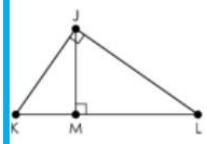
#22) A stair stringer is a board that supports stairs. Suppose a set of stairs is to rise 8 feet over a length of 15 feet. Find the length of the stair stringer to the nearest foot.

End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2018

Question 4



Mark is proving the Pythagorean Theorem. He draws right triangle JKL with altitude $\overline{JM}$. First he proves $\triangle JKL \sim \triangle MKJ$ and $\triangle JKL \sim \triangle MJL$ using the Angle-Angle criterion. The rest of his proof is shown with some steps missing.

Statements	Reasons
1. $\triangle JKL \sim \triangle MKJ$ and $\triangle JKL \sim \triangle MJL$	1. Angle-Angle criterion
2. $\frac{JK}{LK} = \frac{MK}{JK}$ and $\frac{LJ}{LK} = \frac{ML}{LJ}$	2. Corresponding sides of similar triangles are proportional
3. $(JK)^2 = LK \cdot MK$ and $(LJ)^2 = LK \cdot ML$	3. Multiplication property of equality
4.	4.
5.	5.
6. $MK + ML = LK$	6. Segment addition postulate
7. $(JK)^2 + (LJ)^2 = (LK)^2$	7. Substitution

Which two steps are missing from the proof?

Ⓐ

4. $(JK)^2+(LJ)^2=LK\cdot MK+LK\cdot ML$	4. Addition property of equality
5. $(JK)^2+(LJ)^2=LK(MK+ML)$	5. Distributive property

Ⓑ

4. $(JK)^2+(LJ)^2=LK\cdot MK+LK\cdot ML$	4. Addition property of equality
5. $(JK)^2+(LJ)^2=LK(LK+LK)$	5. Distributive property

Ⓒ

4. $(JK)^2\cdot(JK)^2=LK\cdot MK\cdot LK\cdot ML$	4. Multiplication property of equality
5. $(JK)^2\cdot(LJ)^2=LK(MK\cdot ML)$	5. Distributive property

Ⓓ

4. $(JK)^2\cdot(JK)^2=LK\cdot MK\cdot LK\cdot ML$	4. Multiplication property of equality
5. $(JK)^2\cdot(LJ)^2=LK(LK\cdot LK)$	5. Distributive property

Geometric Mean

Hw Section 8.3

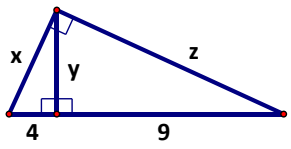
Find the geometric mean between each pair of numbers.
Give exact answers.

#1) 5 and 3

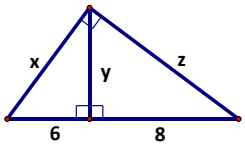
#2) 4 and 6

Find the missing values. (If not a whole number, leave it in simplest radical form)

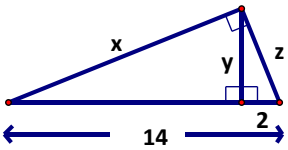
#3) $(x, y, z) =$ (_____, _____, _____)



#4) $(x, y, z) =$ (_____, _____, _____)

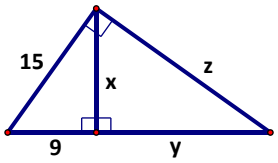


#5) $(x, y, z) =$ (_____, _____, _____)

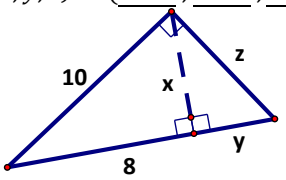


Round to two decimal places if needed.

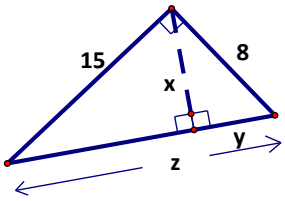
#6) $(x, y, z) =$ (_____, _____, _____)



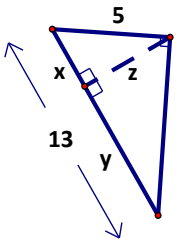
#7) $(x, y, z) =$ (____, ____, ____)



#8) $(x, y, z) =$ (____, ____, ____)



#9) $(x, y, z) =$ (____, ____, ____)

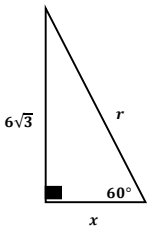


#10) The find the height his house, George held the corner of a box of Sugar Bombs near his eye so that the top and bottom of the house were in line with two edges of the box. If George's eye is 4 feet off the ground and he is standing 12 feet from the house, how tall is the house?

Special Right Triangles

Hw Section 8.4

1.



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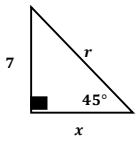

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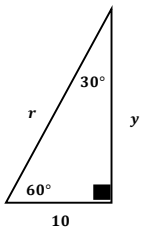

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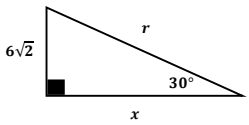

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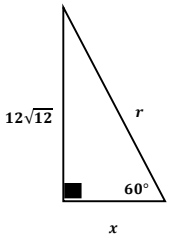

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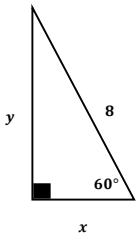

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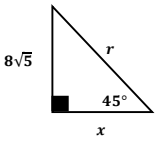

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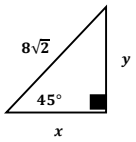

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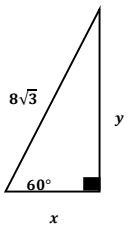

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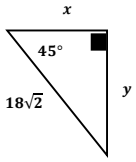

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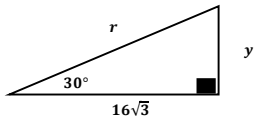

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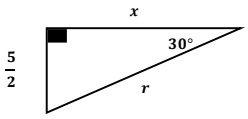

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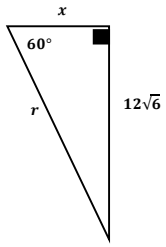

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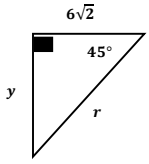

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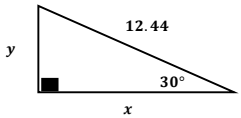

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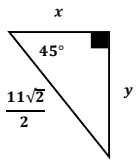

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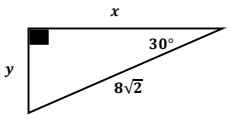

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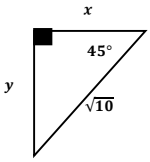

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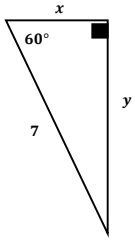

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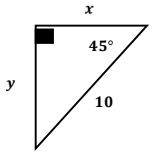

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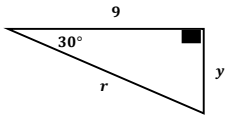

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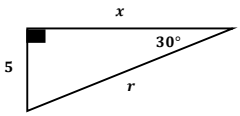

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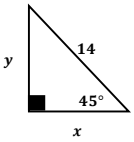

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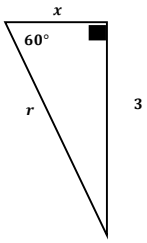

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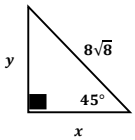

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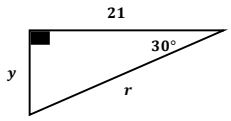

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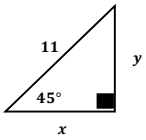

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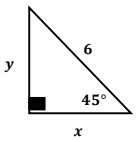

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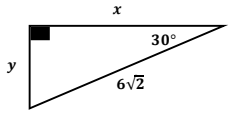
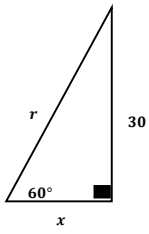


30.



End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2018

Question 23

A triangle is shown.

What is the length, in inches (in.), of side *a*?

_____ *in.*

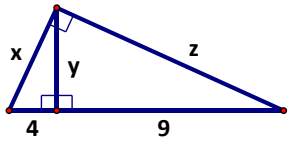
1	2	3
4	5	6
7	8	9
	0	
.	-	$\frac{\square}{\square}$

Right Triangles

Review Chapter 8

Find the values of x, y and z. Give exact answers only.

#1) $(x, y, z) = (\_\_\_\_, \_\_\_\_, \_\_\_\_)$



Determine whether a triangle with sides having the given measurements is a right triangle.

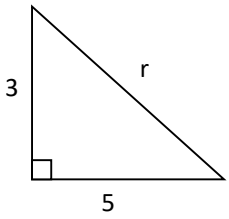
#2) 13, 16, 20

#3) 5, 3, 4

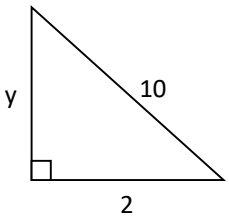
#4) $2\sqrt{3}, 2, 4$

Find the value of the variable. Give the exact value and a rounded value to the nearest hundredth. *(2 decimal places)*

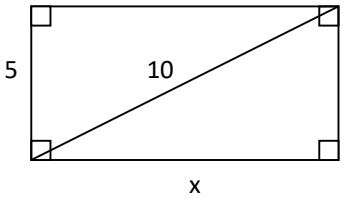
#5)



#6)

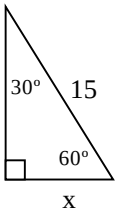


#7)

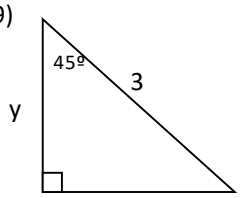


Find the value of the variables indicated. Give the exact value.

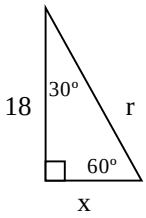
#8)



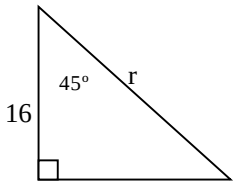
#9)



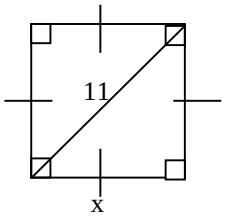
#10)



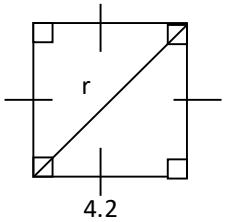
#11)



#12)



#13)



Simplify the expressions.

#14) $\sqrt{225}$

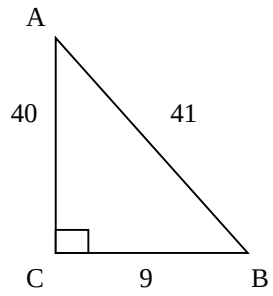
#15) $\sqrt{32}$

#16) $\sqrt{12}$

Sine, Cosine, and Tangent

Hw Section 9.1

Write a trigonometric function that corresponds to each pair of numbers and the given angle.



#1) 9, 40, ∠A

#2) 9, 41, ∠A

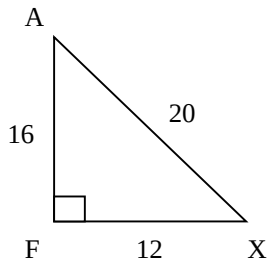
#3) 40, 41, ∠A

#4) 9, 40, ∠B

#5) 9, 41, ∠B

#6) 40, 41, ∠B

Write an equation using the indicated trig ratio.



#7) sin A

#8) cos A

#9) tan A

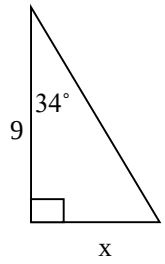
#10) sin X

#11) cos X

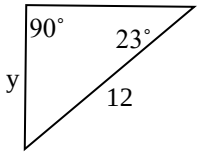
#12) tan X

Find the value of x. Round measures of segments to the nearest tenth and angle measures to the nearest degree

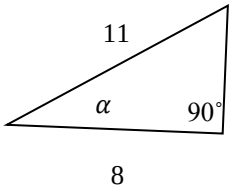
#13)



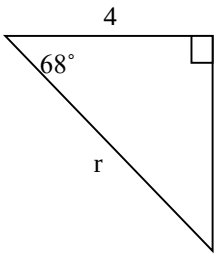
#14)



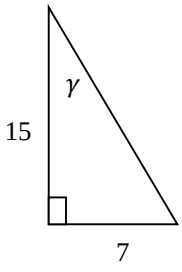
#15)



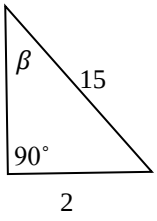
#16)



#17)

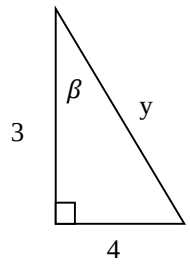


#18)

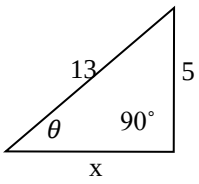


Find the value of the variables. Round measures of segments to the nearest tenth and angle measures to the nearest degree.

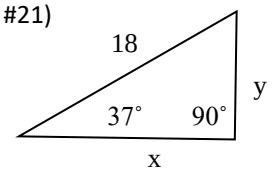
#19)



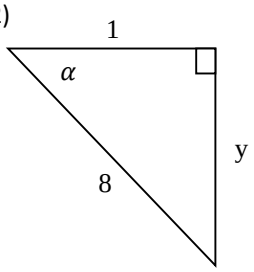
#20)



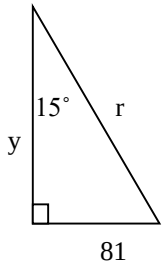
#21)



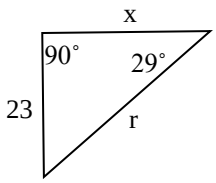
#22)



#23)



#24)



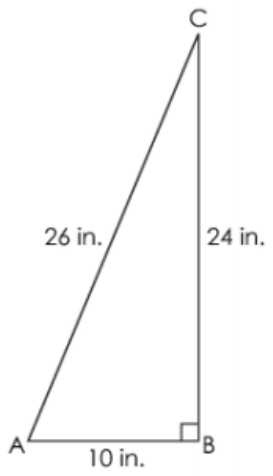
End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2017

Question 21

Triangle ABC is shown.

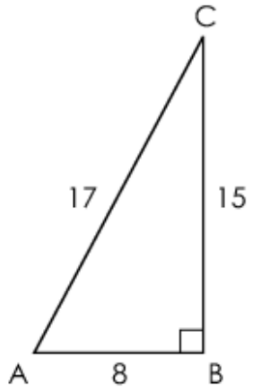


What is tan(A)?

2018

Question 8

A right triangle ABC is shown.

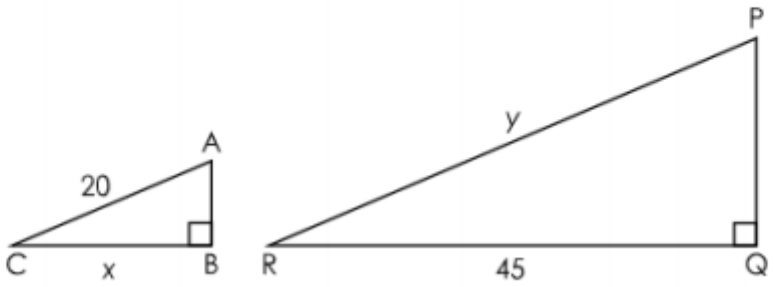


What is cos A?

2019

Question 16

A teacher asked Dwayne to find the values of x and y in the triangles shown.



The teacher provided the following information about the triangles:

- Triangle ABC is similar to triangle PQR.
- In triangle ABC, $cos(C) = 0.92$.

Dwayne claims that the value of x can be determined but the information provided is not sufficient to find the value of y.

Which statement about Dwayne's claim is accurate?

(A) His claim is correct because $cos(C) = \frac{20}{x}$ and 0.92 can be substituted for $cos(C)$, but the cosine of angle R is not given for triangle PQR.

(B) His claim is correct because $cos(C) = \frac{x}{20}$ and 0.92 can be substituted for $cos(C)$, but the cosine of angle R is not given for triangle PQR.

(C) His claim is incorrect because $cos(C) = \frac{20}{x}$, 0.92 can be substituted for $cos(C)$, and since the triangles are similar, this ratio will be the same as $\frac{y}{45}$.

(D) His claim is incorrect because $cos(C) = \frac{x}{20}$, 0.92 can be substituted for $cos(C)$, and since the triangles are similar, this ratio will be the same as $\frac{45}{y}$.

Sine, Cosine and Complementary Angles

#1) Some sine values have the same cosine values as shown in the table below. What do the angles that have the same value have in common?

Degree	Sine
10	0.1736
9	0.1564
8	0.1392
7	0.1219
6	0.1045
5	0.0872
4	0.0698
3	0.0523
2	0.0349
1	0.0175
0	0.0000

Degree	Cosine
80	0.1736
81	0.1564
82	0.1392
83	0.1219
84	0.1045
85	0.0872
86	0.0698
87	0.0523
88	0.0349
89	0.0175
90	0.0000

#2) Why does $\sin(90° - \alpha) = \cos\alpha$?

Hw Section 9.2

Solve the following.

#3) $\sin(90°) = \cos$ _____°

#4) $\sin(30°) = \cos$ _____°

#5) $\sin(60°) = \cos$ _____°

#6) $\cos(89°) = \sin$ _____°

#7) $\cos(72°) = \sin$ _____°

#8) $\cos(18°) = \sin$ _____°

Solve for the unknown variable.

#9) $\sin(x+10)^\circ = \cos(45)^\circ$

#10) $\sin(3x-5)^\circ = \cos(6x-4)^\circ$

#11) $\sin(x)^\circ = \cos(x)^\circ$

#12) $\sin\left(\frac{1}{3}x\right)^\circ = \cos\left(\frac{2}{3}x\right)^\circ$

#13) $\sin(2x+8)^\circ = \cos(3x+2)^\circ$

#14) $\sin\left(\frac{3}{4}x-8\right)^\circ = \cos(71)^\circ$

#15) If $\sin(\alpha) = \cos(\beta)$, then what must be true about α and β?

End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2017

Question 14

Angle A is the complement of angle B.

Which equation about the two angles must be true?

(A) $\sin A = \sin B$

(B) $\sin A = \cos A$

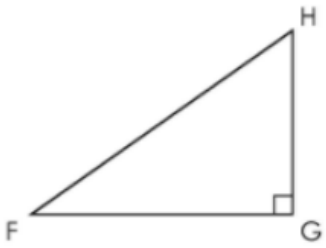
(C) $\cos B = \sin B$

(D) $\cos A = \sin B$

2018

Question 40

Right triangle FHG is shown.



The sine of ∠F is 0.53.

What is the cosine of ∠H? Round your answer to the nearest hundredth as needed.

2019

Question 20

In triangle ABC, ∠A and ∠B are complementary, where cos A = 0.5.

What is the measure, in degrees, of ∠B?

degrees

Trigonometry Applications

Hw Section 9.3

Solve each problem. If needed, round measures of segments to the nearest hundredth and measures of angles to the nearest degree. You must draw a picture and add information to drawing.

#1) It's not that George is an idiot, it's more that he just doesn't know any better. Did he once mistake a Frisbee for a bologna sandwich? Yes, but in his defense, there was mustard on all the lawn toys that fateful day. Speaking of mustard, one day George's mom asked him to paint his room yellow. So, George grabbed a ladder and leaned it against his bedroom wall. The ladder made an angle of 60º with his Power Puffs Girls rug. The foot of the ladder is 7 feet from the wall. How long is the ladder?

#2) After he ran out of mustard, George decided to get some fresh air. He went outside to fly his He-Man kite. Tired from walking all the way outside, George decided to nap while flying The Most Powerful Man in the Universe's kite. The kite string makes an angle of 57º with the ground. If George is laying 100 feet from the point on the ground directly below the kite, find the length of the kite string.

#3) With his hands covered in mustard, George accidently lets his He-Man kite slip out of his fingers. When he awakes, he finds his kite at the very top of the 40 foot tree. If the tree casts a 58 foot shadow, what is the angle of elevation of the sun?

#4) Wanting to recover his kite, George has a brilliant idea. He asks his best friend, a SpongeBob shaped helium balloon, to retrieve his kite. While on his tippy toes, George's outstretched hand is 6 feet above the ground. If the 40-foot balloon string makes an angle of 50º with the ground, how high above the ground is SpongeBob?

#5) At the exact moment a condor pops SpongeBob, an airplane flies overhead. During the airplane's takeoff, airplane rose vertically 1000 feet over a horizontal distance of 1 mile. What is the angle of elevation of the airplane's path?

#6) Trying to grab the airplane out of the sky, George climbs to the top of a 80-foot tower. Once there, he notices a box of Twinkies lying on the ground. From the top of a tower, the angle of depression to the Twinkies is 72º. How far are the Twinkies from the foot of the tower?

#7) While at the top of the 80-foot tower, George jumps to the top of a 50-meter tower. This new tower is braced with a cable secured at the top of the tower and tied 30 meters from the base. What angle does the cable form with the vertical tower?

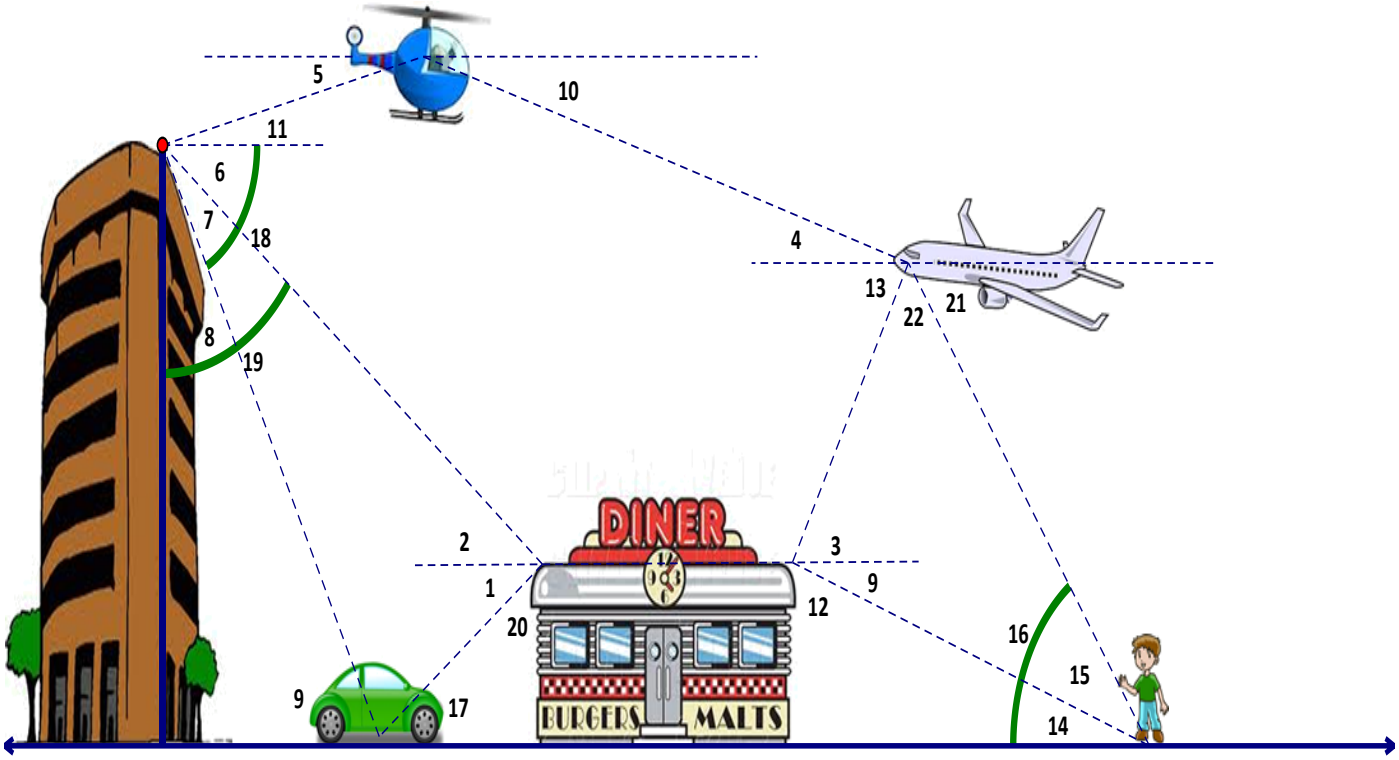
#8) After waking from his dream of climbing towers and swatting down planes, George's mom asks him to paint the outside of the house red. After a quick trip to the refrigerator for paint and to the tool shed to grab a 20-foot ladder, George places the bottom of the ladder 8 feet from the house and gently leans it against the house. What angle does the ladder make with the ground?

#9) Once he runs out of ketchup, George decides to ride his tricycle to find some roadkill so he can scrounge up some more red paint. Trying to find a better viewpoint of the road, George climbs an abandoned lighthouse that is 210 feet high. Once on top, George spots some fresh roadkill. The angle of depression from the top of the lighthouse to the fresh paint is 27º. Find the distance from the roadkill to the foot of the lighthouse.

Trigonometry Applications

Hw Section 9.3b

1. Choose the correct angle number for the provided description.



a) the angle of elevation from the **CAR** to the top of the **DINER** is _____.

b) the angle of depression from the top of the **TALL BUILDING** to the **DINER** is _____.

c) the angle of elevation from the **PLANE** to the **HELICOPTER** is _____.

d) the angle of depression from the top of the **DINER** to the **BOY** is _____.

e) the angle of depression from the **HELICOPTER** to the **PLANE** is _____.

f) the angle of depression from the **PLANE** to the top of the **DINER** is _____.

g) the angle of elevation from the **BOY** to the top of the **DINER** is _____.

h) the angle of depression from the top of the **TALL BUILDING** to the top of the **CAR** is _____.

i) the angle of depression from the **HELICOPTER** to the top of the **TALL BUILDING** is _____.

j) the angle of elevation from the top of the **DINER** to the top of the **TALL BUILDING** is _____.

k) the angle of elevation from the top of the **DINER** to the **PLANE** is _____.

l) the angle of depression from the top of the **DINER** to the **CAR** is _____.

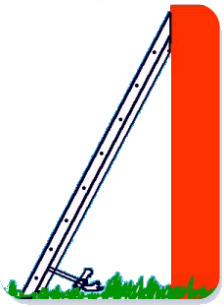
m) the angle of elevation from the **BOY** to the front of the **PLANE** is _____.

n) the angle of depression from the front of the **PLANE** to the **BOY** is _____.

o) the angle of elevation from the **TALL BUILDING** to the **HELICOPTER** is _____.

2. Label (or Draw and label) the side or angle that is represented by the description.

a) The Leaning Ladder

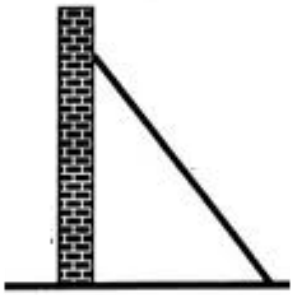


Height on the wall that the ladder reaches.

b) The Leaning Ladder

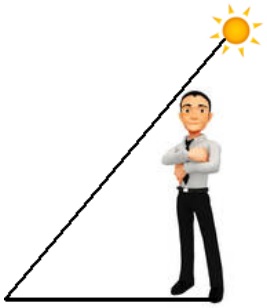
The distance from the foot of the ladder to the wall.

c) The Leaning Ladder



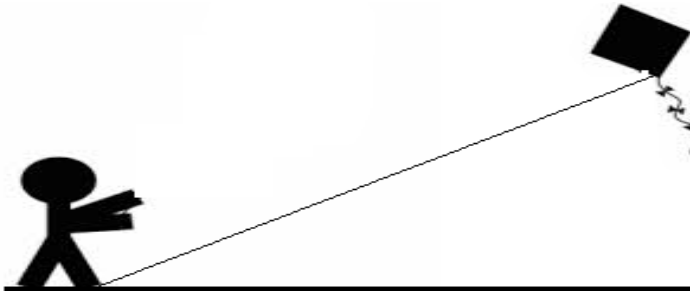
The angle the ladder forms with the wall.

d) The Shadow



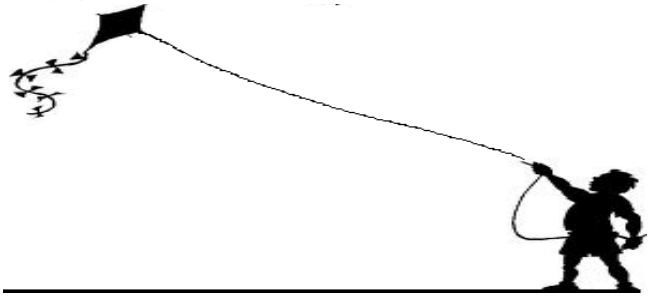
The length of his shadow.

e) Flying a Kite



The length of the string.

f) Flying a Kite



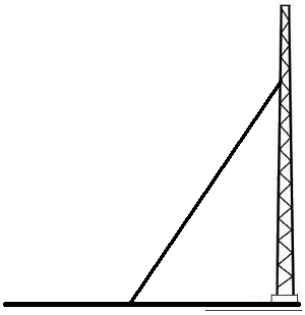
The height of the kite.

What are some of the assumptions that are made about the kite example so that it works easily as a trigonometry question?

g) The Support Guy Wire

The distance from the base of the tree to where the guy wire is fastened to the ground.

h) The Support Guy Wire

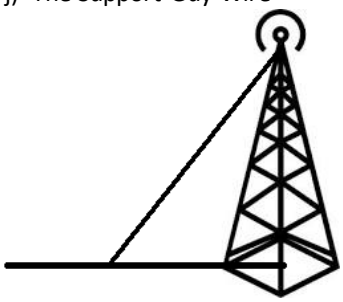


The angle between the antenna and the guy wire.

i) The Support Guy Wire

The height of where the guy wire is fastened to the antenna.

j) The Support Guy Wire



The angle formed between the wire and the ground.

What are some of the assumptions that are made about the guy wire example so that it works easily as a trigonometry question?

3. Create the diagram for the following descriptions. Label the diagram completely including putting the x for the unknown missing value. Write an equation from the diagram and solve the equation.

a) A young boy lets out 30 ft of string on his kite. If the angle of elevation from the boy to his kite is 27°, how high is the kite?

b) A 20 ft ladder leans against a wall so that it can reach a window 18 ft off the ground. What is the angle formed at the foot of the ladder?

c) To support a young tree, Jack attaches a guy wire from the ground to the tree. The wire is attached to the tree 4 ft above the ground. If the angle formed between the wire and the tree is 70°, what is the length of the wire?

d) A helicopter is directly over a landing pad. If Billy is 110 ft from the landing pad, and looks up to see the helicopter at 65° to see it. How high is the helicopter?

e) A man casts a 3 ft long shadow. If the sun's rays strike the ground 62°, what is the height of the man?

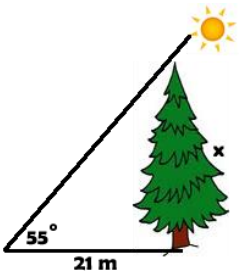
f) A man in a lighthouse tower that is 30 ft. He spots a ship at sea at an angle of depression of 10°. How far is the ship from the base of the lighthouse?

Trigonometry Applications

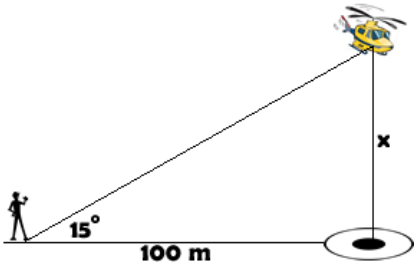
Hw Section 9.3c

Solve the following problems. (All answers to 2 decimals places, unless otherwise instructed.)

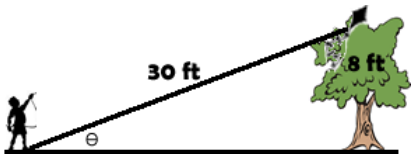
1. A tree casts a shadow 21 m long. The angle of elevation of the sun is 55°. What is the height of the tree?



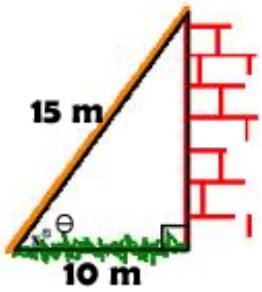
2. A helicopter is hovering over a landing pad 100 m from where you are standing. The helicopter's angle of elevation with the ground is 15°. What is the altitude of the helicopter?



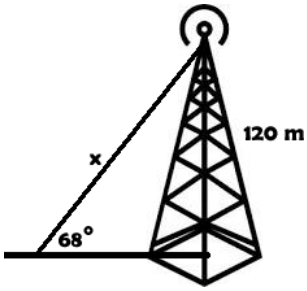
3. You are flying a kite and have let out 30 ft of string but it got caught in a 8 ft tree. What is the angle of elevation to the location of the kite?



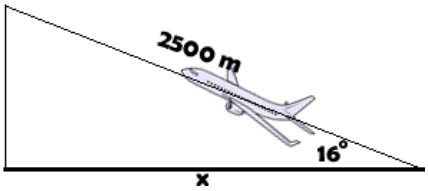
4. A 15 m pole is leaning against a wall. The foot of the pole is 10 m from the wall. Find the angle that the pole makes with the ground.



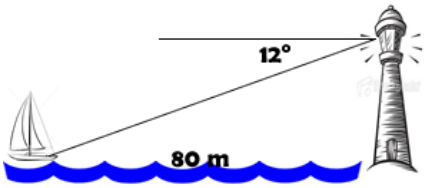
5. A guy wire reaches from the top of a 120 m television transmitter tower to the ground. The wire makes a 68° angle with the ground. Find the length of the guy wire.



6. An airplane climbs at an angle of 16° with the ground. Find the ground distance the plane travels as it moves 2500 m through the air.

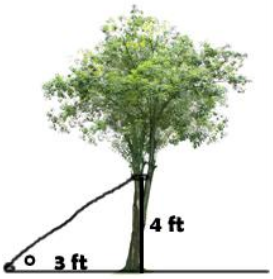


7. A lighthouse operator sights a sailboat at an angle of depression of 12°. If the sailboat is 80 m away, how tall is the lighthouse?



Solve the following problems.

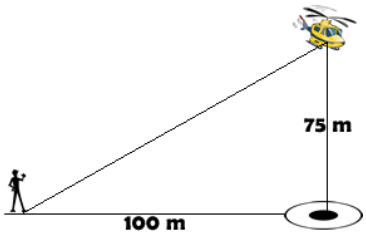
8.



a) How long is the guy wire?

b) What is the angle formed between the guy wire and the ground?

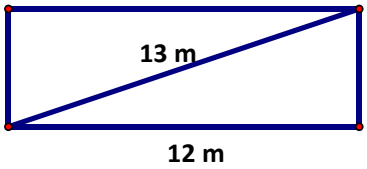
9.



a) What is the length of the line of sight from the man to the helicopter?

b) What is the angle of elevation from the man to the helicopter?

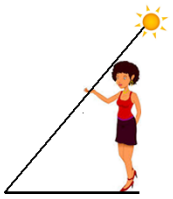
10.



a) A field has a length of 12 m and a diagonal of 13 m. What is the width?

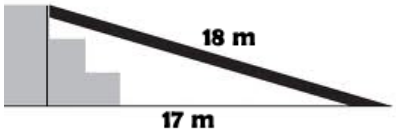
b) What is the angle formed between the diagonal and the width of the field?

11.



a) A 5 ft 11 inch women casts 3 ft shadow. What is the angle that the sun's rays make with the ground?

12.

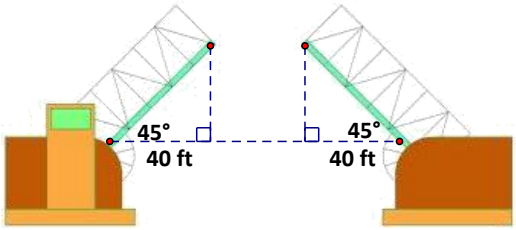


a) A ramp is 18 m long. If the horizontal distance of the ramp is 17m, what is the vertical distance?

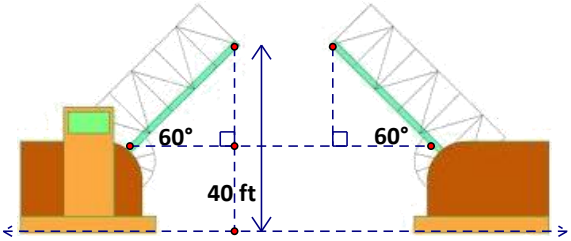
b) What is the angle of elevation of the ramp?

13.

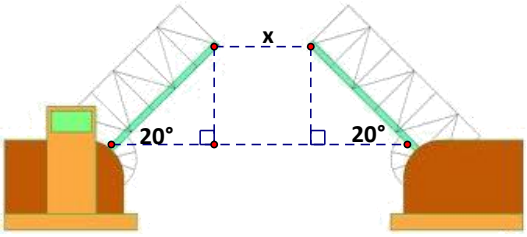
a) Using the drawbridge diagram, determine the distance from one side to the other. (exact answer)



b) Now that you know the distance from side to side, determine how high the drawbridge would be if the angle of elevation was 60°.(exact answer)



c) How far apart would the drawbridge be if the angle of elevation of the drawbridge was 20°?



Trigonometry & Systems of Equations Hw Section 9.4

Solve each problem. If needed, round measures of segments to the nearest hundredth and measures of angles to the nearest degree. You must draw a picture and add information to drawing.

#1) Wearing his Spiderman Underoos, George duct taped himself to Sears Tower in Chicago looking for crime. He sights two thieves going due east from the tower. The angles of depression to the two thugs are 42º and 29º. If SpiderGeorge is 1,353 feet high, how far apart are the criminals?

#2) Wearing his Batman garb, George is standing on top of Wayne Manner looking at Wayne Enterprises building across Gotham River. It is 880 feet between buildings. BatGeorge deduces the angle of elevation to the top of Wayne Enterprises to be 8º and the angle of depression to the ground level to be 20º. How tall is Wayne Enterprises to the nearest foot?

#3) Wearing his Superman costume, SuperGeorge flies due north from his sanity for 90 kilometers. He then turns east for 40 kilometers before turning north again to fly for 70 kilometers. How far is George from his sanity?

#4) Skeletor and He-Man are 7 miles apart with SuperGeorge flying between them. From Skeletor, the angle of elevation to SuperGeorge is 35º. From He-man, the angle of elevation to George is 54º. Find the altitude of the George to the nearest tenth of a mile.

Solving Complex Equations

Hw Section 10.1

Solve each equation showing all your work. Round angles to the nearest tenth and segments to the nearest hundredth

#1) $a^2 = b^2 + c^2 - 2bc \bullet \cos(m\angle A)$
$a^2 = 7^2 + 8^2 - 2(7)(8)\cos(50°)$

#2) $b^2 = a^2 + c^2 - 2ac \bullet \cos(m\angle B)$
$b^2 = 4.2^2 + 3.7^2 - 2(4.2)(3.7)\cos(70°)$

#3) $c^2 = a^2 + b^2 - 2ab \bullet \cos(m\angle C)$
$c^2 = 10^2 + 8^2 - 2(10)(8)\cos(75°)$

#4) $c^2 = a^2 + b^2 - 2ab \bullet \cos(m\angle C)$
$c^2 = 2^2 + 7^2 - 2(2)(7)\cos(60°)$

#5) $a^2 = b^2 + c^2 - 2bc \bullet \cos(m\angle A)$
$4^2 = 6^2 + 9^2 - 2(6)(9)\cos(m\angle A)$

#6) $b^2 = a^2 + c^2 - 2ac \bullet \cos(m\angle B)$
$17^2 = 11^2 + 7^2 - 2(11)(7)\cos(m\angle B)$

#7) $c^2 = a^2 + b^2 - 2ab \cdot \cos(m\angle C)$
$4^2 = 3^2 + 6^2 - 2(3)(6)\cos(m\angle C)$

#8) $c^2 = a^2 + b^2 - 2ab \cdot \cos(m\angle C)$
$8^2 = 4^2 + 5^2 - 2(4)(5)\cos(m\angle C)$

#9) $b^2 = a^2 + c^2 - 2ac \cdot \cos(m\angle B)$
$9^2 = 12^2 + 10^2 - 2(12)(10)\cos(m\angle B)$

#10) $a^2 = b^2 + c^2 - 2bc \cdot \cos(m\angle A)$
$10^2 = 10^2 + 15^2 - 2(10)(15)\cos(m\angle A)$

#11) In triangle ABC, a = 9, b = 10, c = 11. Find $m\angle C$.

#12) In triangle ABC, a = 2.3, b = 1.3, c = 3. Find $m\angle B$.

#1)	a = 6.40	#2)	b = 4.55	#3)	c = 11.07	#4)	c = 6.24	#5)	$m\angle A = 20.7^\circ$
#6)	$m\angle B = 140.6^\circ$	#7)	$m\angle C = 36.3^\circ$	#8)	$m\angle C = 125.1^\circ$	#9)	$m\angle B = 47.2^\circ$	#10)	$m\angle A = 41.4^\circ$
#11)	$m\angle C = 70.5^\circ$	#12)	$m\angle B = 24.1^\circ$						

Law of Sines

Hw Section 10.2

Use the given information to find each value. Round the sides to the nearest tenth and the angles to the nearest whole number.

#1) If $m\angle A = 53°$, $m\angle B = 61°$, and $b = 2.8$, find a.

#2) If $m\angle B = 98°$, $c = 12$ and $b = 36$, find $m\angle C$.

#3) If $c = 2.2$, $m\angle A = 70°$, and $m\angle B = 23°$, find a.

#4) If $m\angle C = 55°$, $c = 11$ and $a = 9$, find $m\angle A$.

For the following, round the sides to the nearest tenth and the angles to the nearest whole number.

#5) George fenced in a triangular area for his pet parakeet. Two sides of the area are 160 marshmallows long and they meet at an angle of 85°. If a fence is to be built around the area, how many marshmallows of fencing will be needed?

#6) George decides to leave his house and go on an adventure with his favorite Cabbage Patch Doll. From his front door, George walks due north for 100 feet. Then, he turns 30° east of north and walks 100 more feet. How far is George from his house?

#7) Two of George's Teenage Mutant Ninja Turtles leave George's house at the same time. Both turtles, Leonardo and Donatello, travel at a speed of 310 miles per hour. Leo runs in the direction of 60° east of north while Don travels 40° east of south. How far apart are the two Turtles after 3 hours?

Law of Cosines

Hw Section 10.3

Use the given information to find each value. Round the sides to the nearest tenth and the angles to the nearest whole number.

#1) If a = 5, b = 6, and c = 7, find m∠A.

#2) If a = 14, c = 21 and m∠B = 60°, find b.

#3) If a = 40, m∠A = 51°, and c = 35, find m∠C.

#4) If a = 14, b = 15, and c = 16, find m∠C.

For the following, round the sides to the nearest tenth and the angles to the nearest whole number.

#5) George fenced in a triangular area for Danny Devito, his miniature pet donkey. Two sides of the area are 400 ears of corn long and 600 ears of corn long and they meet at an angle of 46.3°. If a fence is to be built around the area, how many ears of corn will be needed for the fencing?

#6) The measure of the sides of George's best friend Rickito, a Ranch flavored Dorito, is 6.8 mm by 8.4 mm by 4.9 mm. Find the measure of the smallest angle of Rickito to the nearest degree?

#7) Unbeknownst to George, Danny Devito ate through the corn fence and is now terrorizing George's bedroom. After eating George's best friend, Danny Devito takes a nap. From his napping position, Danny Devito is 70 pretzel sticks from Raphael and 130 pretzel sticks from Michelangelo. The angle formed by the two Ninja Turtles and Danny Devito is 130°. How many pretzel sticks apart are Raphael and Michelangelo?

Law of Sines/Cosines

Chapter 10 Review

Use the law of sines or the law of cosines to answer each question. Round each angle to the nearest degree and each side to nearest tenth.

#1) In ΔABC, a = 12, m∠B = 70º, m∠C = 15º. Find b.

#2) In ΔABC, a = 12, b = 5, m∠A = 110º. Find m∠C.

#3) In ΔABC, a = 7, b = 12, c = 15. Find m∠C.

#4) In ΔABC, m∠A = 43°, b = 23, c = 26. Find a.

#5) Two of George's fleas leave George's body at the same time. Both fleas, Hoppy and Springs, travel at a speed of 2 feet per hour. Hoppy hops in the direction of 80° east of north while Springs springs 30° east of south. How far apart are the two fleas after 5 hours?

#6) Strandy, one of George's arm pits hairs, decides to detach himself from the pit and make a run for it. While squirming across George's chest, Strandy is 7 inches from George's left armpit and 13 inches from his right armpit. The angle formed by the two armpits and Strandy is 100°. How many inches apart are George's armpits?

Answers

#1) $b \approx 11.3$

#2) $m\angle C \approx 47^{\circ}$

#3) $m\angle C \approx 101^{\circ}$

#4) $a \approx 18.2$

Law of Sines/Cosines

Chapter 10 Review b

Round all answers to two decimal places.

#1) Wonder Woman is in Gnaden. Using her super vision, she deduces Port Washington is exactly 5 miles from Gnaden. While in Gnaden, she also deduces that Tusky is 4 miles from Gnaden. If the angle between her two lines of sight is 80°, how far is Tusky to Port? *(Make a drawing, write the equation, solve)*

#2) Pamela purchases a triangular plot of land. She decides to plant a tree on each corner (vertex) of her land. She plants an apple tree on one corner, a banana tree on another corner, and a coconut tree on the final corner. The apple tree is 50' from the banana tree. At the apple tree, the sides of the property form a 10° angle. At the coconut tree, the sides of the property form a 50° angle. How far is the banana tree from the coconut tree? *(Make a drawing, write the equation, solve)*

#3) Kenny, Todd, and Sean are playing catch. The three of them form the vertices of a triangle. Kenny is 15' from Todd. Todd is 30' from Sean. Sean is 20' feet from Kenny. What angle is formed at Kenny? *(Make a drawing, write the equation, solve)*

#4) George is not very talented. He made a stepladder using his wood shop. When he sets the ladder up, one side is 15' and the other is 19'. The angle formed by the two sides is 150°. How far apart are the feet of the two sides. *(Make a drawing, write the equation, solve)*

Factoring Perfect Square Trinomial Review Hw Section 11.1

Factor each completely. (All are factorable.)

1) $16x^2 + 40x + 25$

2) $36v^2 - 132v + 121$

3) $121m^2 - 198m + 81$

4) $49p^2 - 28p + 4$

5) $100b^2 - 180b + 81$

6) $25x^2 + 110x + 121$

7) $25n^2 - 40n + 16$

8) $144x^2 + 264x + 121$

9) $36x^2 - 60x + 25$

10) $4a^2 - 36a + 81$

11) $25k^2 - 80k + 64$

12) $r^2 - 22r + 121$

13) $4n^2 - 28n + 49$

14) $100n^2 - 60n + 9$

15) $121n^2 - 110n + 25$

16) $x^2 + 24x + 144$

Factoring Review

Hw Section 11.2(ODDS)

Factor

1. $12x^3 - 9x^2 + 4x - 3$

2. $4x^3 + 10x^2 + 12x + 30$

3. $3x^3 - 4x^2 + 9x - 12$

4. $40xy + 30x - 100y - 75$

5. $x^3 - x^2 + 2x - 2$

6. $x^2 - 25$

7. $2x^2 - 200$

8. $3x^2 - 27$

9. $-36 + x^4$

10. $x^4 - 49$

11. $17(x + 1) + 12x(x + 1)$

12. $x^2(x + 2) - 4(x + 2)$

13. $x^6(x - 7) - 25(x - 7)$

14. $12x^2(3x + 7) + 4x(3x + 7)$

15. $x^3(x + 3) + 12(x + 1)$

16. $3p^2 - 2p - 5$

17. $2x^2 + 3x - 9$

18. $16x^2 - 40x + 25$

19. $4x^2 - 4x + 1$

20. $2x^2 + 11x + 5$

21. $2x^2 + 5x + 2$

22. $7x^2 + 53x + 28$

23. $3 + 6x + 3x^2$

24. $100x^2 + 180x + 81$

25. $10x^2 + 100x + 250$

26. $4x^2 - 15x - 25$

27. $4x^2 - 35x + 49$

28. $4x^2 - 17x + 4$

29. $6x^2 + 7x - 49$

30. $6x^2 + 37x + 6$

Equations of a Circle

Hw Section 11.3

Determine the coordinates of the center and the measure of the radius for each circle whose equation is given.

#1) $(x-7)^2+(y+10)^2=49$

Center =

Radius =

#2) $144=(x+3)^2+y^2$

Center =

Radius =

#3) $(x-8)^2+(y+1)^2=100$

Center =

Radius =

#4) $36=(x+2)^2+(y-4)^2$

Center =

Radius =

#5) $x^2+\left(y+\sqrt{3}\right)^2-17=0$

Center =

Radius =

#6) $(x+21)^2+(y+11)^2-17=8$

Center =

Radius =

The coordinates of the center and the measure of the radius of a circle are given. Write an equation of the circle.

#7) (-2, -1), 7

#8) (0, 0), 4

#9) (13, -15), $\sqrt{5}$

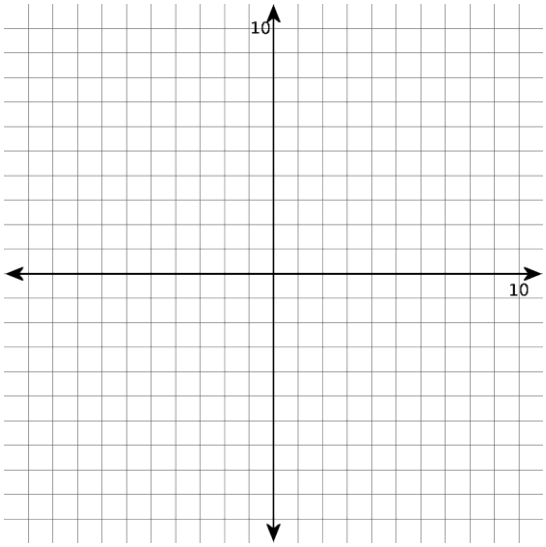
#10) (4, 9), $\sqrt{8}$

#11) (0, -5), 12

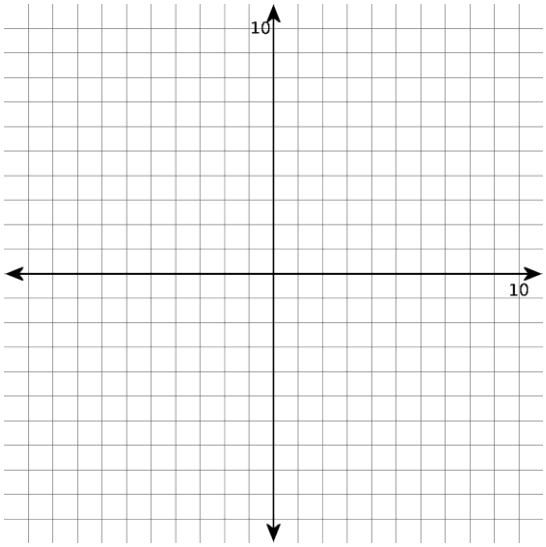
#12) (0, -4), 1

Graph each equation.

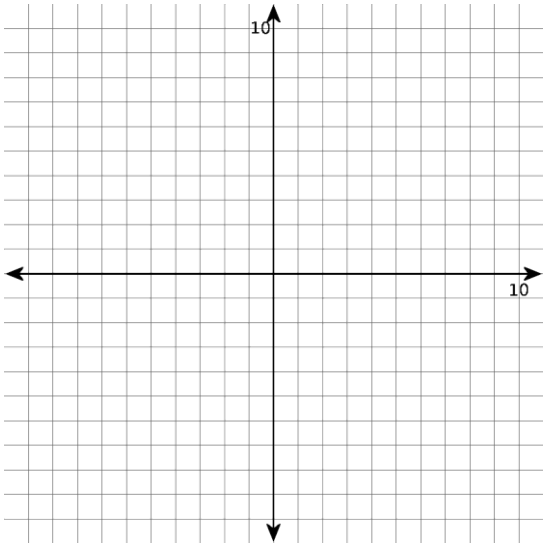
#13) $(x-3)^2+(y+2)^2=25$



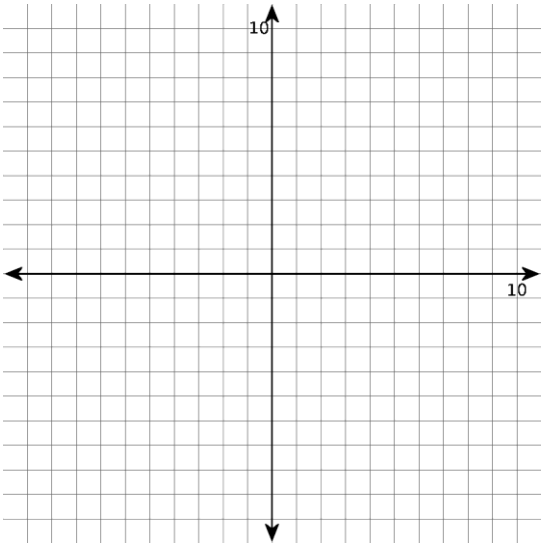
#14) $(x+6)^2+(y-7)^2=4$



#15) $x^2+(y-5)^2=25$



#16) $(x-9)^2+(y+9)^2=1$



Completing the Square

Hw Section 11.4

Complete the square for each equation.

1) $p^2 + 14p - 38 = 0$

2) $v^2 + 6v - 59 = 0$

3) $a^2 + 14a - 51 = 0$

4) $x^2 - 12x + 11 = 0$

5) $x^2 + 6x + 8 = 0$

6) $n^2 - 2n - 3 = 0$

7) $x^2 + 14x - 15 = 0$

8) $k^2 - 12k + 23 = 0$

9) $r^2 - 4r - 91 = 7$

10) $x^2 - 10x + 26 = 8$

11) $k^2 - 4k + 1 = -5$

12) $b^2 + 2b = -20$

Completing Circle Squares

Hw Section 11.5

Write each equation of a circle in standard form by completing some squares. Then identify the center and radius.

#1) $x^2 + 4x + y^2 - 16y + 52 = 0$

#2) $x^2 + 2x + y^2 + 18y = -1$

#3) $x^2 + 10x + y^2 - 16 = 0$

#4) $x^2 - 14x + y^2 - 2y = 50$

#5) $x^2 + 18x + y^2 + 17 = 0$

#6) $x^2 - 10x + y^2 + 10y = -48$

#7) $x^2 - 6x + y^2 - 18 = 0$

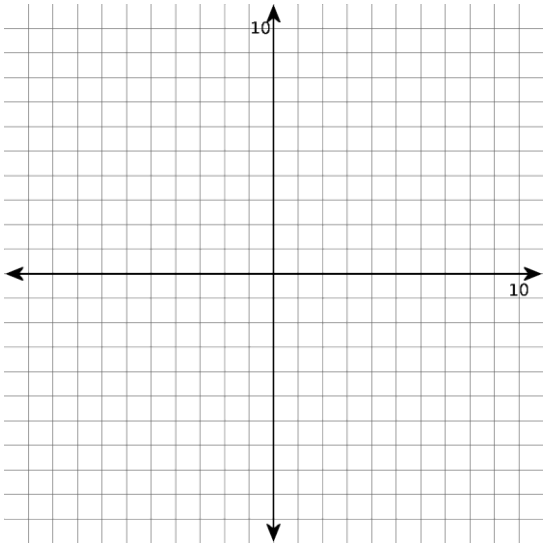
#8) $x^2 - 14x + y^2 - 2y = 50$

#9) $x^2 + 9x + y^2 + 4y = \frac{3}{4}$

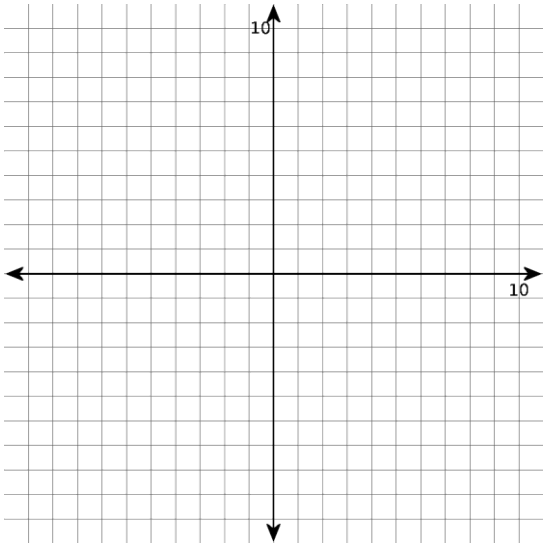
#10) $x^2 + 5x + y^2 + 3y = \frac{3}{2}$

Graph each circle.

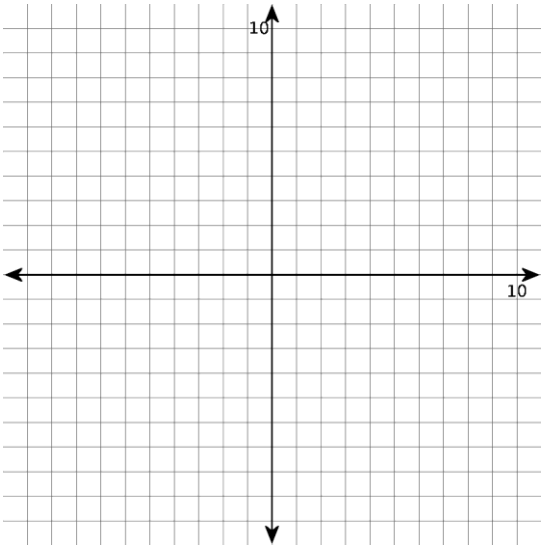
#11) $x^2 + 10x + y^2 + 9 = 0$



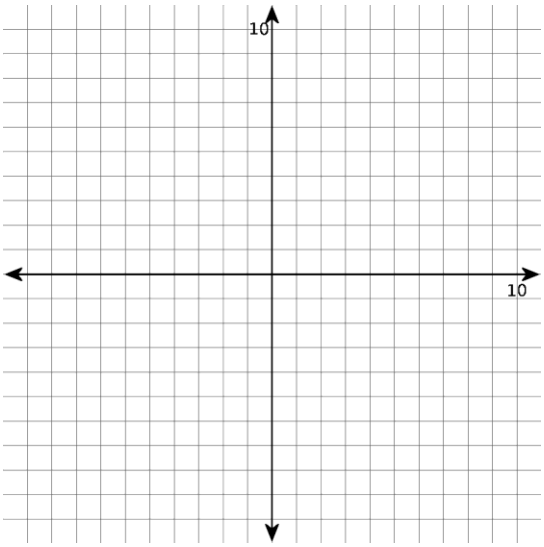
#12) $x^2 - 8x + y^2 + 10y = -32$



#13) $x^2 + 2x + y^2 + 4y = 4$



#14) $x^2 - 12y + y^2 + 35 = 0$



End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2017

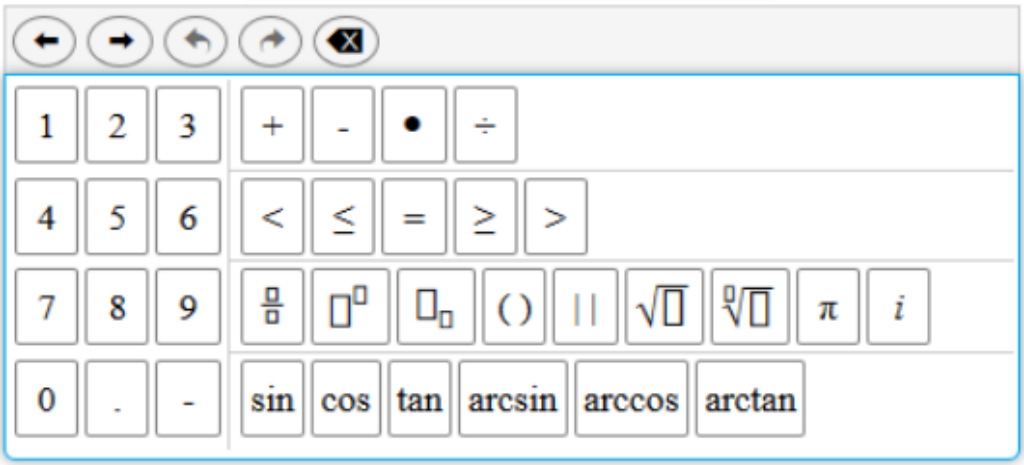
Question 19

The equation of a circle is shown.

$x^2 + y^2 - 10x + 8y + 16 = 0$

What is the radius of the circle?

radius:



Circles

Review Chapter 11

Choose true or false.

#1)_____
The circle $(y+7)^2+x^2=12$ has a center of (0,-7).

#2)_____
The circle $(y+1)^2+(x-3)^2=25$ has a center of (3,-1).

#3)_____
The circle $(y-5)^2+(x-9)^2=7$ has a radius of $\sqrt{7}$.

#4)_____
The circle $(x+1)^2+(y+2)^2=24$ has a center of (-1,-2).

#5)_____
The circle $(x-5)^2+(y-9)^2=4$ has a radius of 2.

Choose the best choice by writing the letter on the blank.

#6)_____
Which equation represents a circle centered at C (-3,8) with a radius of 7 cm?

A. $x^2+y^2=7$
B. $(x+3)^2+(y-8)^2=49$
C. $(x-3)^2+(y+8)^2=49$
D. $-3x^2+8y^2=49$

#7)_____
Which equation represents a circle centered at C (0,-2) with a radius of 3 cm?

A. $x^2+(y-2)^2=9$
B. $(x+2)^2+y^2=9$
C. $(y+2)^2=9$
D. $x^2+(y+2)^2=9$

#8)_____
Which equation represents a circle centered at C (3,-1) with a radius of 8 cm?

A. $(x-3)^2+(y+1)^2=8$
B. $(x-3)^2+(y+1)^2=64$
C. $(x+3)^2+(y-1)^2=8$
D. $(x+3)^2+(y-1)^2=64$

#9)_____
Which equation represents a circle centered at C (-3,5) with a radius of $\sqrt{5}$ cm?

A. $(x+3)^2+(y-5)^2=5$
B. $(x+3)^2+(y-5)^2=\sqrt{5}$
C. $(x-3)^2+(y+5)^2=5$
D. $(x+3)^2+(y-5)^2=25$

#10)_____
Determine the circle that has radius that is between 5 and 7 cm.

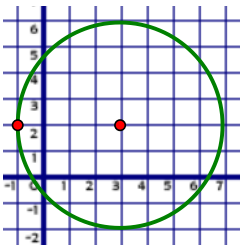
A. $x^2+(y-3)^2=18$
B. $(x-8)^2+(y-9)^2=5.5$
C. $x^2+y^2=38$
D. $(x-12)^2+(y+2)^2=8$

#11)_____
Determine the circle that has radius that is between 10 and 13 cm.

A. $(x-2)^2+(y+8)^2=11$
B. $(x-1)^2+(y-3)^2=225$
C. $x^2+(y-3)^2=121$
D. $(x-1)^2+(y-2)^2=98$

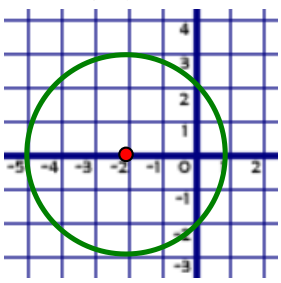
#12)_____
What is the equation of the circle on the graph?

A. $(x-2)^2+(y-3)^2=16$
B. $(x-3)^2+(y-2)^2=4$
C. $(x+3)^2+(y+2)^2=16$
D. $(x-3)^2+(y-2)^2=16$



#13)_____
What is the equation of the circle on the graph?

A. $x^2+(y-2)^2=9$
B. $(x+2)^2+y^2=3$
C. $x^2+(y+2)^2=9$
D. $(x+2)^2+y^2=9$



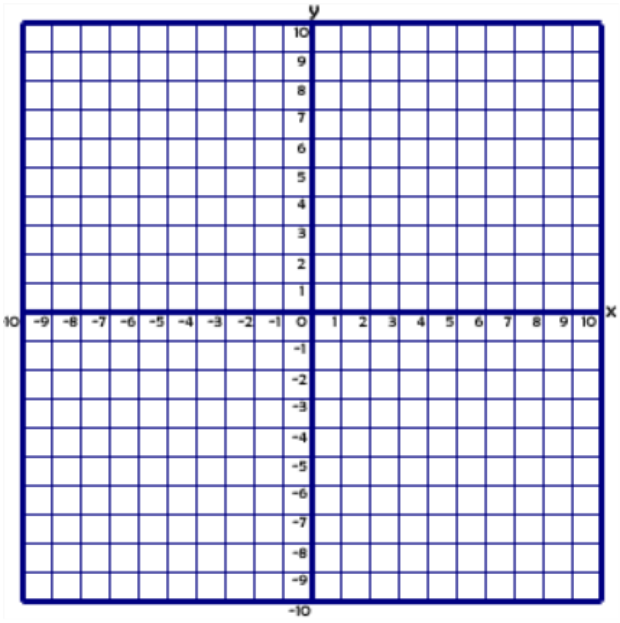
#14)_____
Which of these equations is equivalent to $x^2 + y^2 + 4x - 16y + 52 = 0$?

A. $(x+2)^2 + (y-8)^2 = 16$
B. $(x+4)^2 + (y-8)^2 = 16$
C. $(x+2)^2 + (y-8)^2 = 120$
D. $(x-2)^2 + (y+8)^2 = 16$

#15)_____
Which of these equations is equivalent to $x^2 + y^2 - 3x - 8y - \frac{7}{4} = 0$?

A. $\left(x - \frac{3}{2}\right)^2 + (y-4)^2 = 17\frac{3}{4}$
B. $\left(x + \frac{3}{2}\right)^2 + (y+4)^2 = 4$
C. $\left(x - \frac{3}{2}\right)^2 + (y-4)^2 = 20$
D. $\left(x - \frac{3}{2}\right)^2 + (y-4)^2 = 19.5$

Graph the following circles.
#16) $(x-5)^2 + (y-4)^2 = 16$
#17) $x^2 + (y+7)^2 = 9$
#18) $(x+6)^2 + (y-2)^2 = 16$
#19) $(x-6)^2 + (y+4)^2 = 4$



Determine the center and radius of the given circles.
#20) $x^2 + y^2 - 9x - 7y = \frac{14}{4}$

Center (_____ , _____) Radius = _____

#21) $x^2 + 2x + y^2 = -4x + 4y + 2$

Center (_____ , _____) Radius = _____

Circle Transformations

Hw Section 12.1

#1) George says "Two circles aren't always similar no matter what because you can't map one onto the other using similarity transformations." Why is George wrong?

#2) Two circles A and B have different radii. A student dilates circle A at its center by a scale factor of $\frac{9}{4}$ to make it the same size as circle B. What scale factor could have been used to make circle B the same size as circle A?

#3) Circle A and circle B are concentric.

a) What does that mean?

b) If the radius of circle A is 24 cm and the radius of circle B is 18 cm. What scale factor would map circle A onto circle B?

#4) To prove similarity between circle A (center at A (-2,5) with radius of 5 cm) and circle B (center at B (5,-3) with radius of 15 cm), Janice translates circle A by vector <7,-8> and then dilates circle A at point B by a scale factor of 3. Provide two other transformation sequences to establish similarity between these two circles.

(1) First _____followed by _____

(2)First _____followed by _____

Determine the translation vector that would map the center of circle A onto the center of circle B given the center of each circle.

#5) $\odot A$ with center (-4, 5) to $\odot B$ with center (3, 0)

Translation Vector: <____, ____>

#6) $\odot A$ with center (-3, -11) to $\odot B$ with center B (4, 7)

Translation Vector: <____, ____>

#7) $\odot A$ with center (0, -8) to $\odot B$ with center (-3, 2)

Translation Vector: <____, ____>

#8) $\odot A$ with center (2, 2) to $\odot B$ with center (8, 2)

Translation Vector: <____, ____>

#9) $\odot A$ with center $\left(\frac{1}{4}, 7\right)$ to $\odot B$ with center $\left(-3\frac{3}{4}, -2\right)$

Translation Vector: <____, ____>

#10) $\odot A$ with center $\left(3\frac{1}{5}, -\frac{2}{3}\right)$ to $\odot B$ with center $\left(7\frac{3}{5}, 6\frac{1}{3}\right)$

Translation Vector: <____, ____>

What scale factor would make circle A the same size as circle B?

#11) $Radius_A$ = 2 cm, $Radius_B$ = 4 cm, Scale Factor: _____

#12) $Radius_A$ = 12 cm, $Radius_B$ = 3 cm, Scale Factor: _____

#13) $Radius_A$ = 6 cm, $Radius_B$ = 8 cm, Scale Factor: _____

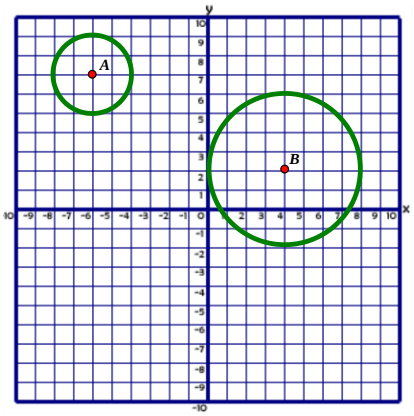
#14) $Diameter_A$ = 8 cm, $Radius_B$ = 1 cm, Scale Factor: _____

#15) $Radius_A$ = 12 cm, $Diameter_B$ = 8 cm, Scale Factor: _____

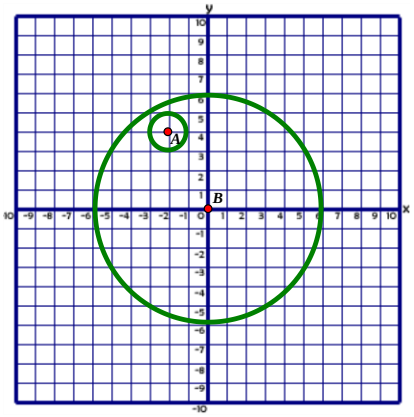
#16) $Radius_A$ = 7 cm, $Radius_B$ = 6 cm, Scale Factor: _____

Determine the translation vector and scale factor of the dilation for the following similarity transformations.

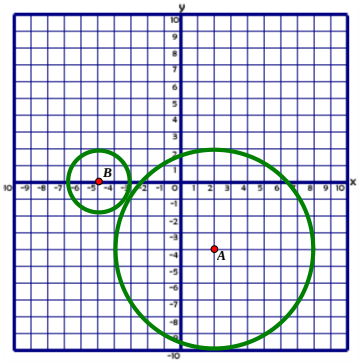
#17) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_\_}(\odot A) = \odot B$



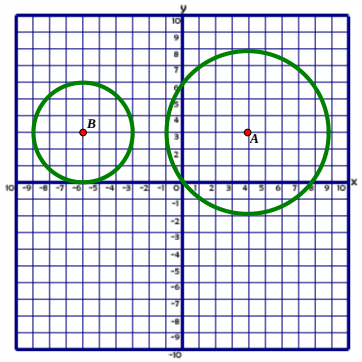
#18) Circle B to Circle A
Translate Vector <_____ , _____>, $D_{A,\_\_\_\_}(\odot B) = \odot A$



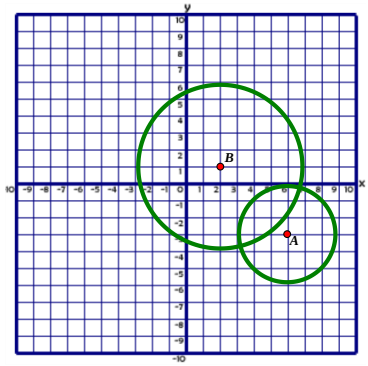
#19) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_\_}(\odot A) = \odot B$



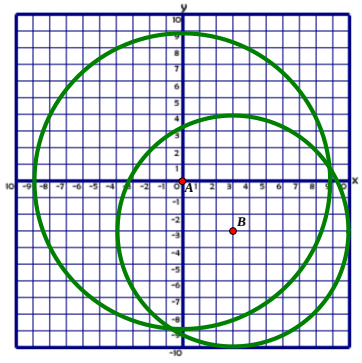
#17) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_\_}(\odot A) = \odot B$



#18) Circle B to Circle A
Translate Vector <_____ , _____>, $D_{A,\_\_\_\_}(\odot B) = \odot A$



#19) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_\_}(\odot A) = \odot B$



Circle Terminology

Hw Section 12.2

Match the following for Circle A (use each item once).

#1) _____ Major Arc

#2) _____ Diameter

#3) _____ Chord

#4) _____ Minor Arc

#5) _____ Tangent line

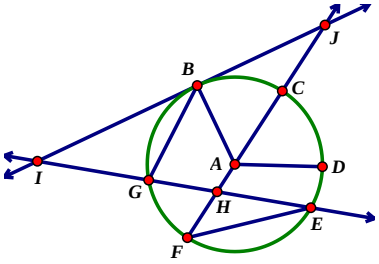
#6) _____ Interior Point

#7) _____ Secant line

#8) _____ Exterior Point

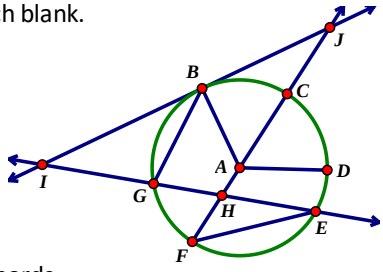
#9) _____ Center

#10) _____ Semi-Circle



$\overline{EG}$	Point H
$\overleftrightarrow{GE}$	Point A
$\widehat{FD}$	Point I
$\overline{FC}$	$\widehat{CBF}$
$\widehat{CEG}$	$\overleftrightarrow{IJ}$

Using the diagram, name objects that meet the description. Fill each blank.



#11) Chords _____ , _____, _____, _____

#12) Radii _____ , _____, _____, _____

#13) Central ∠ _____ , _____ , _____

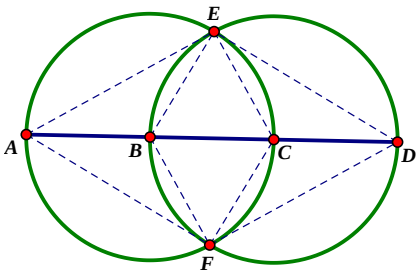
#14) Exterior Points _____ , _____

#15) Jeff was a little confused by the lesson about the circle basics. When he looked back at his notes he had written down that radii and diameters of circles are not chords. Is this correct? Explain.

#16) A textbook had the following true and false question.
"Two radii always form a diameter. T or F
The answer is false."

Draw a counter example to this statement to establish it is false.

Circles B and C are congruent. Circle B has a radius of 4 cm and ∠AEC is a right angle. Use this information to determine the missing values.



#17) BC = _____ #18) AD = _____

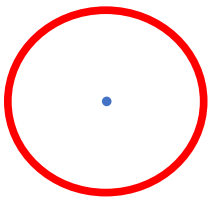
#19) AC = _____ #20) Perimeter of Quad. BECF

#21) AE = _____ #22) Perimeter of ΔBED

#23) After completing the previous questions a very observant students states, "Hey ΔAEC must be a special right triangle, $30° - 60° - 90°$." She is correct, what did she see that helped her come to this conclusion?

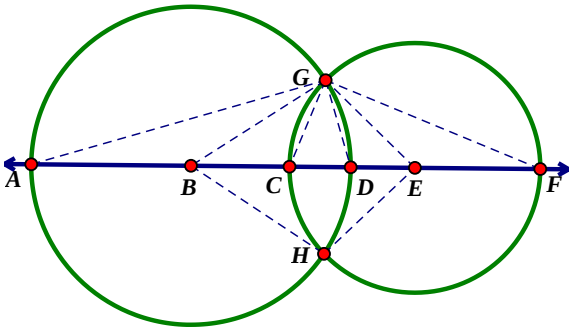
Secant $\overleftrightarrow{GE}$ goes through Circle F's center and intersects at points G and E.

#24) Draw the description. What is the name of the diameter formed by the secant?



#25) Name the two radii formed by the secant.

Circles B and E have radii of 8 cm & 6 cm respectively, and CD is 3 cm. Use this information to determine the missing values.



#26) BC = _____

#27) EA = _____

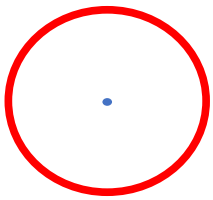
#28) Perimeter of BGEH = _____

#29) AF = _____

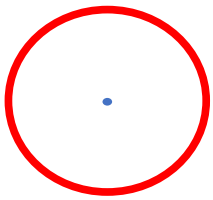
#30) Perimeter of ΔBGE = _____

Draw the following relationships.

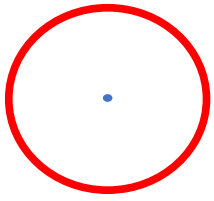
#31) Tangent line $\overleftrightarrow{GE}$ has a point of tangency at Point F on Circle M.



#32) Secant line $\overleftrightarrow{HT}$ intersects tangent line $\overleftrightarrow{JT}$ on Circle R.



#33) Radius $\overline{AB}$intersects tangent line $\overleftrightarrow{GE}$ on circle A.



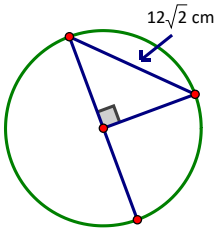
Determine the radius of the circle.

#34) Area = 36π

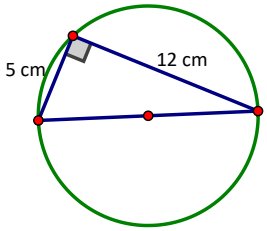
#35) C = 36π

#36) d = 7 cm

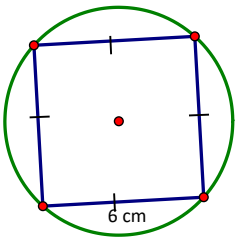
#37)



#38)



#39)



Circles' Central Angles & Arcs

Hw Section 12.3

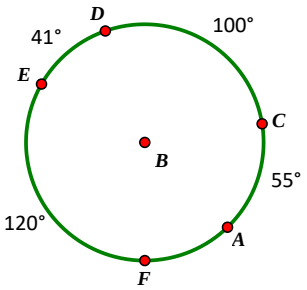
#1) Determine the arc measure.

$m\widehat{DF}$ = _____

$m\widehat{ECA}$ = _____

$m\widehat{AF}$ = _____

$m\widehat{CFD}$ = _____



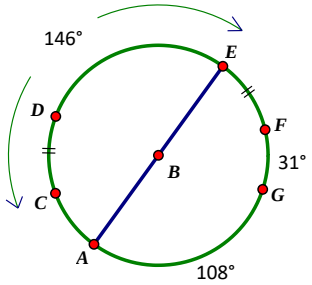
#2) Determine the arc measure.

$m\widehat{AC}$ = _____

$m\widehat{DAG}$ = _____

$m\widehat{AD}$ = _____

$m\widehat{DAF}$ = _____



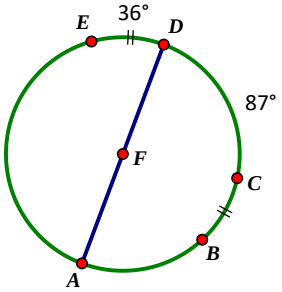
#3) Determine the arc measure.

$m\widehat{AE}$ = _____

$m\widehat{AB}$ = _____

$m\widehat{CDB}$ = _____

$m\widehat{BD}$ = _____



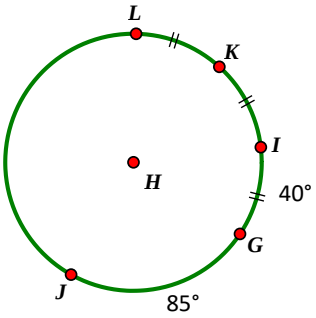
#4) Determine the arc measure.

$m\widehat{LJ}$ = _____

$m\widehat{KJ}$ = _____

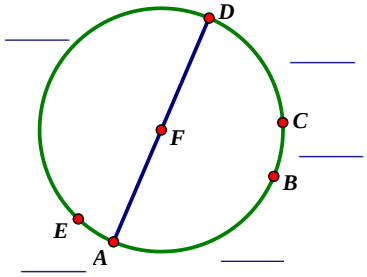
$m\widehat{GJK}$ = _____

$m\widehat{KLI}$ = _____



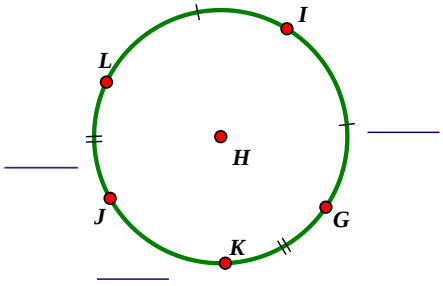
#5) Fill in the of the missing arcs on the circle.

$m\widehat{AC} = 117°, m\widehat{BE} = 111°, m\widehat{BA} = 91°$

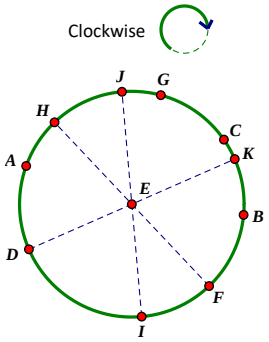


#6) Fill in the of the missing arcs on the circle.

$mJ\widehat{LK} = 302°, m\widehat{LG} = 168°$

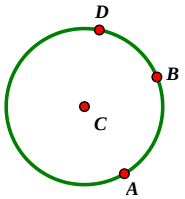


#7) From the given diagram, determine whether the arcs are Major, Minor or Semi-Circle. To describe the arc without giving it way through notation we will refer to clockwise and counterclockwise (counter cw).

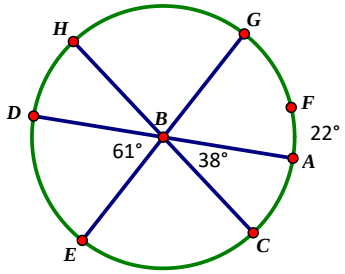


F to G, clockwise	Major	Minor	Semi
A to F, clockwise	Major	Minor	Semi
J to C, clockwise	Major	Minor	Semi
K to D, clockwise	Major	Minor	Semi
D to I, counter cw	Major	Minor	Semi
C to A, counter cw	Major	Minor	Semi
F to J, clockwise	Major	Minor	Semi
G to I, counter cw	Major	Minor	Semi

#8) The teacher asks a student to write the name for the arc from A to B on the board. Jackie comes up writes $\widehat{AB}$ or $\widehat{BA}$. Jeff raises his hand and says that he has a different answer. What might his answer be if it is different than Jackie's?



#9) Given Circle B with diameters $\overline{HC}$, $\overline{DA}$ and $\overline{EG}$.

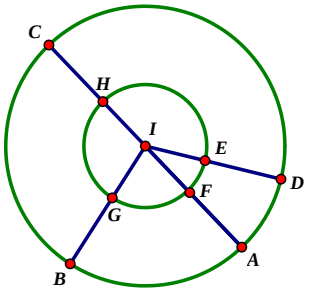


m∠DBH = _____ $m\widehat{DCE}$ = _____

$m\widehat{HG}$ = _____ $m\widehat{HCF}$ = _____

m∠HBA = _____ m∠DBA = _____

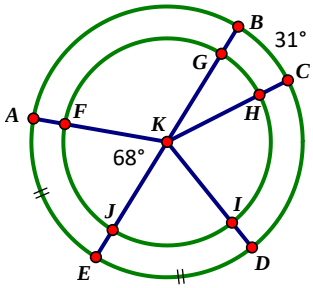
#10) Given concentric circles with $m\widehat{GF} = 76°$, $m\angle HIE = 147°$, and $\overline{CA}$ and $\overline{FH}$ are diameters.



$m\widehat{CB}$ = _____ $m\widehat{HE}$ = _____

$m\widehat{BDC}$ = _____ m∠CIB = _____

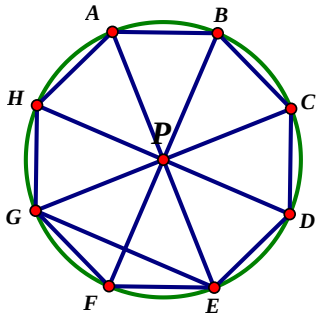
#11) Given concentric circles with $m\widehat{BC} = 31°$, $m\angle FKJ = 68°$, and $\overline{EB}$ is a diameter.



$m\widehat{ED}$ = _____ m∠GKH= _____

$m\widehat{ABC}$ = _____ m∠AKB = _____

#12) Given a regular octagon. Answer each question.



m∠APB = _____ m∠HPF = _____

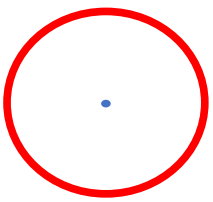
$m\widehat{AGE}$ = _____ $m\widehat{GEA}$ = _____

m∠GPF = _____ m∠PAH = _____

m∠PGE = _____

If HD = 12 cm, then GE = _____

#13) Points A, B, C, D, and E are placed on circle R in this order such that there are five congruent arcs.
What is the $m\widehat{BCE}$ =?



End of Course Released Questions

2019

Question 10

A circle with center L contains points J and K. Circle L is dilated by a factor of 2, resulting in a new circle with center P. Points M and N are on circle P such that central angle MPN has the same measure as central angle JLK.

Which statement correctly identifies the relationship between the arc length of JK and the arc length of MN?

Ⓐ The arc length of JK is half the arc length of MN.

Ⓑ The arc length of MN is half the arc length of JK.

Ⓒ The arc length of JK is a quarter of the arc length of MN.

Ⓓ The arc length of MN is a quarter of the arc length of JK.

Circle Theorems

Review Chapter 12

Match for Circle H. (Do not use a letter twice.)

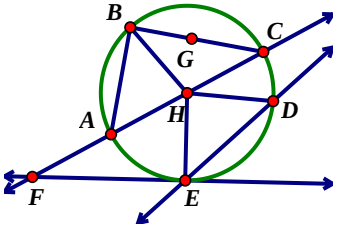
#1) _____ Major Arc

#2)_____ Diameter

#3)_____ Chord

#4)_____ Center

#5)_____ Secant line



A. $\overleftrightarrow{FC}$ B. $\overset{\frown}{BE}$ C. $\overline{HD}$

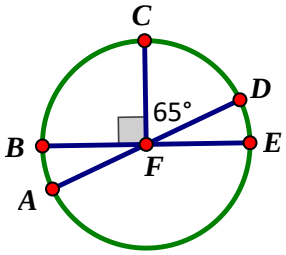
D. $\overleftrightarrow{FE}$ E. $\overset{\frown}{ADC}$ F. Point F

G. $\overline{BC}$ H. Point H I. $\overline{CA}$

J. $\overset{\frown}{ABE}$

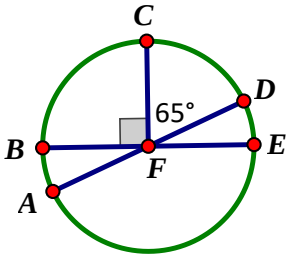
_____#6) What is $m\overset{\frown}{DAB}$?

A. 155°
B. 180°
C. 205°
D. 215°
E. 245°



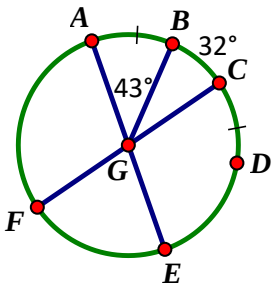
_____#7) What is $m\overset{\frown}{AB}$?

A. 10°
B. 15°
C. 20°
D. 25°
E. 35°

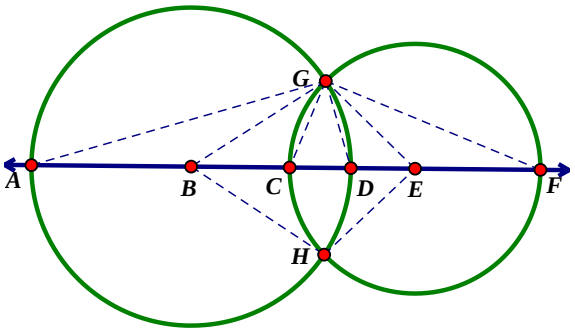


_____#8) What is $m\overset{\frown}{DAB}$?

A. 95°
B. 275°
C. 285°
D. 317°
E. 328°



Circles B and E have radii of 10 cm & 7 cm respectively, and CD is 3 cm. Use this information to determine the missing values.



#9) DE = _____

#10) AF = _____

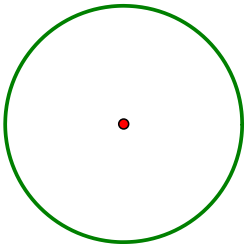
#11) AE = _____

#12) Perimeter of ΔBGE = _____

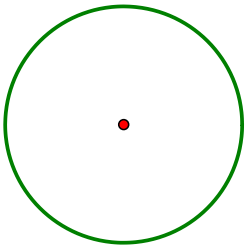
#13) Perimeter of Quad. BHEG = _____

Draw the following relationships.

#14) Secant $\overleftrightarrow{HT}$ and secant $\overleftrightarrow{DE}$ intersect circle A at H, T, D and E respectively. The secants intersect each other in the exterior at point C.



#15) Tangent $\overleftrightarrow{GE}$ intersects secant $\overleftrightarrow{HE}$ at the point of tangency E of Circle A.



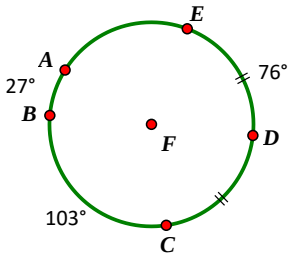
Determine each measure.

#16) $m\widehat{AE}$ = _____

#17) $m\widehat{ABD}$= _____

#18) $m\widehat{DA}$= _____

#19) $m\widehat{BCE}$= _____



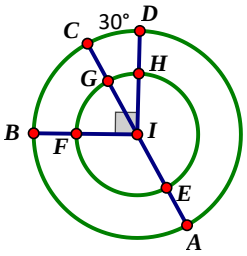
Given concentric circles with $m\widehat{CD} = 30°$ and $\overline{CA}$ is a diameter.

#20) m∠GIF = _____

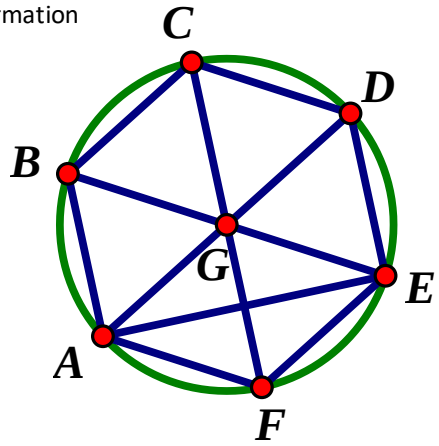
#21) $m\widehat{HE}$= _____

#22) $m\widehat{FEH}$= _____

#23) m∠BIA = _____



Given a regular hexagon ABCDEF. Determine the missing information



#24) m∠BGC = _____ #25) m∠GCD = _____

#26) $m\widehat{AE}$ = _____ #27) $m\widehat{CEA}$= _____

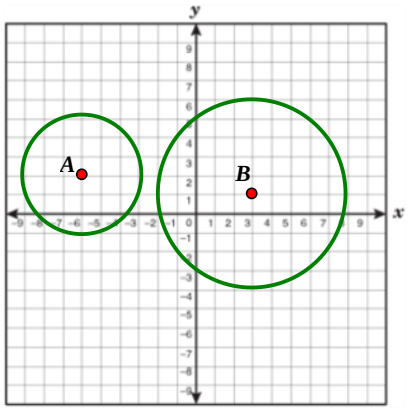
#28) m∠GAE = _____

#29) What type of Δ is ΔEGD? _____

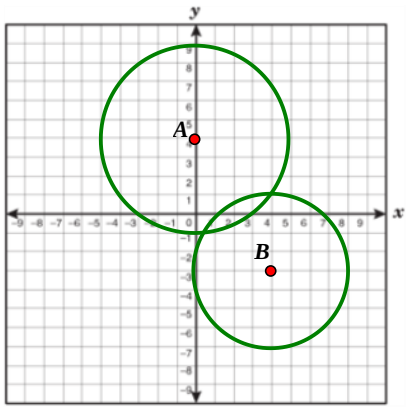
#30) If GA = 12 cm, what is AE = _____ (exact)

Determine the translation vector and scale factor of the dilation for the following similarity transformations.

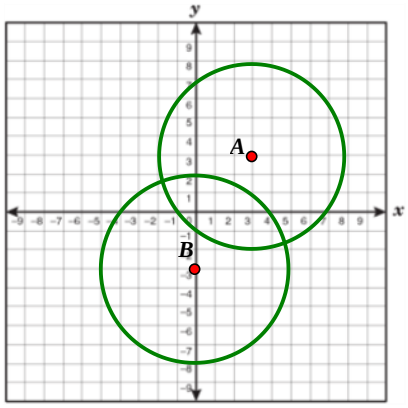
#31) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_}(\odot A) = \odot B$



#32) Circle A to Circle B
Translate Vector <_____ , _____>, $D_{B,\_\_\_}(\odot A) = \odot B$



#33) Circle B to Circle A
Translate Vector <_____ , _____>, $D_{A,\_\_\_}(\odot B) = \odot A$

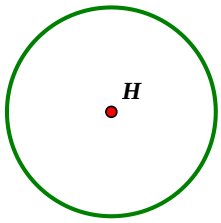


Tangent

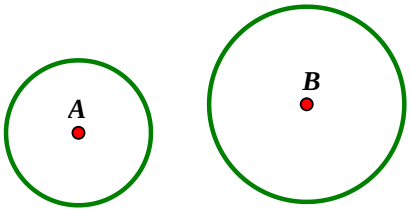
Hw Section 13.1

Draw the following relationships.

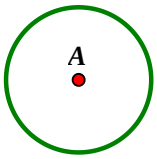
1. $\overleftrightarrow{AB}$ tangent to circle H at B.



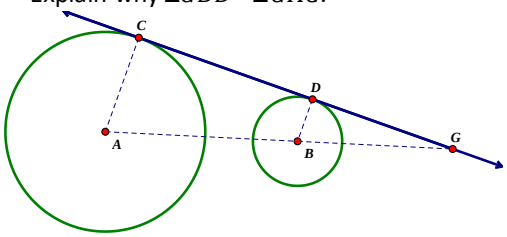
2. The external tangents of circle A and B.



3. In circle A, Radius $\overline{AB}$ perpendicular to $\overleftrightarrow{BD}$

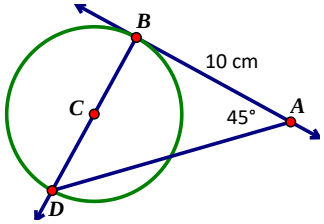


4. $\overleftrightarrow{GC}$ is a common external tangent to circles A and B. Explain why $\Delta GBD \sim \Delta GAC$.

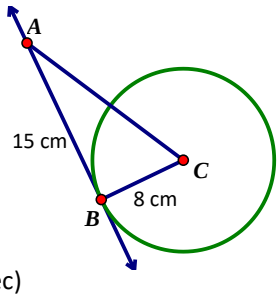


Solve for the missing information, given the $\overleftrightarrow{AB}$ is a tangent line to circle C.

5. CB = _____

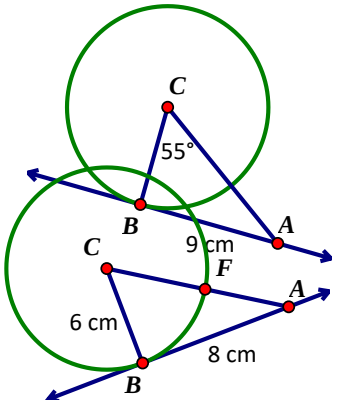


6. AC = _____

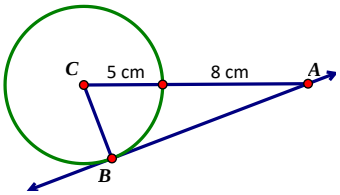


7. CB = _____ (2 dec)

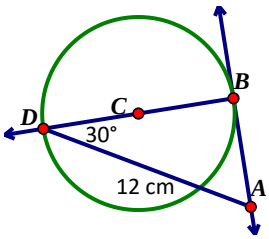
8. FA = _____



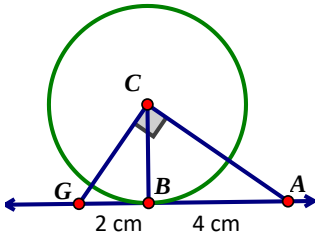
9. AB = _____



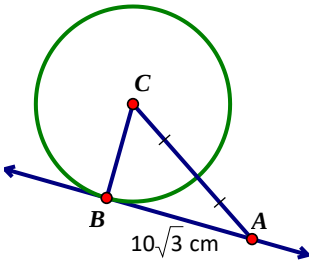
10. CB = _____



11. CB = _____ (2 dec)

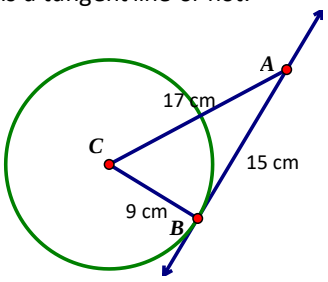


12. CB = _____

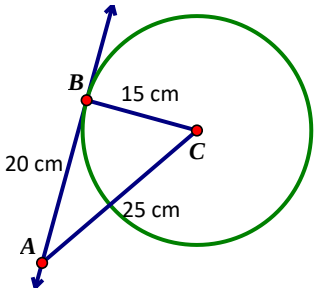


Determine if the $\overleftrightarrow{AB}$ is a tangent line or not.

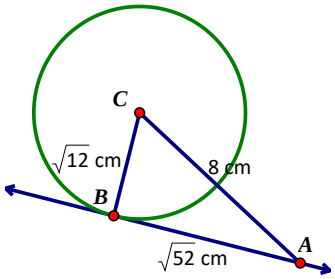
13. Yes or No



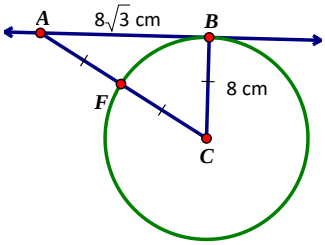
14. Yes or No



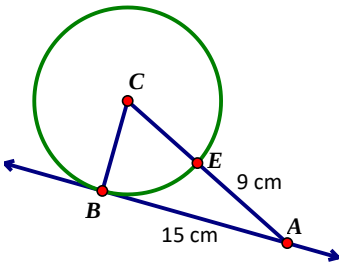
15. Yes or No



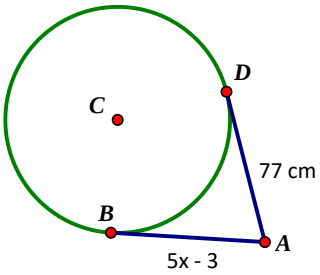
16. Yes or No



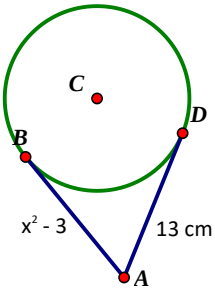
17. Given that $\overleftrightarrow{AB}$ is tangent to circle C and EA = 9 cm and AB = 15 cm, determine CB. (Hint: Label the two radii with x)



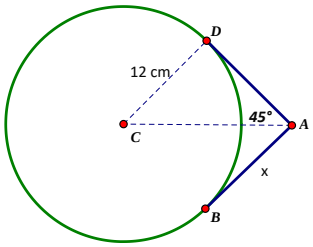
18. If $\overline{AB}$ and $\overline{AD}$ are tangent, then x = _____



19. If $\overline{AB}$ and $\overline{AD}$ are tangent, then x = _____

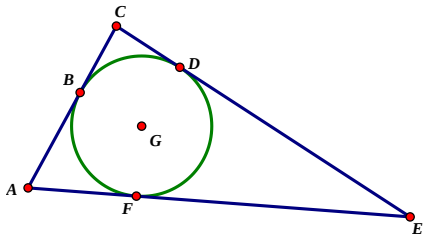


20. If $\overline{AB}$ and $\overline{AD}$ are tangent, then x = _____

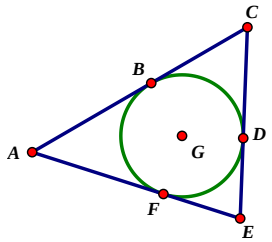


Solve for the missing information (Lines that appear to be tangent are tangent.)

21. AC = 18 cm, CE = 30 cm & AF = 10 cm, find FE



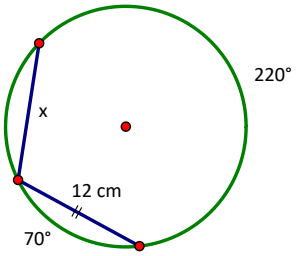
22. $\text{Perimeter}_{\Delta} = 40$ cm, AC = 15 cm, AF = 8.5 cm, find FE



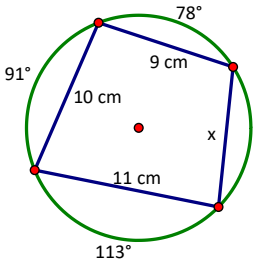
Chord Theorems

Hw Section 13.2

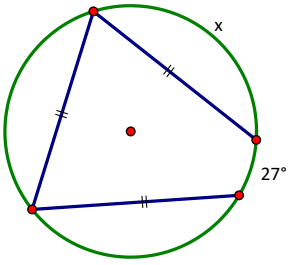
1. Find the value of x.



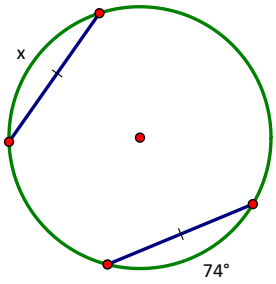
2. Find the value of x.



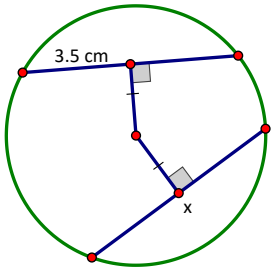
3. Find the value of x.



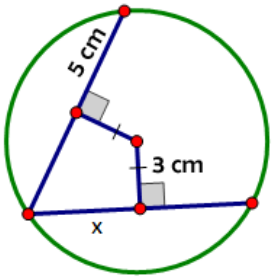
4. Find the value of x.



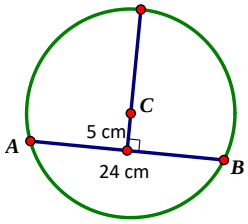
5. Find the value of x.



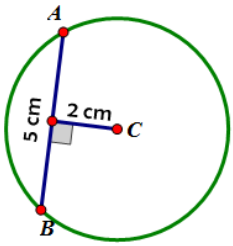
6. Find the value of x.



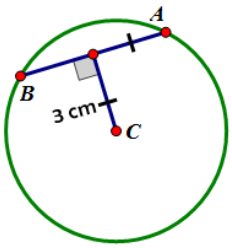
7. Determine the length of the radius $\overline{AC}$



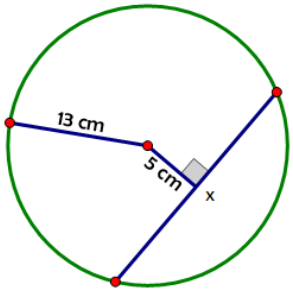
8. Determine the length of the radius $\overline{AC}$. Give exact answer.



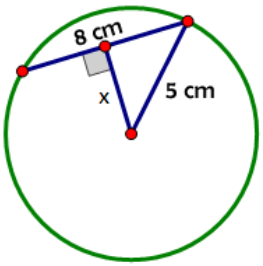
9. Determine the length of the radius $\overline{AC}$. Give exact answer.



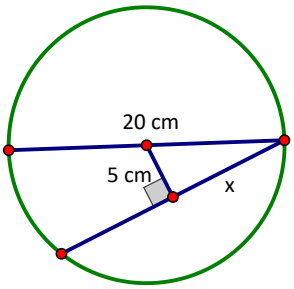
10. Find the value of x.



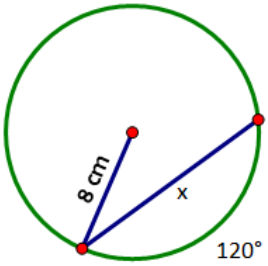
11. Find the value of x.



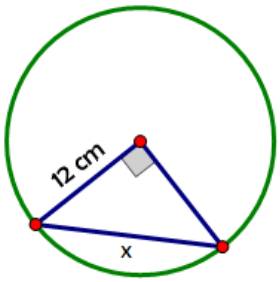
12. Find the value of x. Give exact answer.



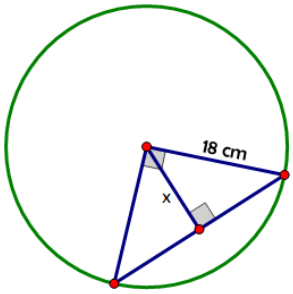
13. Find the value of x. Give exact answer.



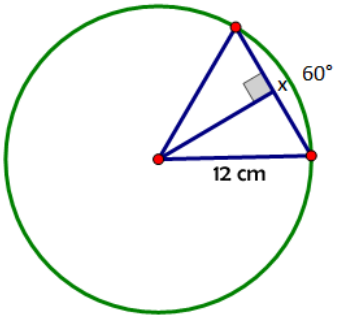
14. Find the value of x. Give exact answer.



15. Find the value of x. Give exact answer.

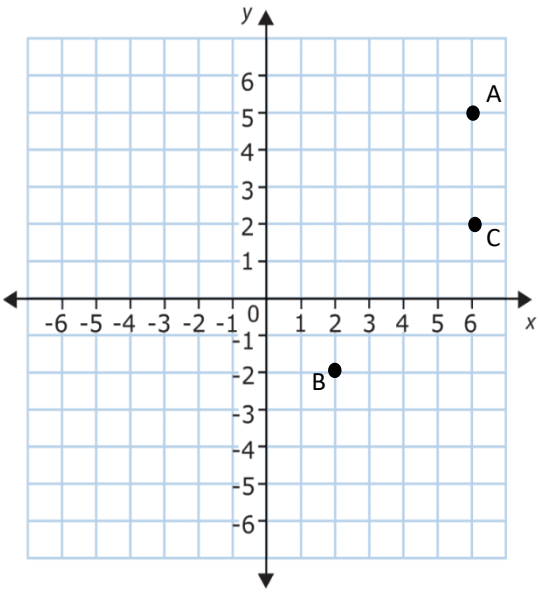


16. Find the value of x. Give exact answer.

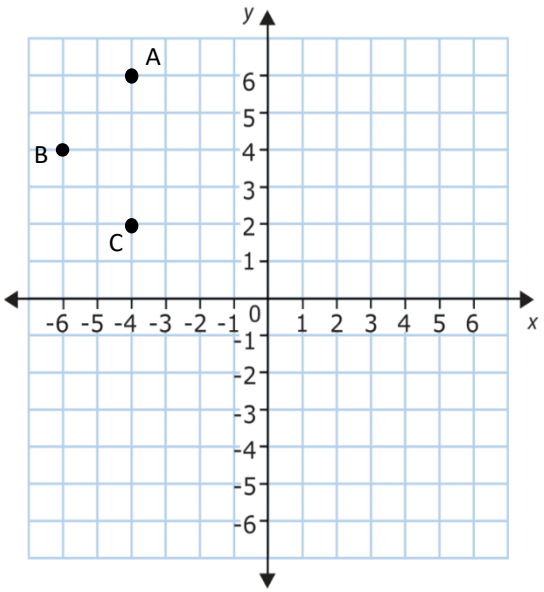


17. An ancient plate from the Mayan time period was drop at a museum. The curator wanted to put it back together but needed to find the center of the place to reference the restoration. If the largest piece looked like this… how could they find the center of the plate?

18. Construct the circle that contains the given points.



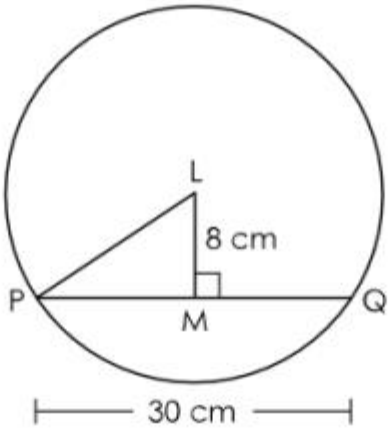
19. Construct the circle that contains the given points.



End of Course Released Question
2019

Question 2

In the figure shown, L is the center of the circle and $\overline{PQ}$ is a chord of the circle measuring 30 centimeters (cm).



What is the length, in centimeters, of $\overline{PL}$?

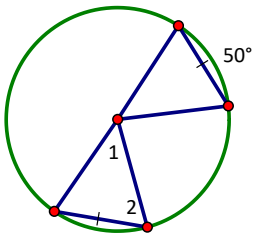
cm

Inscribed Angles

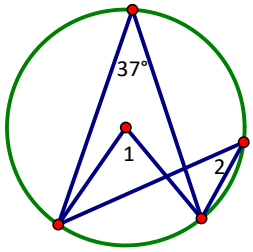
Hw Section 13.3

Find the measure of each numbered angle or arc.

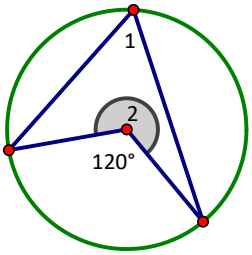
1.



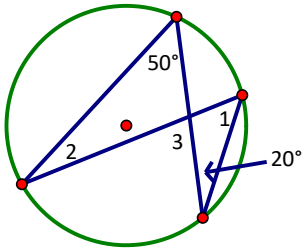
2.



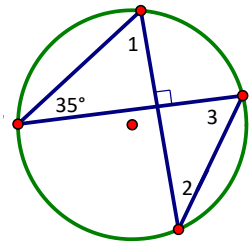
3.



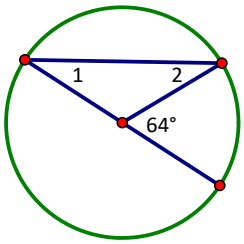
4.



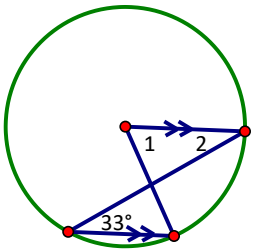
5.



6.



7.



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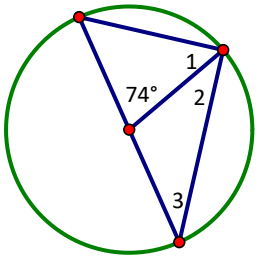
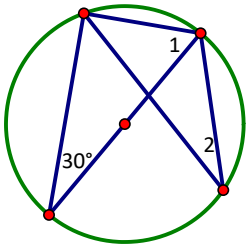
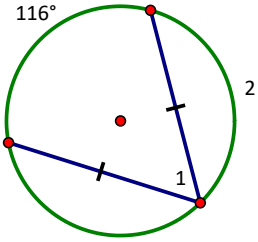


9.



10.



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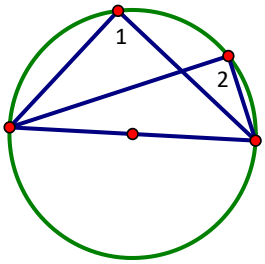
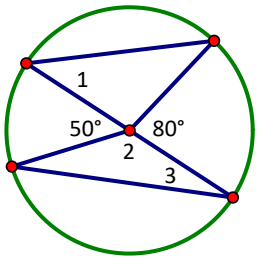
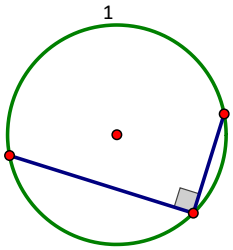


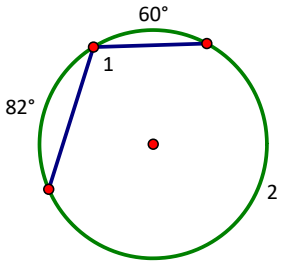
12.



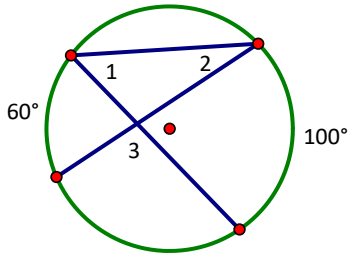
13.



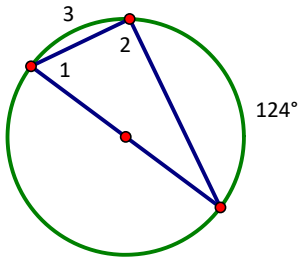
14.



15.



16.



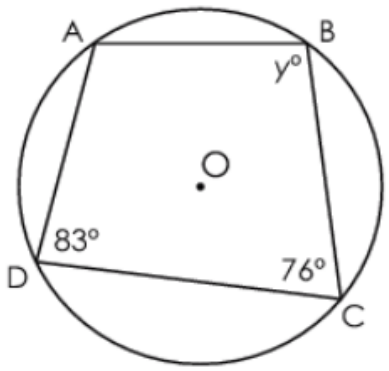
End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2017

Question 10

Quadrilateral ABCD is inscribed in circle O, as shown.



What is the value of y?

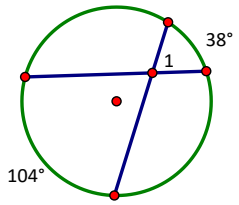
$y =$

Internal, External & Tangent Angles

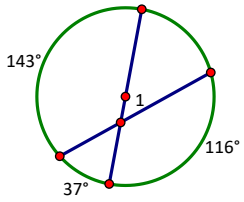
Hw Section 13.4

Find the measure of each variable, numbered angle or arc.

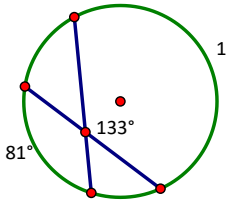
1.



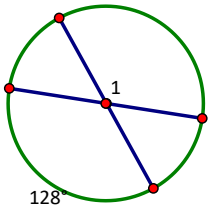
2.



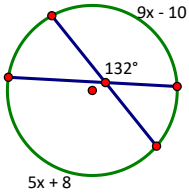
3.



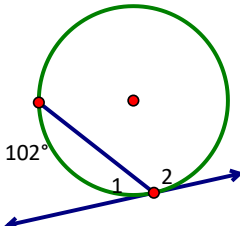
4.



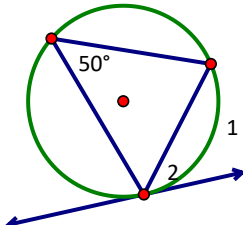
5.



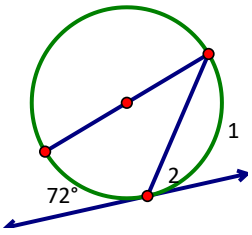
6.



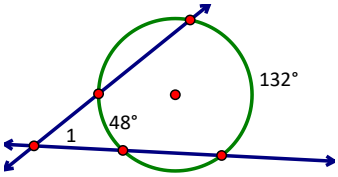
7.



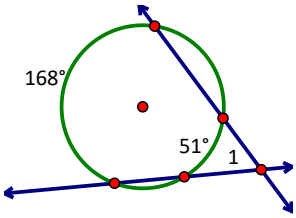
8.



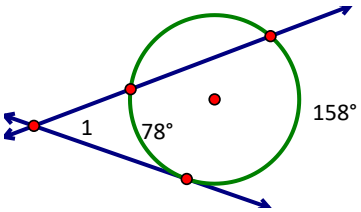
9.



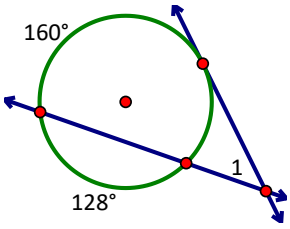
10.



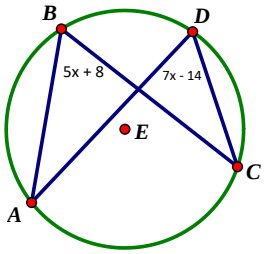
11.



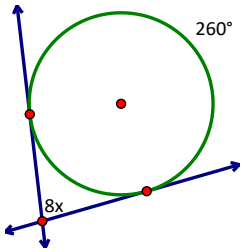
12.



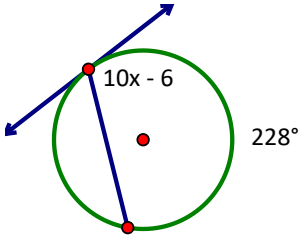
13. Find x and m∠ABC



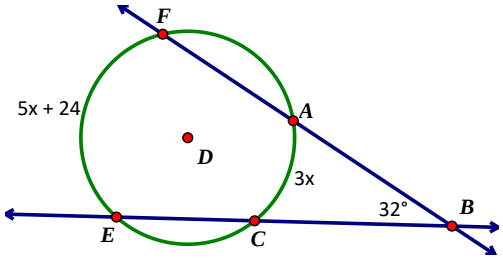
14.



15.



16. Find the value of x and $m\widehat{EF}$



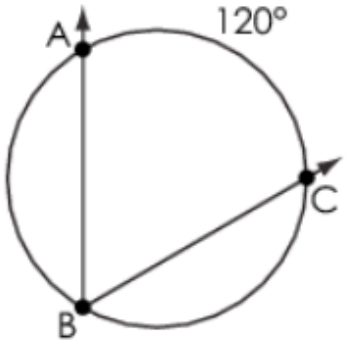
End of Course Test Questions

The key to this section is on smacmathgeometry.weebly.com under "Air Test"

2018

Question 19

Angle ABC is inscribed in a circle as shown.



What is the measure, in degrees, of ∠ABC?

degrees

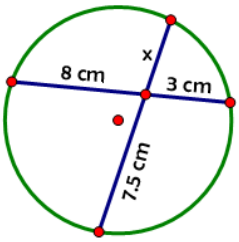
1	2	3
4	5	6
7	8	9
	0	
.	-	

Intersecting Chord Properties

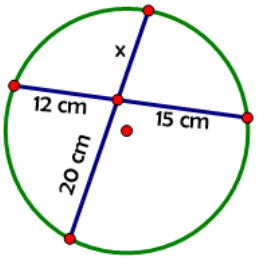
Hw Section 13.5

Find the measure of each variable, numbered angle or arc.

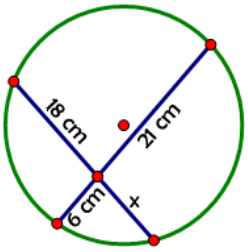
1.



2.



3.



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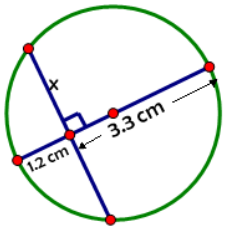
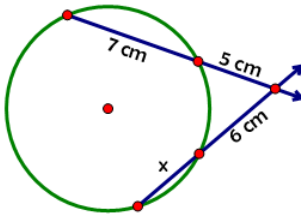
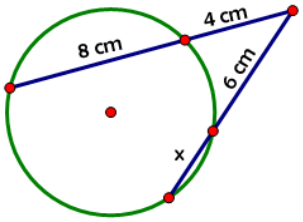


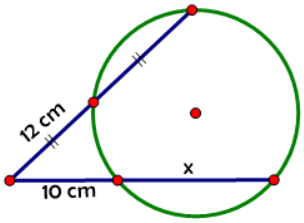
5.



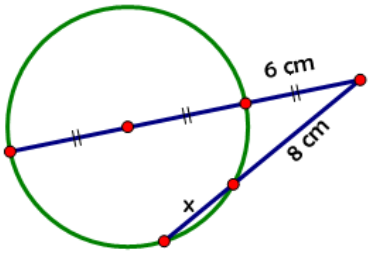
6.



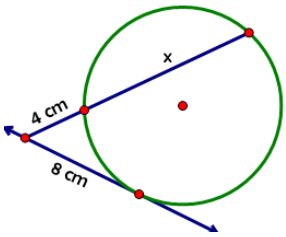
7.



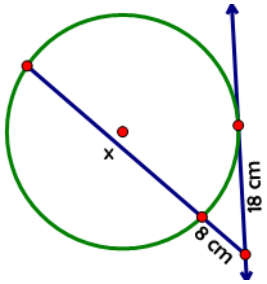
8.



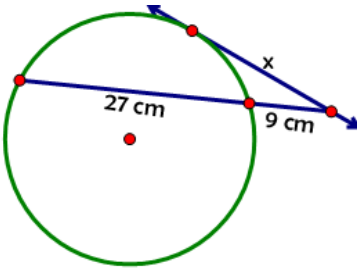
9.



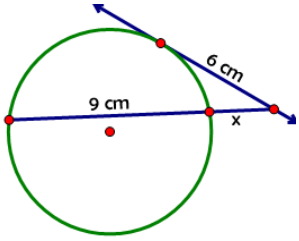
10.



11.



12.

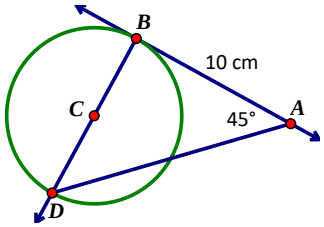


Circle Theorems

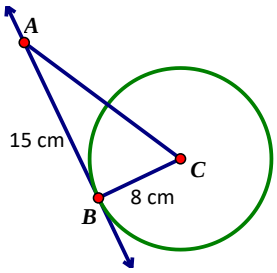
Review Chapter 13

Solve for the missing information, given the $\overleftrightarrow{AB}$ is a tangent line to circle C.

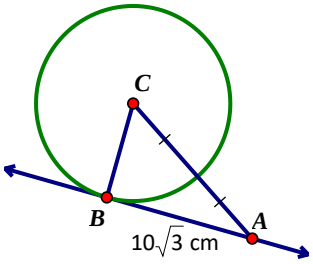
1. CB = _____



2. AC = _____

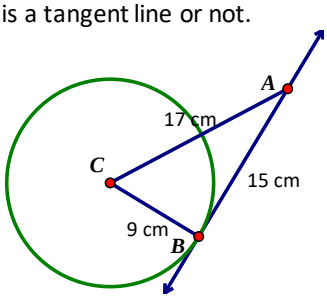


3. CB = _____

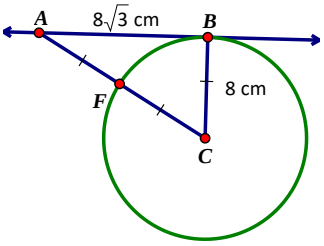


Determine if the $\overleftrightarrow{AB}$ is a tangent line or not.

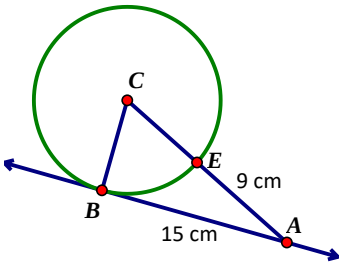
4. Yes or No



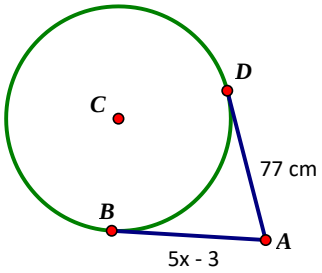
5. Yes or No



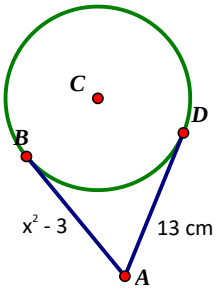
6. Given that $\overleftrightarrow{AB}$ is tangent to circle C and EA = 9 cm and AB = 15 cm, determine CB. (Hint: Label the two radii with x)



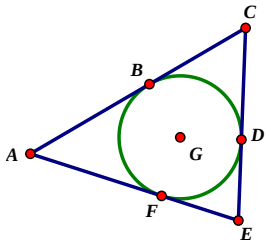
7. If $\overline{AB}$ and $\overline{AD}$ are tangent, then x = _____



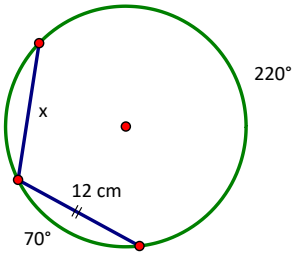
8. If $\overline{AB}$ and $\overline{AD}$ are tangent, then x = _____



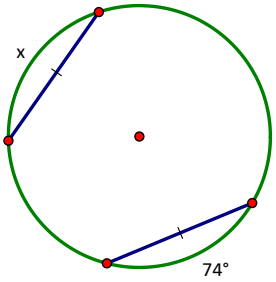
9. $\text{Perimeter}_{\Delta} = 40$ cm, AC = 15 cm, AF = 8.5 cm, find FE



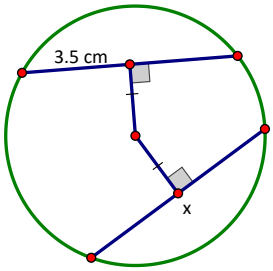
10. Find the value of x.



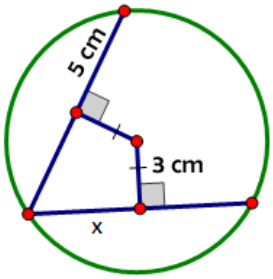
11. Find the value of x.



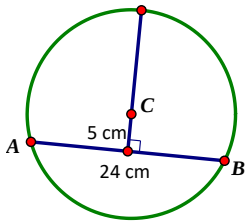
12. Find the value of x.



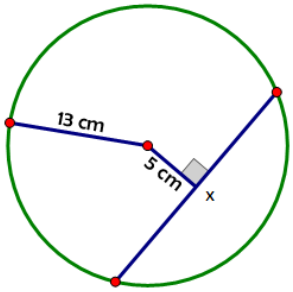
13. Find the value of x.



14. Determine the length of the radius $\overline{AC}$

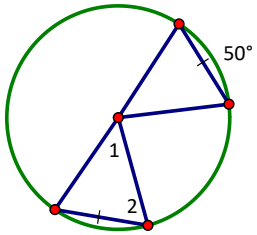


15. Find the value of x.

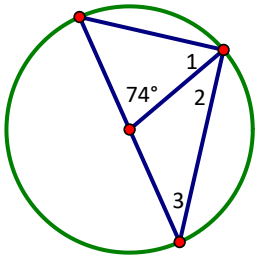


Find the measure of each numbered angle or arc.

16.



17.



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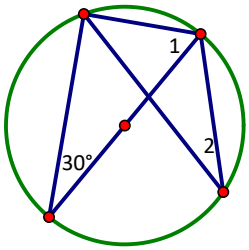

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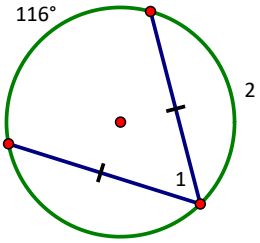

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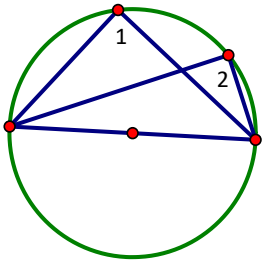
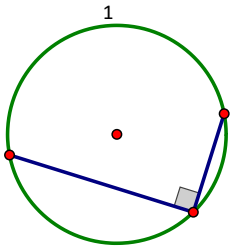
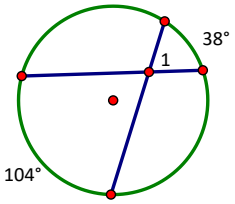


21.

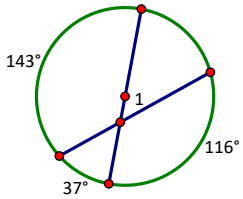


Find the measure of each variable, numbered angle or arc.

22.



23.



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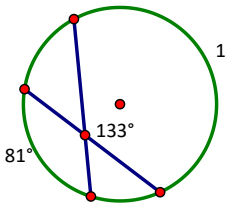

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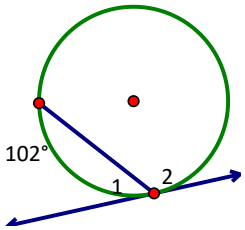

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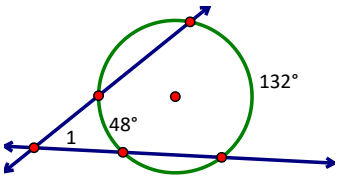

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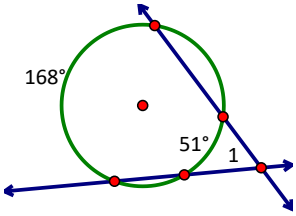
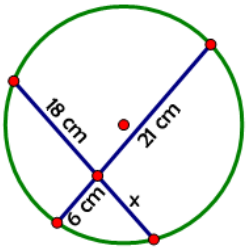


Find the measure of each variable, numbered angle or arc.

28.



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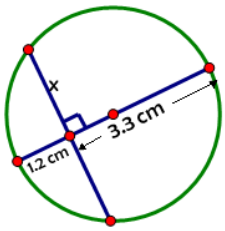
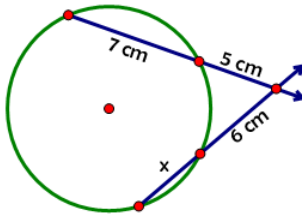
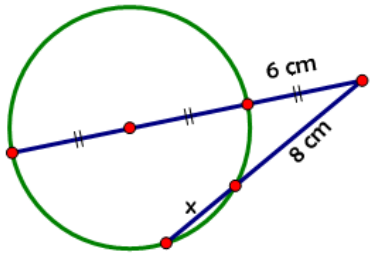


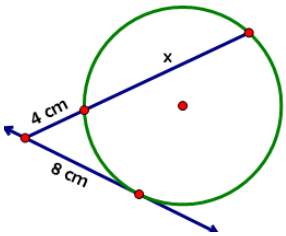
30.



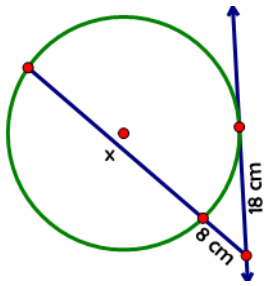
31.



32.

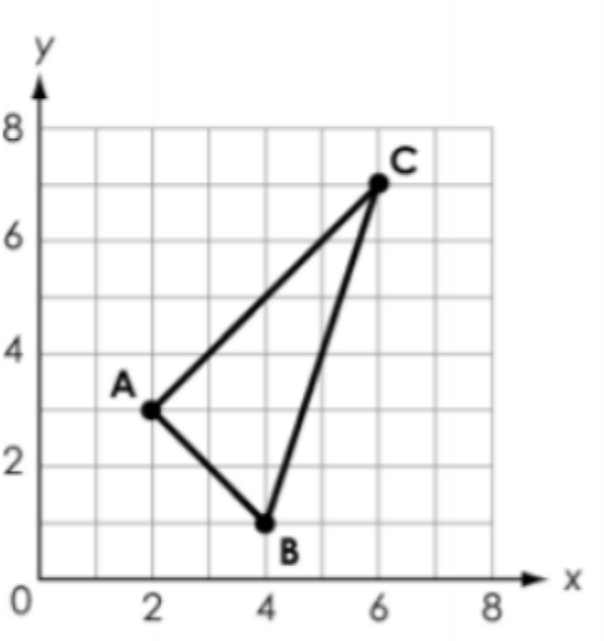


33.



Q3 Review 2017 Part 1

1. Triangle ABC is shown.



Which three-dimensional figure results from rotating the triangle 360° about $\overline{AC}$?

A cone

B cylinder

C pyramid

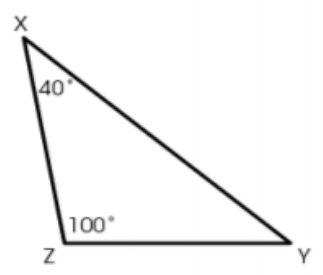
D sphere

2.

Line segment AB has endpoints $A(-1.5,\ 0)$ and $B(4.5,\ 8)$. Point C is on line segment AB and is located at $(0,\ 2)$

What is the ratio of $\frac{AC}{CB}$?

3. Triangle XYZ is shown.



Which triangle must be similar to triangle XYZ?

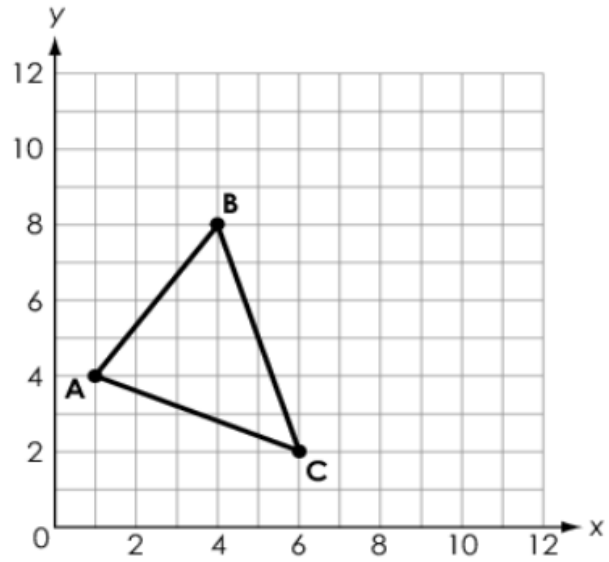
A a triangle with two angles that measure 40°

B a triangle with angles that measure 40° and 60°

C a scalene triangle with only one angle that measures 100°

D an isosceles triangle with only one angle that measures 40°

4. Triangle ABC is shown.



Triangle $A'B'C'$ is created by dilating triangle ΔABC by 4.
What is the length of $\overline{A''B''}$?

5. A study reports that in 2010 the population of the United States was $308,745,538$ people and the land area was approximately $3,531,905$ square miles.

Based on the study, what was the population density, in people per square mile, of the United States in 2010? Round your answer to the nearest tenth.

$\square$ *people per square mile*

Q3 Review 2017 Part 2

1. A figure is fully contained in Quadrant II. The figure is transformed as shown.

- a reflection over the x-axis
- a reflection over the line $y = x$
- a $90°$ counterclockwise rotation about the origin.

In which quadrant does the resulting image lie?

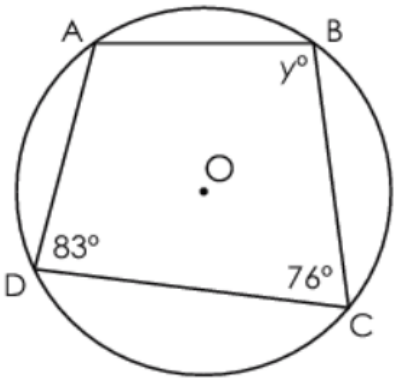
(A) Quadrant I

(B) Quadrant II

(C) Quadrant III

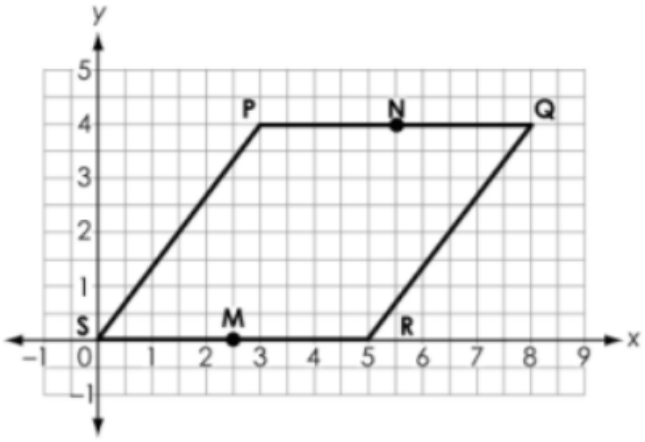
(D) Quadrant IV

2. Quadrilateral $ABCD$ is inscribed in circle O, as shown.



What is the value of y?

3. Rhombus $PQRS$ is shown on the coordinate plane. Points M and N are midpoints of their respective sides.



Select all of the transformations that map the rhombus onto itself.

A a 90° clockwise rotation around the center of the rhombus

B a 180° clockwise rotation around the center of the rhombus

C a reflection across PR

D a reflection across NM

E a reflection across QS

4. Square $ABCD$ has vertices at $A(1, 2)$ and $B(3, -3)$.

What is the slope of $\overline{BC}$?

5. Kevin asked Olivia what parallel lines are. Olivia responded, "They are lines that never intersect."

What important piece of information is missing from Olivia's response?

A The lines must be straight.

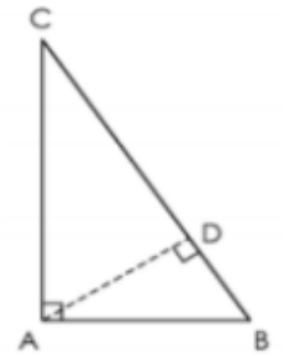
B The lines must be coplanar.

C The lines can be noncoplanar.

D The lines form four right angles.

Q3 Review 2017 Part 3

1. James correctly proves the similarity of triangles DAC and DBA as shown.



His incomplete proof is shown.

	Statements		Reasons
1.	$m\angle CAB = m\angle ADB = 90°$	1.	Given
2.	$m\angle ADB + m\angle ADC = 180°$	2.	Angles in a linear pair are supplementary.
3.	$90° + m\angle ADC = 180°$	3.	Substitution
4.	$m\angle ADC = 90°$	4.	Subtraction property of equality
5.	$\angle CAB \cong \angle ADB$ $\angle CAB \cong \angle ADC$	5.	Definition of congruent angles
6.	$\angle ABC \cong \angle DBA$ $\angle DCA \cong \angle ACB$	6.	Reflexive property of congruence
7.	$\triangle ABC \sim \triangle DBA$ $\triangle ABC \sim \triangle DAC$	7.	?
8.	$\triangle DBA \sim \triangle DAC$	8.	Substitution

What as the missing reason for the seventh statement?

A $CPCTC$

B AA postulate

C All right triangles are similar

D Transitive property of similarity

2. Triangle ABC is reflected across the line $y = 2x$ to form triangle RST.

Select all of the true statement.

A $\overline{AB} = \overline{RS}$

B $\overline{AB} = 2 \cdot \overline{RS}$

C $\triangle ABC \sim \triangle RST$

D $\triangle ABC \cong \triangle RST$

E $m\angle BAC = m\angle SRT$

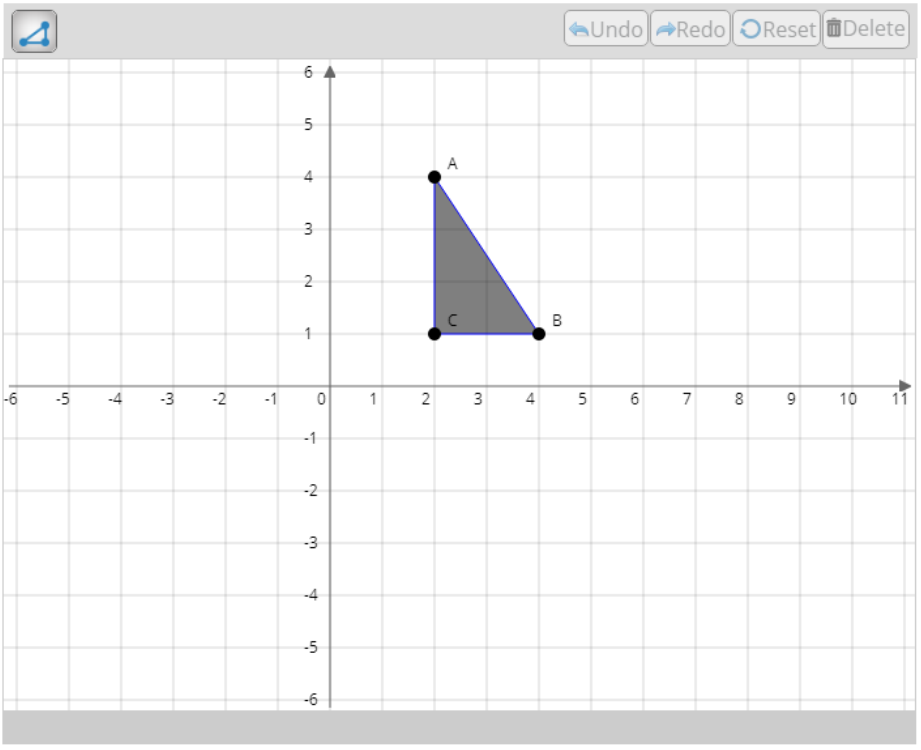
F $m\angle BAC = 2 \cdot m\angle SRT$

3. The equation of a circle is shown.

$$x^2 + y^2 - 10x + 8y + 16 = 0$$

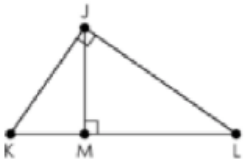
4. Triangle ABC is reflected across the line $y = x$.

Use the Triangle tool to create the triangle on the coordinate grid.



Q3 Review 2018 Part 1

1. Mark is proving the Pythagorean Theorem. He draws right triangle JKL with altitude $\overline{JM}$. First he proves $\Delta JKL \sim \Delta MKJ$ and $\Delta JKL \sim \Delta MJL$ using the Angle - Angle criterion. The rest of his proof is shown with some steps missing.



Statements	Reasons
1. $\Delta JKL \sim \Delta MKJ \text{ and } \Delta JKL \sim \Delta MKL$	1. Angle - Angle Criterion
2. $\frac{JK}{LK} = \frac{MK}{JK} \text{ and } \frac{LJ}{LK} = \frac{ML}{LJ}$	2. Corresponding sides of similar triangles are proportional
3. $(JK)^2 = LK \cdot MK \text{ and } (LJ)^2 = LK \cdot ML$	3. Multiplication property of equality
4.	4.
5.	5.
6. $MK + ML = LK$	6. Segment Addition Postulate
7. $(JK)^2 + (LJ)^2 = (LK)^2$	7. Substitution

A

4. $(JK)^2 + (LJ)^2 = LK \cdot MK + LK \cdot ML$	4. Addition property of equality
5. $(JK)^2 + (LJ)^2 = LK(MK + ML)$	5. Distributive property

B

4. $(JK)^2 + (LJ)^2 = LK \cdot MK + LK \cdot ML$	4. Addition property of equality
5. $(JK)^2 + (LJ)^2 = LK(LK + LK)$	5. Distributive property

C

4. $(JK)^2 \cdot (JK)^2 = LK \cdot MK \cdot LK \cdot ML$	4. Multiplication property of equality
5. $(JK)^2 \cdot (LJ)^2 = LK(MK \cdot ML)$	5. Distributive property

D

4. $(JK)^2 \cdot (JK)^2 = LK \cdot MK \cdot LK \cdot ML$	4. Multiplication property of equality
5. $(JK)^2 \cdot (LJ)^2 = LK(LK \cdot LK)$	5. Distributive property

2. A right triangle ABC is shown.

What is cos A?

3. Line k has a slope of -5. Line j is perpendicular to line k and passes through the point $(5, 9)$.

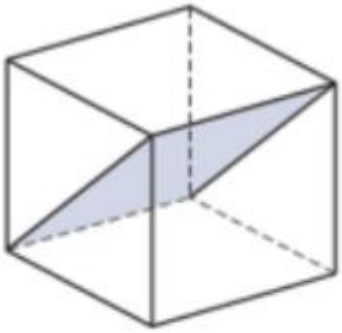
Create the equation for line j.

4. Jeremy wants to know the density of a rock in grams per cubic centimeter. The rock has a mass of 1.08 kilograms and a volume of 400 cubic centimeters.

What is the density of the rock, in **grams** per cubic centimeter $\left(\frac{g}{cm^3}\right)$?

$\left(\frac{g}{cm^3}\right)$

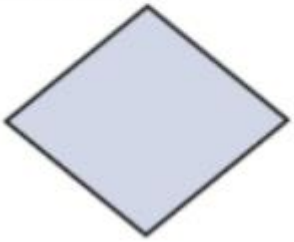
5. A cube is sliced as shown.



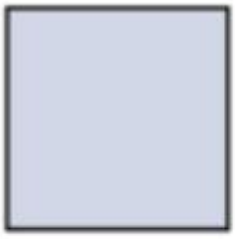
What is the shape of the cross section?

(A) Rectangle

(B) Rhombus



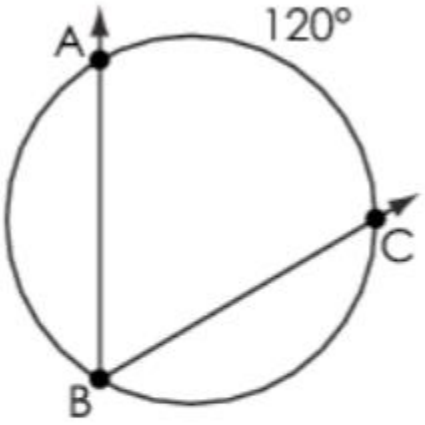
(C) Square



(D) Trapezoid

Q3 Review 2018 Part 2

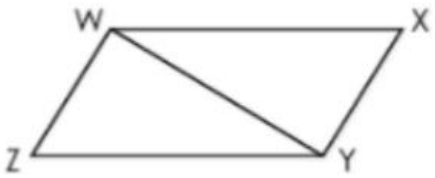
1. Angle ABC is inscribed in a circle as shown.



What is the measure, in degrees, of ∠ABC?

ϕ degrees

2. A parallelogram and incomplete proof are shown.



Given: WXYZ is a parallelogram.
Prove: $\overline{WX} \cong \overline{YZ}$

Place reasons in the table to complete the proof.

Statements	Reasons
1. WXYZ is a parallelogram.	1. Given
2. $\overline{WX} \parallel \overline{YZ}$ $\overline{WZ} \parallel \overline{XY}$	2. Definition of a parallelogram
3. $\angle ZWY \cong \angle XYW$ $\angle ZYW \cong \angle XWY$	3.
4. $\overline{WY} \cong \overline{WY}$	4.
5. $\triangle WYZ \cong \triangle YWX$	5.
6. $\overline{WX} \cong \overline{YZ}$	6.

- Reflexive property
- Corresponding parts of congruent triangles are congruent
- SSS
- Corresponding angles are congruent
- Angle addition postulate
- Alternate interior angles are congruent
- AA
- SAS
- Alternate exterior angles are congruent
- Corresponding parts of congruent triangles are similar
- Transitive property
- ASA

3. A triangle is shown.

What is the length, in inches (in.), of side *a*?

in.

4. Points A, B and C lie on a circle with center Q.

- The area of sector AQB is twice the area of sector BQC.
- The length of arc AB is 28 centimeters.

What is the length, in centimeters, of arc BC?

centimeters

5. Which terms is defined as two intersecting lines that form four right angles?

A skew lines

B straight lines

C parallel lines

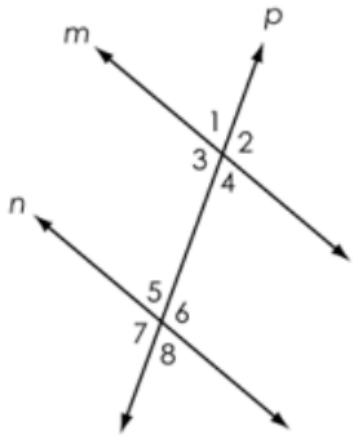
D perpendicular lines

Q3 Review 2018 Part 3

1.

Given: $m \parallel n$ and transversal p

Prove: $\angle 5 \cong \angle 4$



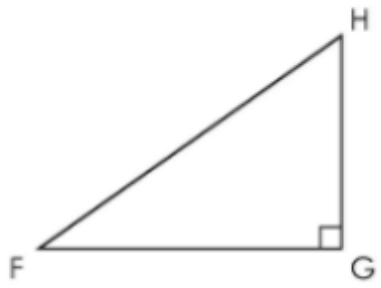
Part of a proof is shown. Place statements and reasons in the table to complete the proof.

Statements	Reasons
1. $m \parallel n$ and transversal p	1. Given
2.	
3.	
4. $\angle 5 \cong \angle 4$	

- Vertical angles theorem
- $\angle 1 \cong \angle 4$
- $\angle 4 \cong \angle 7$
- $\angle 5 \cong \angle 7$
- $\angle 8 \cong \angle 1$
- $\angle 8 \cong \angle 4$

- Transitive property
- $\angle 5 \cong \angle 8$
- Reflexive property
- Corresponding angles postulate
- Alternate exterior angles theorem
- Angle addition postulate

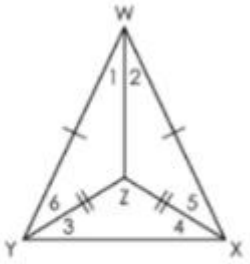
2. Right triangle FHG is shown.



The sine of ∠F is 0.53.

What is the cosine of ∠H? Round your answer to the nearest hundredth as needed.

3. Triangle YWX is shown.



Given: $\overline{WY} \cong \overline{WX}$, $\overline{ZY} \cong \overline{ZX}$

Prove: $\overline{WZ}$ bisects $\angle YWX$

Place statements and reasons in the blank boxes to complete the proof.

Statements	Reasons
$\overline{WY} \cong \overline{WX}$ $\overline{ZY} \cong \overline{ZX}$	Given
$\angle WYX \cong \angle WXY$ $\angle 3 \cong \angle 4$	
$m\angle WYX = m\angle WXY$ $m\angle 3 = m\angle 4$	Measures of congruent angles are equal.
$m\angle WYX = m\angle 6 + m\angle 3$ $m\angle WXY = m\angle 5 + m\angle 4$	
$m\angle 6 + m\angle 3 = m\angle 5 + m\angle 4$	Substitution
	Substitution
$m\angle 6 = m\angle 5$	
	SAS
$\angle YWZ \cong \angle XWZ$	
$\overline{WZ}$ bisects $\angle YWX$	

- $m\angle 6 = m\angle 5 + m\angle 4 - m\angle 3$
- CPCTC
- $m\angle 6 + m\angle 3 = m\angle 5 + m\angle 3$
- Corresponding parts of similar triangles are congruent
- Definition of angle bisector
- Substitution
- Reflexive Property
- $\triangle WYZ \cong \triangle WXZ$
- $\triangle WYX \cong \triangle ZYX$
- Addition Property of Equality
- Base angles of isosceles triangles are congruent
- Angle Addition Postulate

4. The equation of a line is shown.

$6x - 3y = 5$

A dilation centered at the origin with a scale factor of 6 is applied to this line.

A. What is the slope of the line after the dilation?

B. What is the value of the y-intercept of the line after the dilation?

A. [ ]

B. [ ]

5. Triangle MNO is transformed to produce triangle PQR.

Select all the transformations that would guarantee triangles MNO and PQR are congruent

- **A** a dilation, then a translation
- **B** a reflection, then a dilation
- **C** a reflection, then a rotation
- **D** a rotation, then a translation
- **E** a translation, then a reflection