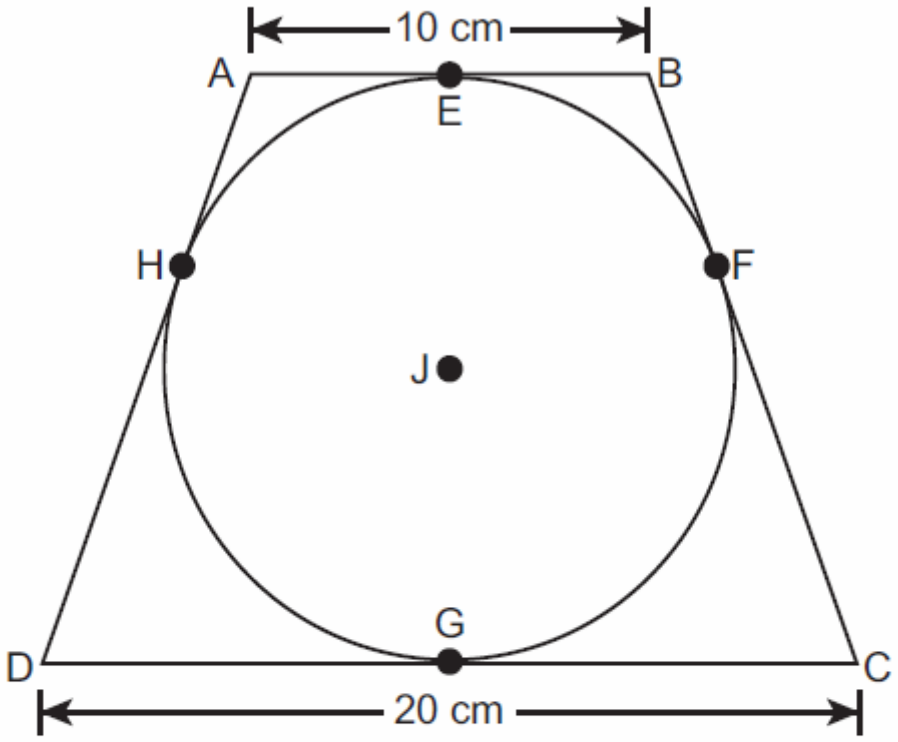
Geometry Work at home 03202020

Question 1.

Circle J is inscribed in isosceles trapezoid ABCD, as shown below.



Points E, F, G, and H are points of tangency. The length of $\overline{AB}$ is 10 cm. The length of $\overline{DC}$ is 20 cm. What is the length, in cm, of $\overline{BC}$?

A. 5

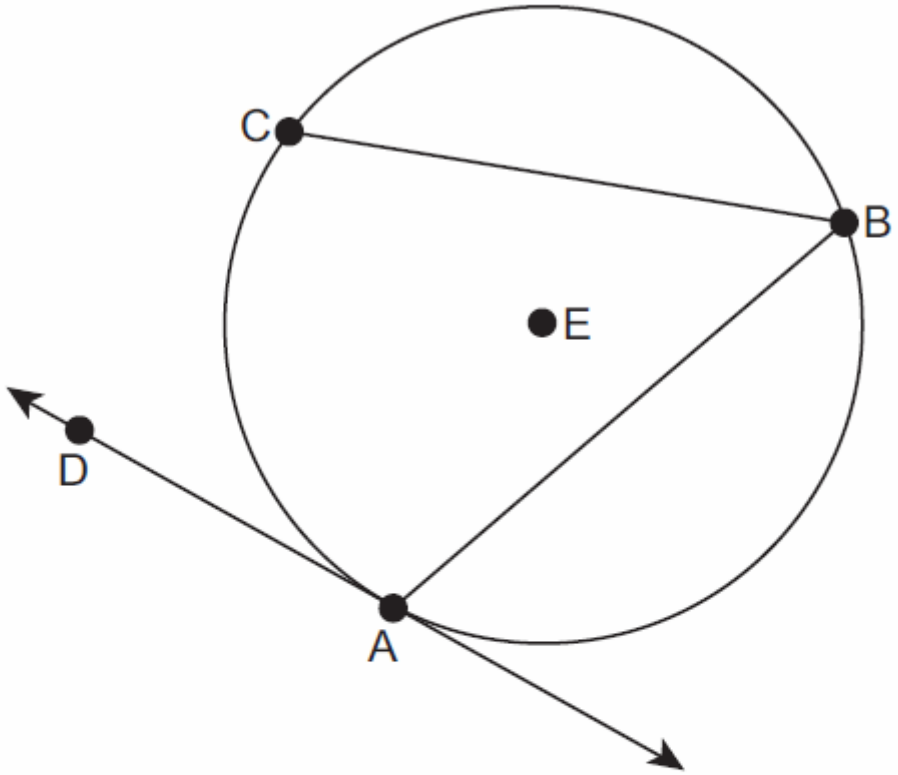
B. 10

C. 15

D. 30

Question 2

Circle E is shown in the diagram below.



Line AD is tangent to circle E. The measure of angle DAB is 110°. The measure of minor arc CB is 120°. What is the measure of arc CBA?

A. 220°

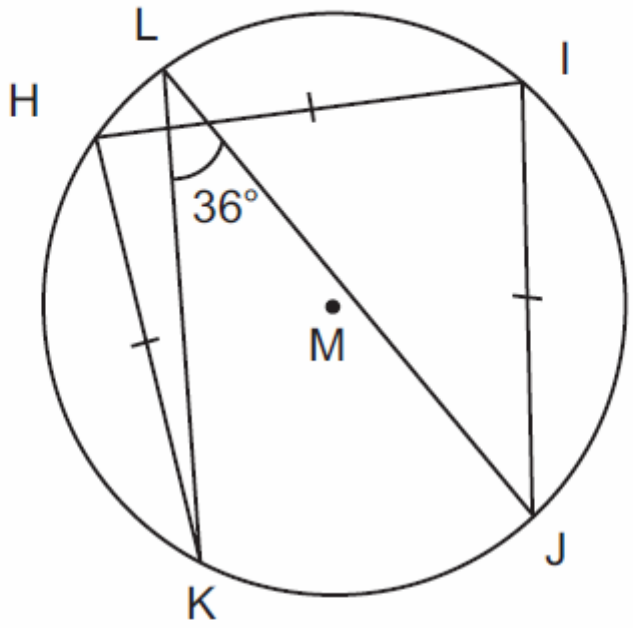
B. 240°

C. 250°

D. 260°

Question 3.

Circle M is shown below.



Chords $\overline{KH}$, $\overline{HI}$, and $\overline{IJ}$ are congruent. What is the measure of $\overset{\frown}{KH}$?

A. 72°

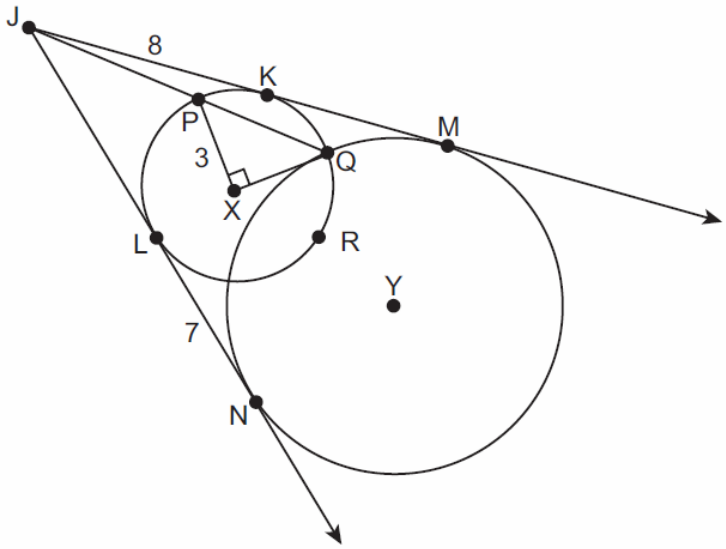
B. 90°

C. 96°

D. 108°

Question 4.

A diagram is shown below.



In the diagram, $\overline{JM}$ and $\overline{JN}$ are tangent to circle X and circle Y.

A. What is the length of $\overline{JM}$?

length of $\overline{JM}$: _____

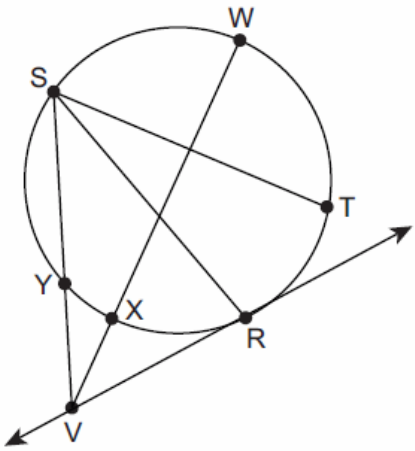
B. Identify the chord in the diagram.

chord: _____

C. What is the length of $\overline{JP}$? Show your work. Explain your reasoning.

Question 5.

A circle is shown below.



Some information about the circle is listed below.

- $\overleftrightarrow{VR}$ is tangent to the circle
- $m\angle VRS = 77°$
- $m\angle RST = 27°$
- $m\overset{\frown}{SW} = 78°$
- $m\overset{\frown}{XY} = 22°$
- $m\overset{\frown}{SY} = 78°$

A. What is the measure of $\angle XVY$?

$m\angle XVY =$ _____

Continued. Please refer to the previous page for task explanation.

B. What is the measure of $\overset{\frown}{RT}$?

$m\overset{\frown}{RT}$ = _____

C. What is the measure of $\overset{\frown}{WT}$?

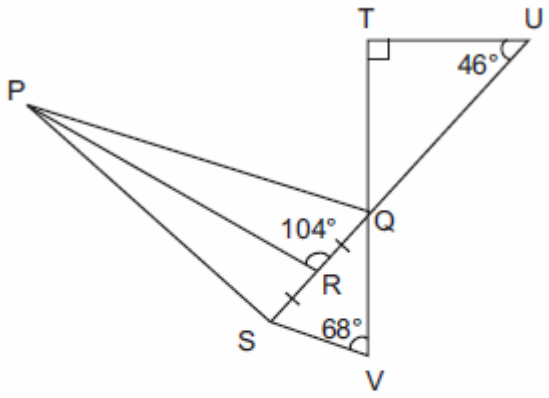
$m\overset{\frown}{WT}$ = _____

D. What is the measure of $\angle SVR$?

$m\angle SVR$ = _____

Question 6.

A diagram is shown below.



Which of the triangles **must** be isosceles?

A. △SPR

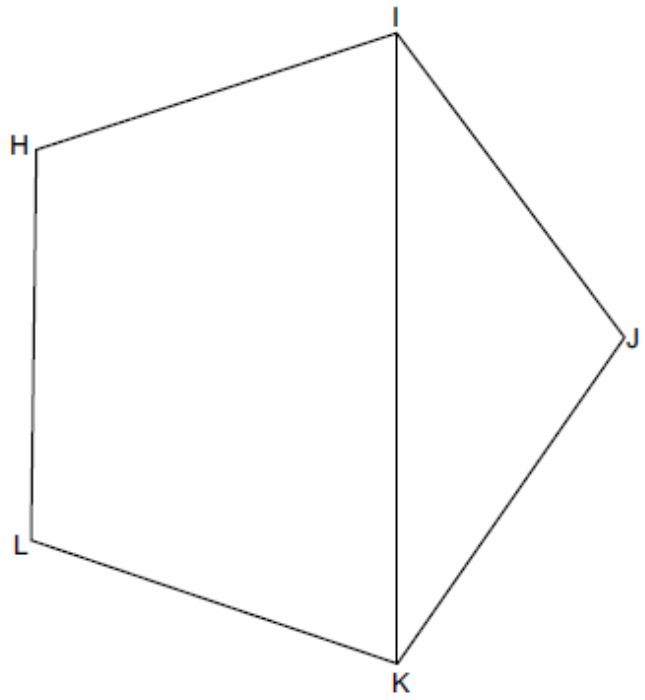
B. △SPQ

C. △QTU

D. △SQV

Question 7.

Regular pentagon HIJKL is shown below.



What is the measure of ∠HIK?

A. 36°

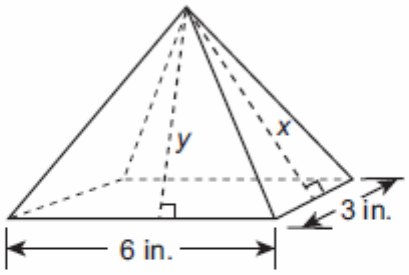
B. 54°

C. 72°

D. 108°

Question 8.

In the right rectangular pyramid shown below, x and y are slant heights.



Which of the following **must** be true about the relationship between the values of x and y?

A. $x = y$

B. $x > y$

C. $x < y$

D. $x^2 + y^2 = 9^2$

Question 9.

A craftsman makes a cabinet in the shape of a triangular prism. The top and bottom of the cabinet are congruent isosceles right triangles.

A. Describe the shape needed to build each of the faces of the cabinet.

In order to make production of the cabinets easier, the craftsman wants to design the cabinet so the lateral faces are all congruent figures.

B. Explain why this is not possible.

C. What must be true about the base of a triangular prism in order for the lateral faces to all be congruent figures?

The craftsman is designing the cabinet to fit perfectly against two perpendicular walls.

D. Explain why a cabinet whose lateral faces are all squares cannot fit perfectly against two perpendicular walls.

Question 10.

Kelly notices that in an equilateral triangle, each interior angle measures 60° and in a square, each interior angle measures 90°. She wonders if, each time a side is added to the number of sides in a regular polygon, the measure of each interior angle increases by 30°.

Kelly examines a regular pentagon to see if her hypothesis is correct.

A. What is the measure of each interior angle of a regular pentagon?

interior angle of a regular pentagon: _____

Kelly decides to examine the ratios of the measures of the interior angles to look for a pattern. She notices that the ratio of the measure of each interior angle of an equilateral triangle to a square is $\frac{2}{3}$.

B. What is the ratio of the measure of each interior angle of a square to a regular pentagon?

ratio: _____

Continued. Please refer to the previous page for task explanation.

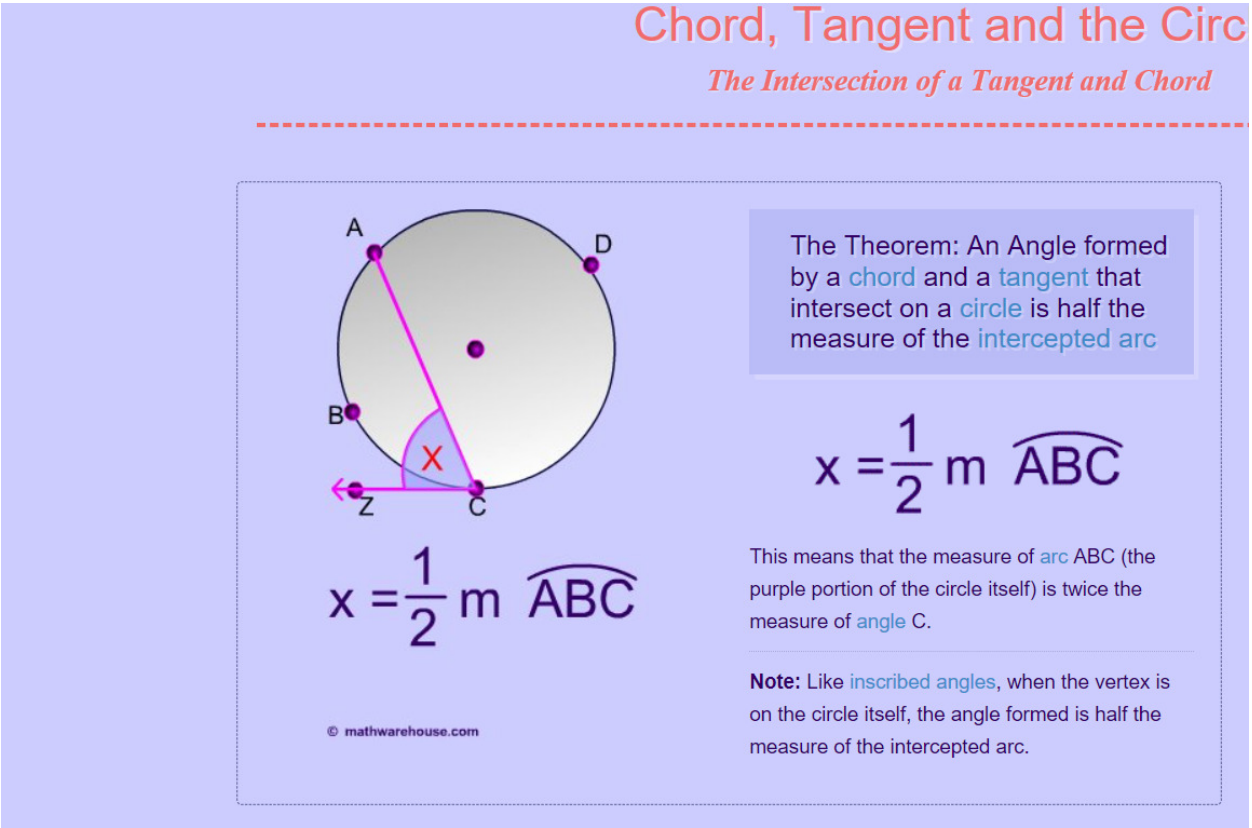
Kelly makes a ratio comparing the measure of each interior angle of a regular polygon with n sides to the measure of each interior angle of a regular polygon with $n + 1$ sides.

C. What is the ratio?

ratio: _____

D. What is the ratio of the measure of each interior angle of a regular 9-sided polygon to the measure of each interior angle of a regular 10-sided polygon?

ratio: _____



http://www.mathwarehouse.com/geometry/circle/angle-tangent-and-chord.php

Converse, Inverse, Contrapositive

Given an if-then statement "if p, then q," we can create three related statements:

A conditional statement consists of two parts, a hypothesis in the "if" clause and a conclusion in the "then" clause. For instance, "If it rains, then they cancel school."

"It rains" is the hypothesis.

"They cancel school" is the conclusion.

To form the converse of the conditional statement, interchange the hypothesis and the conclusion.

The converse of *"If it rains, then they cancel school"* is *"If they cancel school, then it rains."*

To form the inverse of the conditional statement, take the negation of both the hypothesis and the conclusion.

The inverse of *"If it rains, then they cancel school"* is *"If it does not rain, then they do not cancel school."*

To form the contrapositive of the conditional statement, interchange the hypothesis and the conclusion of the inverse statement.

The contrapositive of *"If it rains, then they cancel school"* is *"If they do not cancel school, then it does not rain."*

The link to the above information.
https://www.varsitytutors.com/hotmath/hotmath_help/topics/converse-inverse-contrapositive

PARCC
Partnership for Assessment of Readiness for College and Careers

High School Mathematics Assessment Reference Sheet

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilograms
1 kilogram = 2.2 pounds
1 ton = 2000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallons
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d \text{ or } C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n-1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1-r}$ where $r \neq 1$
Radians	1 radian $= \frac{180}{\pi}$ degrees
Degrees	1 degree $= \frac{\pi}{180}$ radians