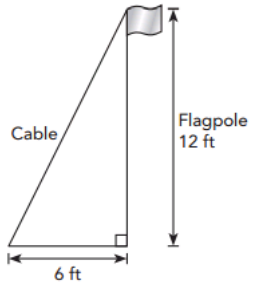
Pear Assessment

Grade 9: Summer Packet 2024

Created By Faranot Louis

1 One end of a cable is attached to the top of a flagpole and the other end is attached 6 feet away from the base of the pole.

If the height of the flagpole is 12 feet, find the length of the cable.



Round your answer to the nearest tenth.

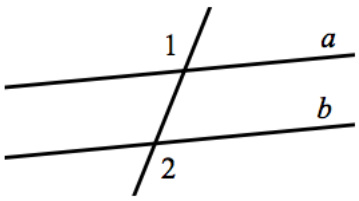
(A) 13.4 feet

(B) 13.1 feet

(C) 18 feet

(D) 10.4 feet

2



In the figure above $a \parallel b$. $If\ \angle 1 = 34,\ find\ the\ measure\ of\ \angle 2$

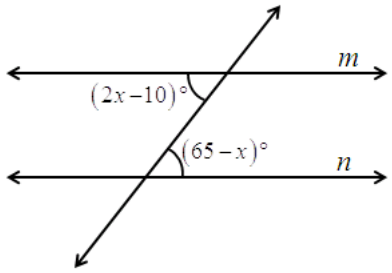
(A) 56

(B) 34

(C) 146

(D) 90

3 In the figure shown below, if line $\mathbf{m}$ is parallel to line $\mathbf{n}$, then find the value of $\mathbf{x}$.



$\mathbf{x} =$ ____

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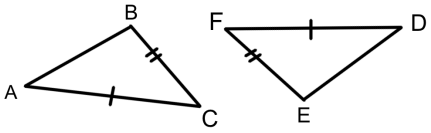
4 Which of the following statements is needed in order to prove these triangles are congruent using SSS?



(A) $\angle BCA \cong \angle EFD$

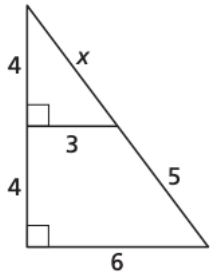
(B) $\overline{AC} \cong \overline{ED}$

(C) $\overline{DE} \cong \overline{BC}$

(D) $\overline{AB} \cong \overline{DE}$

---

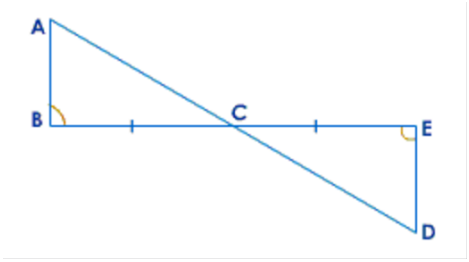
5 **Find the value of x.**



x = ____

---

6 Which of the following can be used to show that these triangles are congruent?



(A) ASA

(B) SSS

(C) SAS

(D) AAS

(E) Not Congruent

---

7 Point B lies on $\overline{AC}$ between A and C. If AB = 8 and AC = 10, find BC.

(A) 2

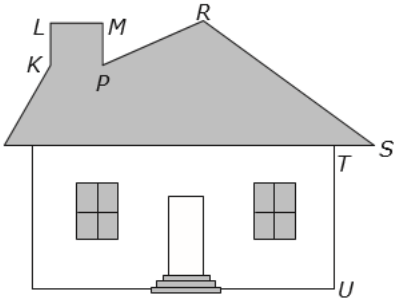
(B) 8

(C) 10

(D) 18

---

8 Which angle in the drawing below is an obtuse angle?



(A) $\angle KLM$

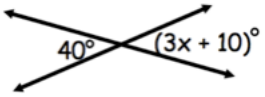
(B) $\angle MPR$

(C) $\angle PRS$

(D) $\angle STU$

---

9 Determine the value of x.



x =

---

10 Vertical angles

(A) are congruent

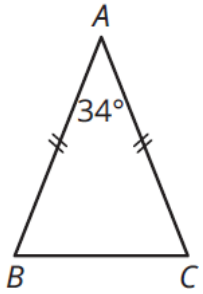
(B) add up to 90 degrees

(C) add up to 180 degrees

(D) add up to 360 degrees

---

11 What is the measure of $\angle B$?



(A) 34°

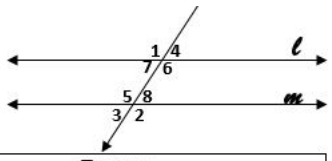
(B) 56°

(C) 73°

(D) 146°

12

Given: $1 \parallel m$
Prove: $\angle 1 \cong \angle 2$



Statements	Reasons
1. $1 \parallel m$	1. Given
2. $\angle 1 \cong \angle 6$	2.
3. $\angle 6 \cong \angle 2$	3. Corresponding Angles Postulate
4. $\angle 1 \cong \angle 2$	4. Transitive Property of Congruence

What is the correct reason for 2?

(A) Vertical Angle Theorem

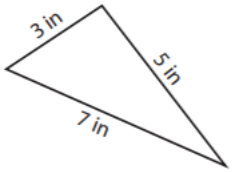
(B) Linear Pair Theorem

(C) Corresponding Angles Postulate

(D) Alternate Interior Angles Theorem

---

13 Identify the following triangle based on sides.



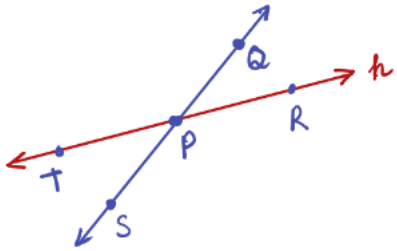
(A) Equilateral

(B) Isosceles

(C) Scalene

(D) none of the above

14



TRUE or FALSE?
Point S, point P and point Q are collinear.

(A) True

(B) False

---

15 Complementary angles

(A) are congruent

(B) add up to 90 degrees

(C) add up to 180 degrees

(D) add up to 360 degrees

---

16 What is the Pythagorean Theorem?

(A) a + b + c

(B) $a^2+b^2=c^2$

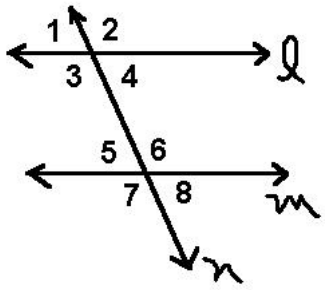
(C) $a^2-b^2=c^2$

(D) abc = d

---

17 Name all the angles

congruent to $\angle 3$.



(A) 2

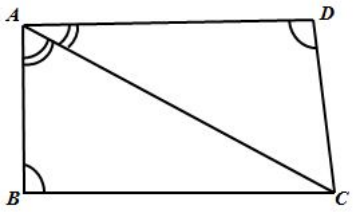
(B) $2, 6$

(C) $2, 6, 7$

(D) $2, 6, 7, 8$

---

18 Which of the following can be used to prove that $\Delta ABC \cong \Delta ADC$?



(A) ASA Postulate

(B) SAS Postulate

(C) AAS Postulate

(D) SSS Postulate

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19 $\angle A$ and $\angle B$ are a pair of supplementary angles, where $\angle A = 30 + 2x$ and $\angle B$=x. Then the measure of $\angle B$ is _____ degrees.

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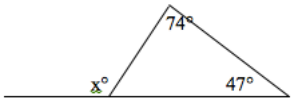
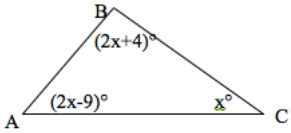
20 Find the exterior angle measure:



21



Find the measure of angle A:

Find the measure of angle B:

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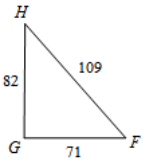
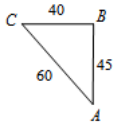
22 Are the two triangles similar? If so, why are they similar?

(a)





(A) The triangles are similar by the definition of similarity (all congruent angles, all proportional sides)

(B) The triangles are similar by AA~ Theorem

(C) The triangles are similar by SSS~ Theorem

(D) The triangles are not similar

(b)

If they are similar, what is the similarity statement?

(A) ΔHGF ~ ΔCBA

(B) ΔHGF ~ ΔBAC

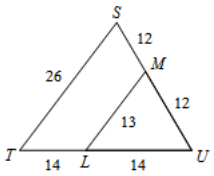
(C) ΔHGF ~ ΔABC

(D) Not Similar

---

23 Are the two triangle similar? If so, why are they similar?

(a)



(A) The triangles are similar by the definition of similarity (all congruent sides, all similar angles)

(B) The triangles are similar by AA~ Theorem

(C) The triangles are similar by SSS~ Theorem

(D) The triangles are not similar

(b)

If they are similar, what is the similarity statement?

(A) ΔSUT ~ ΔUML

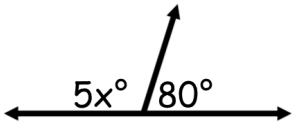
(B) ΔSUT ~ ΔLUM

(C) ΔSUT ~ ΔMUL

(D) Not Similar

---

24 Determine the value of x.



x =

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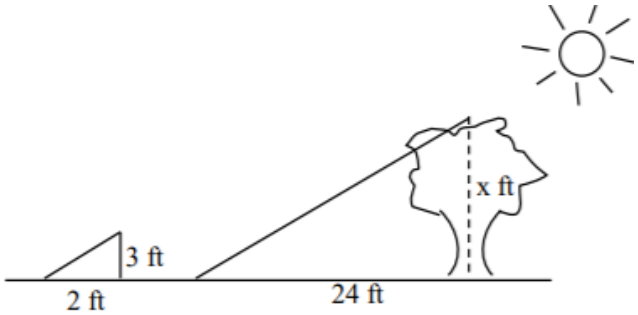
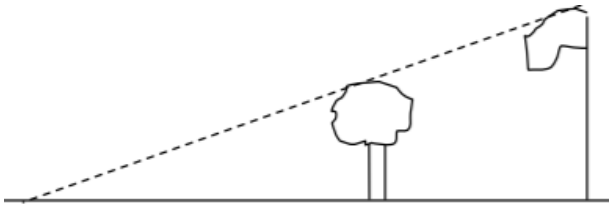
25 **If a tree casts a 24-foot shadow at the same time that a yardstick casts a 2-foot shadow, find the height of the tree.**



26 **On level ground, the base of a tree is 20 ft from the bottom of a 48-ft flagpole. The tree is shorter than the pole. At a certain time, their shadows end at the same point 60 ft from the base of the flagpole. How tall is the tree?**



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27 John wants to move from point A to point B. To avoid the pond, he must walk $36\ m$ south and $49\ m$ east. However, he wants to go through the pond in order to save time. To the nearest meter, calculate how many meters would be saved if John rows a boat across the pond?

DRAG & DROP THE ANSWER

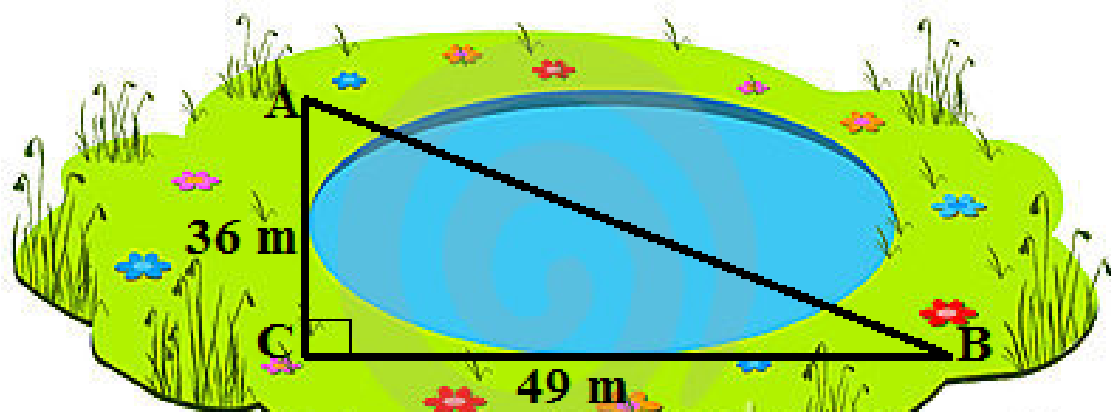
$60.80\ m$

$61.75\ m$

$85\ m$

$24.2\ m$

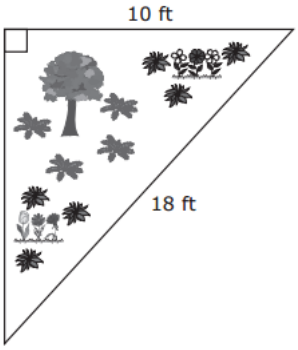
Note: Use CTRL+D to drag the option via keyboard



Distance Saved =

---

28 Molly wants to put a fence around an area. The fence will follow the diagram of the triangle shown below.



About how much fencing does Molly need?

(A) 28 ft

(B) 38 ft

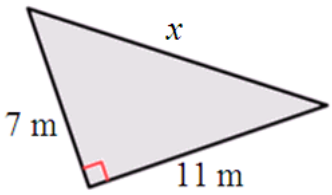
(C) 43 ft

(D) 49 ft

---

29 Find the hypotenuse (x) of the right triangle.

Round your answer to the nearest tenth.



(A) 8.5 m

(B) 18 m

(C) 23 m

(D) 13 m

---

30 If the two legs of a right triangle are $15\ m$ and $8\ m$ then find the hypotenuse.

(A) 17 m

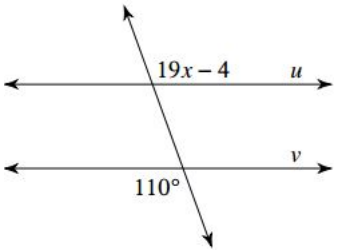
(B) 15 m

(C) 23 m

(D) 30 m

---

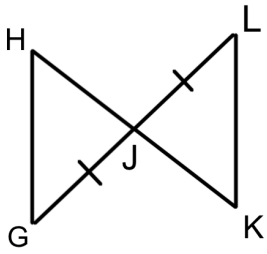
31 **Find the value of x (show all work):**



x =

---

32 Which of the following statements is needed in order to prove these triangles are congruent using ASA?



(A) $\angle GHJ \cong \angle LKJ$

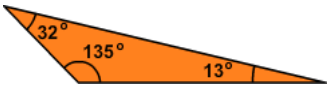
(B) $\angle HGJ \cong \angle KLJ$

(C) $\overline{HJ} \cong \overline{KJ}$

(D) $\angle HJG \cong \angle LKJ$

---

33 This is what type of triangle?



(A) Scalene Right

(B) Scalene Obtuse

(C) Scalene Acute

---

34 Find the longest side of $\triangle ABC$, if $m\angle A = 70,\ m\angle B = 2x - 10,\ and\ m\angle C = 3x + 20$

(A) $\overline{BC}$

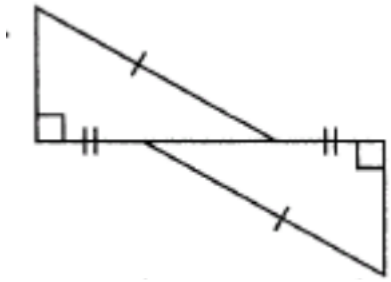
(B) $\overline{AC}$

(C) $\overline{AB}$

(D) Who cares about triangles.... (If you choose this answer you fail for the year)

---

35 Which triangle congruence theorem could you use to prove the following triangles congruent?



(A) Side Angle Side

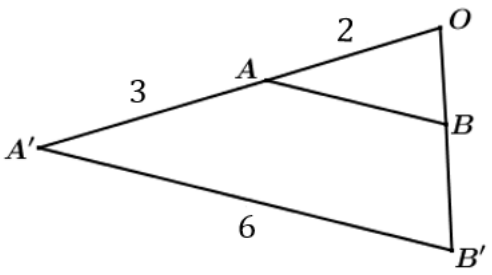
(B) Angle Side Side

(C) Hypotenuse Leg Theorem

(D) Angle Angle Side

---

36 In the diagram, $\triangle OA'B'$ is a scale drawing of $\triangle OAB$. What is the length of AB?



(A) 1

(B) 1.67

(C) 2.4

(D) 4

---

37 Supplementary angles

(A) are congruent

(B) add up to 90 degrees

(C) add up to 180 degrees

(D) add up to 360 degrees

---

38 If the coordinate of A is (0, -2) and the coordinate of B is (10, -6), the then midpoint of $\overline{AB}$ is:

(_____ , _____)

Here is the midpoint formula:

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

---

39 A circle has a diameter of length 11 cm. What is the length of the radius?

(A) 22 cm

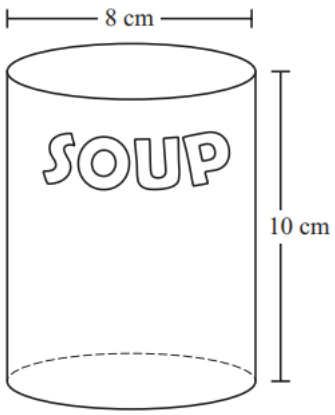
(B) 11 cm

(C) 5.5 cm

(D) 5 cm

---

40 A container of soup is in the shape of a right circular cylinder. The container and its dimensions are shown below.



What is the volume, in cubic centimeters, of the container?

(A) 200π

(B) 160π

(C) 80π

(D) 40π

---

41 A circle has a radius of 10 cm. What is the area of the circle in terms of π?

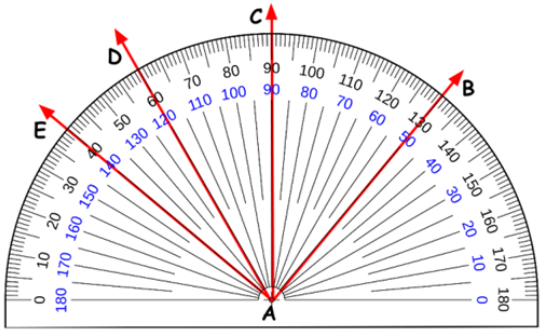
(A) 25π cm^2

(B) 100π cm^2

(C) 50π cm^2

---

42 **Directions - Use the diagram of the protractor to find the indicated angle measures.**



a) $m\angle DAC =$ _____ degrees.

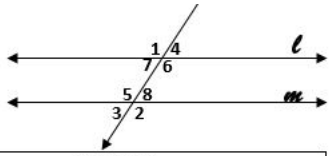
b) $m\angle DAB =$ _____ degrees.

c) $m\angle CAB =$ _____ degrees.

d) $m\angle EAC =$ _____ degrees

43

Given: 1 // m
Prove: $\angle 1 \cong \angle 2$



Statements	Reasons
1. 1 // m	1. Given
2. $\angle 1 \cong \angle 6$	2.
3. $\angle 6 \cong \angle 2$	3. Corresponding Angles Postulate
4. $\angle 1 \cong \angle 2$	4. Transitive Property of Congruence

What is the correct reason for 2?

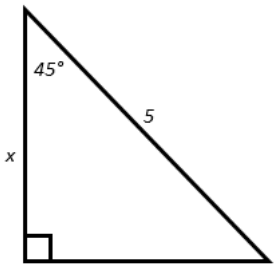
(A) Vertical Angle Theorem

(B) Linear Pair Theorem

(C) Corresponding Angles Postulate

(D) Alternate Interior Angles Theorem

44



Solve for x. Leave answer in simplified radical form.

_____

---

45 What is the center and radius of the circle? $(x-13.4)^2+(y+2.6)^2=100$

Part A

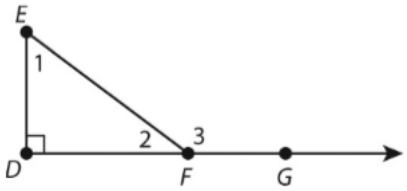
Center:

Part B

Radius:

---

46 Answer the following questions about this figure.



If m∠1= 53°, what is m∠3?

---

47 Simplify the expression. $\frac{\frac{x+2}{x-2}}{\frac{(x+2)(x+4)}{x+6}}$

$=$

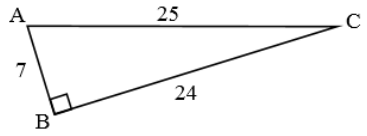
---

48 Solve the equation given.

$\frac{x}{x-3}+\frac{4}{3}=2$

$x=$

49 Write the ratios for $\sin C$, $\cos C$ and $\tan C$.



Note: Use slash (/) to separate numerator and denominator.

sin C	1
cos C	2
tan C	3

50 John is skiing on a mountain with an altitude of 1200 feet. The angle of depression is 21°. About how far does John ski down the mountain?

DRAG & DROP THE ANSWER

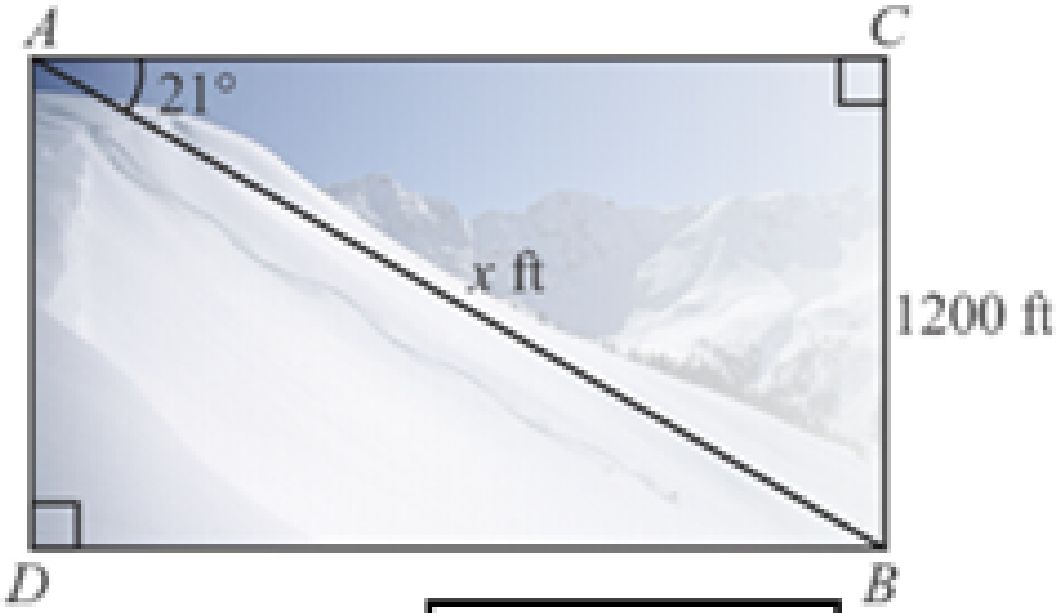
$3348\ ft$

$3698\ ft$

$2235\ ft$

$3542\ ft$

Note: Use CTRL+D to drag the option via keyboard



x :

51 **Directions - Fill in the blanks with the correct terms.**

a) The Pythagorean Theorem works with [a] triangles.

b) In the Pythagorean Theorem equation ($a^2 + b^2 = c^2$), 'a' and 'b' represent the [b] .

c) In the Pythagorean Theorem equation, 'c' stands for the [c] .

d) The opposite operation of raising a number to the second power (3^2) is [d] .

a
- left
- right
- equilateral
- special

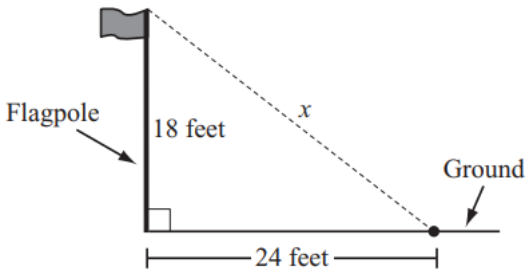
b
- hypotenuses
- legs
- sides
- right angles

c
- smallest leg
- largest leg
- hypotenuse
- right angle

d
- dividing by 2
- multiplying by 2
- taking the square root
- subtracting 2

---

52 The distance from the base of a flagpole to a point on the ground is 24 feet. The flagpole has a height of 18 feet, as shown in the diagram below.



What is x, the distance from the **top** of the flagpole to the point on the ground?

(A) 16 feet

(B) 21 feet

(C) 30 feet

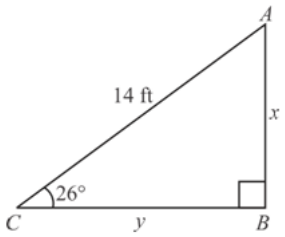
(D) 42 feet

---

53 Part A

Ron wants to build a ramp with a length of $14\ ft$ and an angle of elevation of 26°.

The height of the ramp is about [ ] feet.



Note: Round your answer to the nearest tenth.

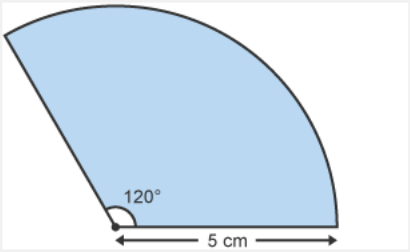
Part B

The length of the base of the ramp is about [ ] feet.

Note: Round your answer to the nearest tenth.

---

54 What is the length of the arc shown?



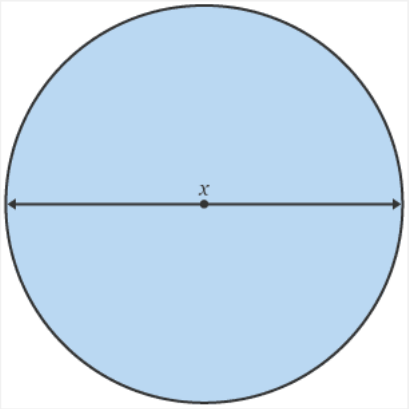
(A) 10.47 cm

(B) 9 cm

(C) 9.6 cm

---

55 What does x represent?



(A) radius

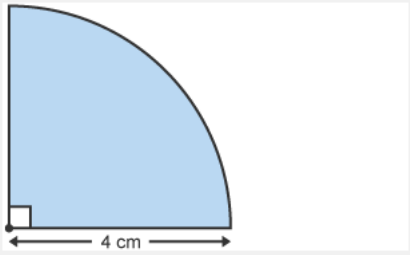
(B) diameter

(C) arc

(D) central angle

---

56 Find the shaded area.



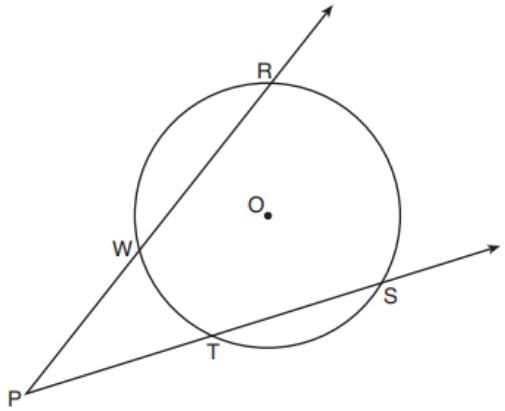
(A) 12.6 cm^2

(B) 14.2 cm^2

(C) 16 cm^2

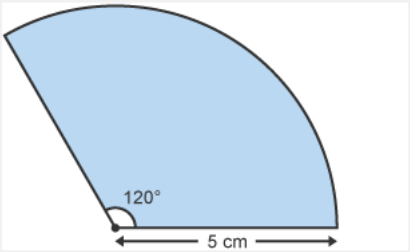
---

57 As shown in the diagram below, secants $\overrightarrow{PWR}$ and $\overrightarrow{PTS}$ are drawn to circle O from external point P.



If $m\angle RPS = 35^\circ$ and $m\overset{\frown}{RS} = 121^\circ$, determine and state $m\overset{\frown}{WT}$.

58 What is the area of the sector?



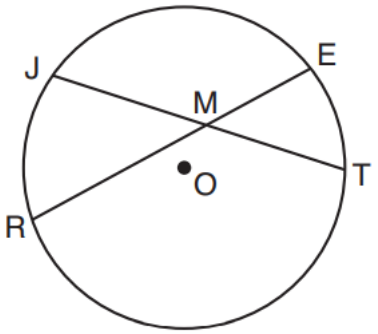
(A) 26.0 cm^2

(B) 26.1 cm^2

(C) 26.2 cm^2

---

59 In the diagram below of circle O, chords $\overline{JT}$ and $\overline{ER}$ intersect at M.



If $EM = 8$ and $RM = 15$, the lengths of $\overline{JM}$ and $\overline{TM}$ could be

(A) 12 and 9.5

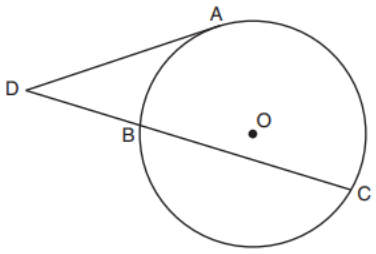
(B) 14 and 8.5

(C) 16 and 7.5

(D) 18 and 6.5

---

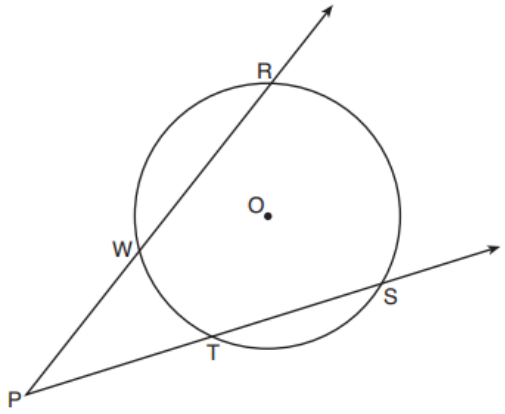
60 In the diagram below, tangent $\overline{DA}$ and secant $\overline{DBC}$ are drawn to circle O from external point D, such that $\overset{\frown}{AC} \cong \overset{\frown}{BC}$.



If $m\overset{\frown}{BC} = 152^\circ$, determine and state $m\angle D$.

---

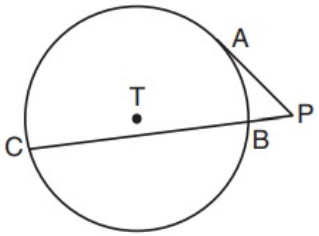
61 As shown in the diagram below, secants $\overrightarrow{PWR}$ and $\overrightarrow{PTS}$ are drawn to circle O from external point P.



If $m\angle RPS = 35^\circ$ and $m\overset{\frown}{RS} = 121^\circ$, determine and state $m\overset{\frown}{WT}$.

---

62 In the diagram shown below, $\overline{PA}$ is tangent to circle T at A, and secant $\overline{PBC}$ is drawn where point B is on circle T.



If $PB = 3$ and $BC = 15$, what is the length of $\overline{PA}$?

(A) $3\sqrt{5}$

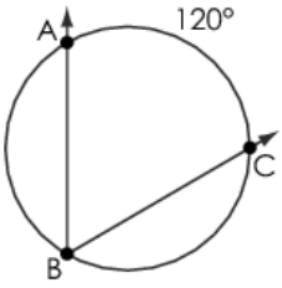
(B) $3\sqrt{6}$

(C) 3

(D) 9

---

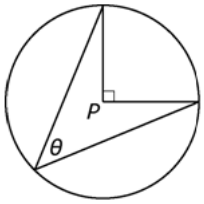
63 Angle ABC is inscribed in a circle as shown.



What is the measure ,in degrees, of $\angle$ABC?

degrees

64



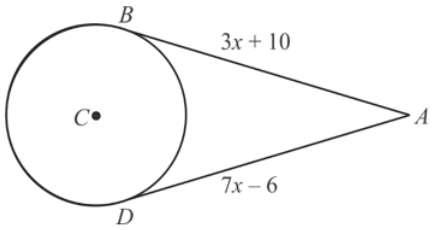
In the circle above, P is the center .

What is the value, in degrees, of θ?

degrees

---

65 Find the value of x in the following diagram.

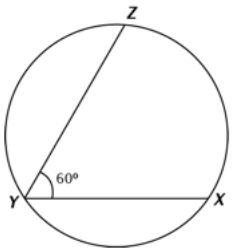


Here, B and D are points of tangency.

$\mathrm{x} =$.

---

66 Angle Y is inscribed in the circle below.



What is the measure of arc XZ?

(A) 30°

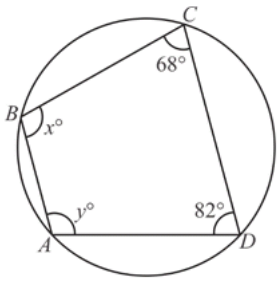
(B) 60°

(C) 120°

(D) 300°

---

67 **i)** Consider the following figure,



If $PQRS$ is a quadrilateral inscribed in a circle, then the opposite angles of the quadrilateral are [a] .

ii) The values of x and y are [ ] degrees and [ ] degrees respectively.

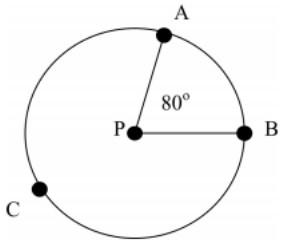
a

- complementary
- supplementary
- equal

---

68 Points A, B, and C are on circle P.

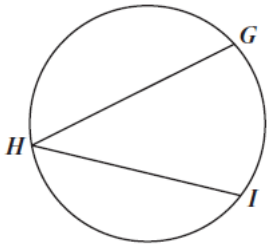
What is the m $\overset{\frown}{ACB}$?



[ ]

---

69 The diagram below shows $\angle GHI$ inscribed in a circle.



The measure of $\overset{\frown}{GI}$ is 80°. What is the measure of $\angle GHI$?

(A) 40°

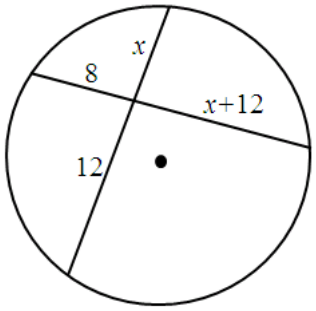
(B) 80°

(C) 120°

(D) 160°

---

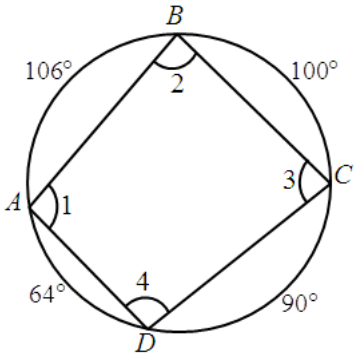
70 A circle with two chords is shown below in the figure. Find the value of **x**.



x = [ ] .

---

71 In the figure shown below, find the values of the angles given in the first column.

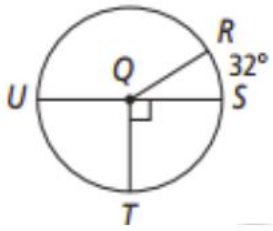


Note: Enter numeric values only.

Angle	Value in degree
1	95
2	1
3	2
4	3

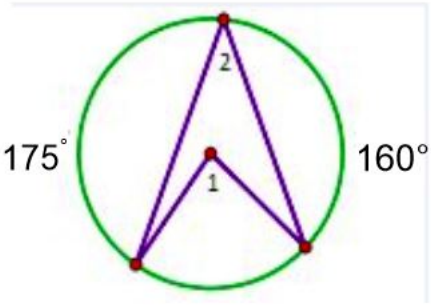
---

72 What is the degree measure of arc UTR?



[ ] degrees

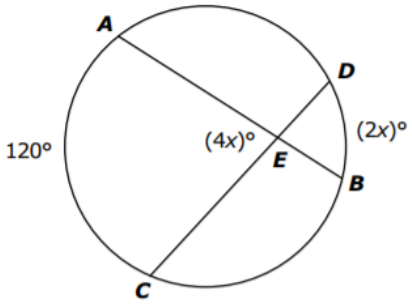
73 Determine the measure of each angle.



$m\angle 1 =$ ____

$m\angle 2 =$ ____

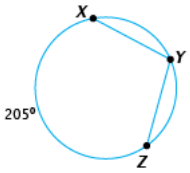
74 In the diagram shown, chords AB and CD intersect at E. The measure of $\overset{\frown}{AC}$ is 120°, the measure of $\overset{\frown}{DB}$ is $(2x)^\circ$, and the measure of $\angle AEC$ is $(4x)^\circ$.



What is the degree measure of $\angle AED$?

____

75 Angle Y is inscribed in the circle below. The measure of arc XZ is 205°.



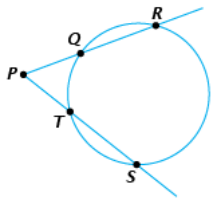
What is the measure of angle Y?

____ °

76 What is the sum of the interior angles of a regular decagon (10 sided polygon)?

____

77 In the circle below, the measure of arc QT is 50° and the measure of angle P is 55°.



What is the measure of arc RS?

(A) 105°

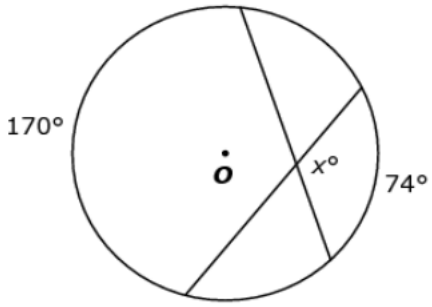
(B) 135°

(C) 160°

(D) 175°

---

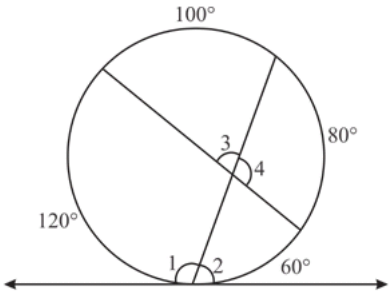
78 Two chords intersect in circle O, as shown.



What is the value of x, in degrees?

---

79 In the figure shown below, find the values of the angles given in the first column.

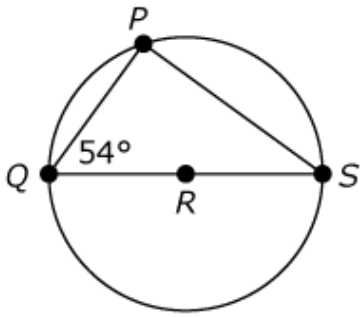


Note : Do not write 'degrees' in the answer column, type numeric value only.

Angle	Value
1	110
2	1
3	2
4	3

---

80 In this diagram, points P, Q, and S lie on circle R. Line segment QS is a diameter of the circle.



The measure of $\angle Q$ is 54°. What is the measure of $\angle S$?

(A) 27°

(B) 36°

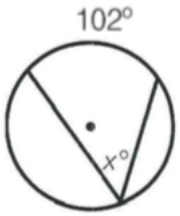
(C) 54°

(D) 63°

---

81 **p.6 (back) Circles: Arc Measure, Central Angles and Inscribed Angles**

#6 What is the value of x in the diagram?



$x =$ _____ degrees