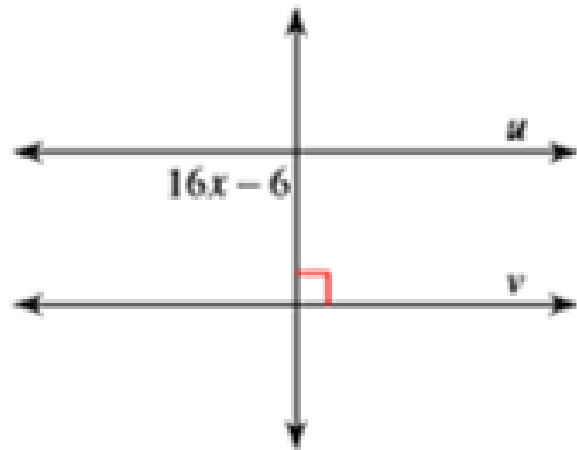


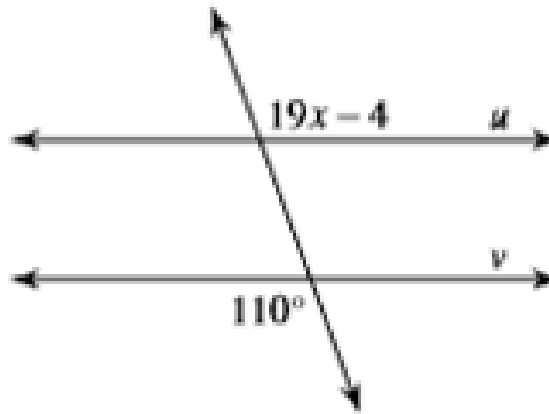
WARM UP

Find the value of x that makes the lines u and v parallel.

1.

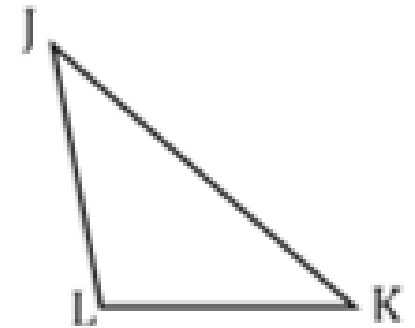
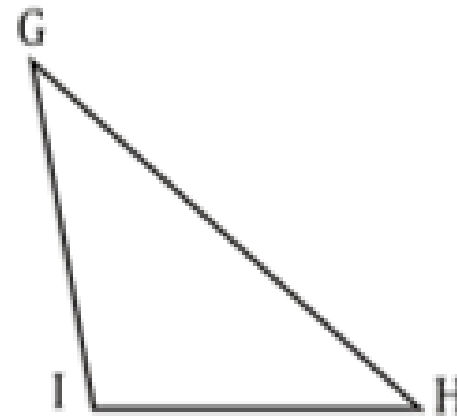


2.



3.

$\frac{GI}{JL} = \frac{IH}{LK}$ What additional information is necessary to show $\triangle GHI \sim \triangle JKL$ by SAS?



1

2

3

4

5

6

7

8

9

10

Objectives

- Use properties of circles to derive the formula for sector area.
- Determine arc length and arc measure for given central and inscribed angle measures
- Determine angle measures using the properties of interior angles.

Homework

Circle Packet, Sections I, II and III all problems

ALL Make Up Tests for the Log and Exponents Unit must be completed by Monday November 17th .

No exceptions.

ALL Retakes for the Log and Exponents Unit must be completed by Friday November 21st.

No exceptions.

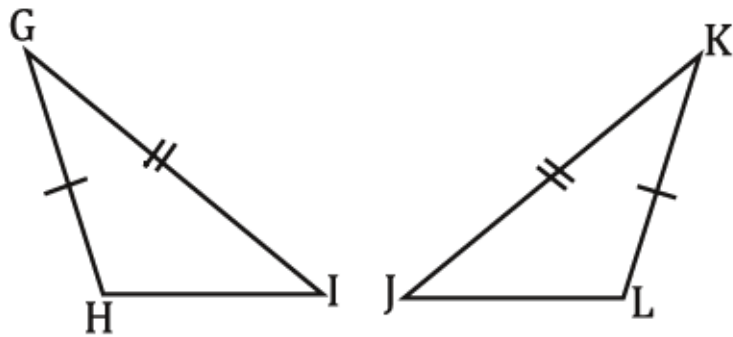
You **MUST** bring your test corrections with you to be eligible for a retake.

UNIT TEST THIS FRIDAY

Homework review: Sections III, IV and V

Fill in the missing information in each proof.

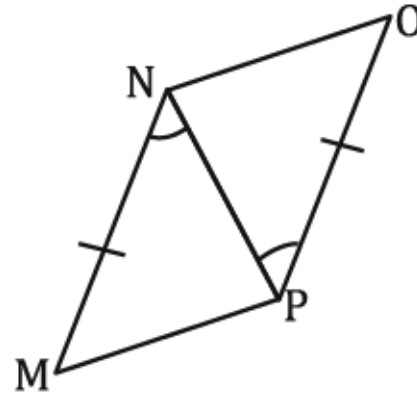
4. Given: $\overline{GH} \cong \overline{KL}$, $\angle G \cong \angle K$, and $\overline{GI} \cong \overline{KJ}$



Prove: $\overline{HI} \cong \overline{LJ}$

Statements	Reasons
1. $\overline{GH} \cong \overline{KL}$	1. Given
2. $\angle G \cong \angle K$	2. Given
3. $\overline{GI} \cong \overline{KJ}$	3. <i>Given</i>
4. $\triangle GHI \cong \triangle KJL$	4. SAS
5. $\overline{HI} \cong \overline{LJ}$	5. CPCTC

5. Given: $\angle MNP \cong \angle OPN$, and $\overline{MN} \cong \overline{OP}$

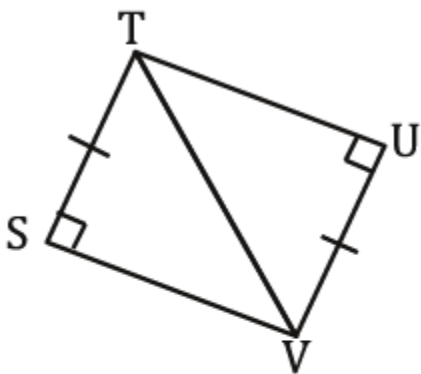


Prove: $\overline{MP} \cong \overline{NO}$

Statements	Reasons
1. $\angle MNP \cong \angle OPN$	1. Given
2. $\overline{MN} \cong \overline{OP}$	2. <i>Given</i>
3. $\overline{NP} \cong \overline{NP}$	3. <i>Reflexive Property</i>
4. $\triangle MNP \cong \triangle OPN$	4. SAS
5. $\overline{MP} \cong \overline{NO}$	5. CPCTC

Homework review

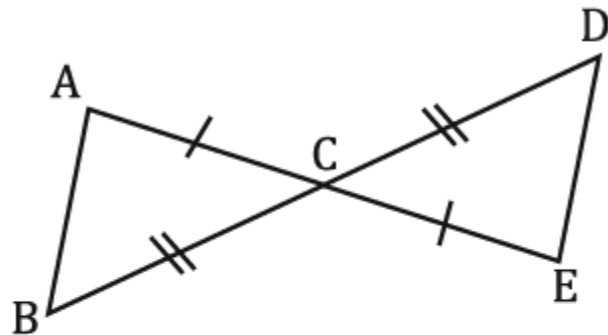
6. Given: $\overline{ST} \cong \overline{VU}$



Prove: $\angle SVT \cong \angle UTV$

Statements	Reasons
1. $\overline{ST} \cong \overline{VU}$	1. Given
2. $\overline{TV} \cong \overline{TV}$	2. Reflexive Property
3. $\triangle STV \cong \triangle UVT$	3. HL
4. $\angle SVT \cong \angle UTV$	4. CPCTC

7. Given: $\overline{AC} \cong \overline{CE}$, $\overline{DC} \cong \overline{BC}$

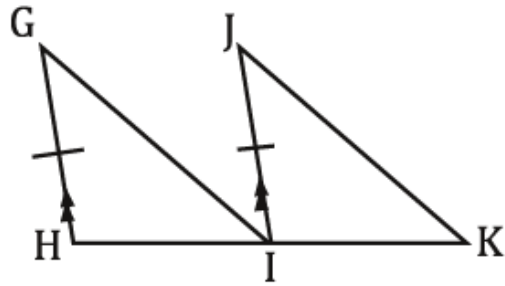


Prove: $\angle B \cong \angle D$

Statements	Reasons
1. $\overline{AC} \cong \overline{CE}$	1. Given
2. $\overline{DC} \cong \overline{BC}$	2. Given
3. $\angle ACB \cong \angle DCE$	3. Alternate Interior
4. $\triangle ABC \cong \triangle DEC$	4. SAS
5. $\angle B \cong \angle D$	5. CPCTC

Homework review

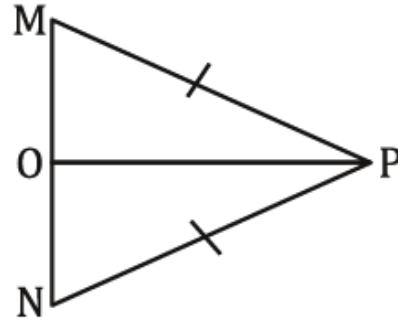
8. Given: $\overline{GH} \parallel \overline{JI}$, I is the midpoint of \overline{HK} and $\overline{GH} \cong \overline{JI}$



Prove: $\angle G \cong \angle J$

Statements	Reasons
1. $\overline{GH} \parallel \overline{JI}$	1. <i>Given</i>
2. I is the midpoint of \overline{HK}	2. <i>Given</i>
3. $\overline{GH} \cong \overline{JI}$	3. <i>Given</i>
4. $\overline{HI} \cong \overline{IK}$	4. <i>Midpoint</i>
5. $\angle GHI \cong \angle JIK$	5. <i>Corresponding</i>
6. $\triangle GHI \cong \triangle JIK$	6. <i>SAS</i>
7. $\angle G \cong \angle J$	7. <i>CPCTC</i>

9. Given: $\overline{MP} \cong \overline{NP}$, $\overline{MN} \perp \overline{OP}$



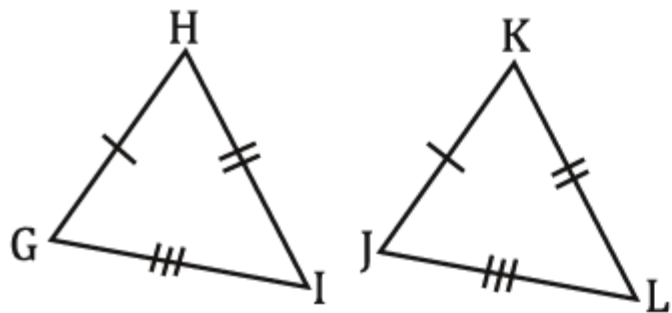
Prove: $\overline{MO} \cong \overline{ON}$

Statements	Reasons
1. $\overline{MP} \cong \overline{NP}$	1. <i>Given</i>
2. $\overline{MN} \perp \overline{OP}$	2. <i>Given</i>
3. $\overline{OP} \cong \overline{OP}$	3. <i>Reflexive Property</i>
4. $\triangle MOP \cong \triangle NOP$	4. <i>HL</i>
5. $\overline{MO} \cong \overline{ON}$	5. <i>CPCTC</i>

Homework review

Write a two column proof for each.

16. Given: $\overline{GH} \cong \overline{JK}$, $\overline{HI} \cong \overline{KL}$, and $\overline{IG} \cong \overline{LJ}$



Prove: $\angle I \cong \angle L$

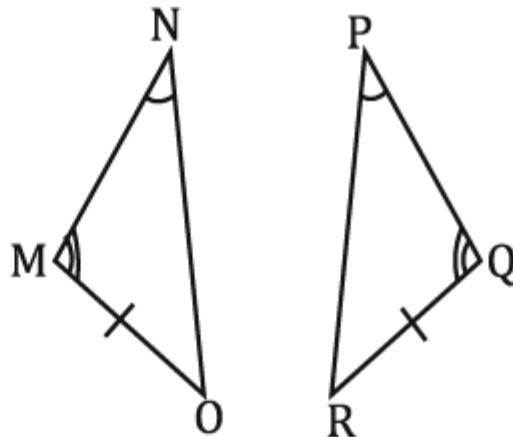
Statements

1. $\overline{GH} \cong \overline{JK}$
2. $\overline{HI} \cong \overline{KL}$
3. $\overline{IG} \cong \overline{LJ}$
4. $\triangle GHI \cong \triangle JKL$
5. $\angle I \cong \angle L$

Reasons

1. Given
2. Given
3. Given
4. SSS
5. CPCTC

17. Given: $\angle N \cong \angle P$, $\angle M \cong \angle Q$, and $\overline{MO} \cong \overline{QR}$



Prove: $\angle O \cong \angle R$

Statements

1. $\angle N \cong \angle P$
2. $\angle M \cong \angle Q$
3. $\overline{MO} \cong \overline{QR}$
4. $\triangle MNO \cong \triangle PQR$
5. $\angle O \cong \angle R$

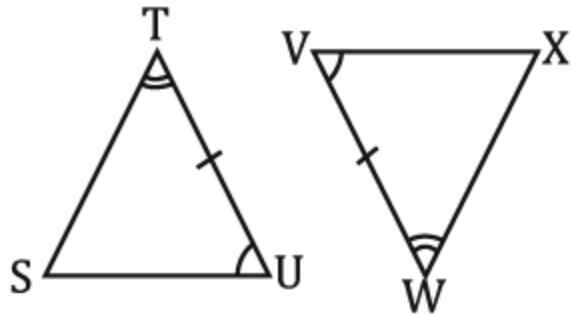
Reasons

1. Given
2. Given
3. Given
4. AAS
5. CPCTC

Homework review

18.

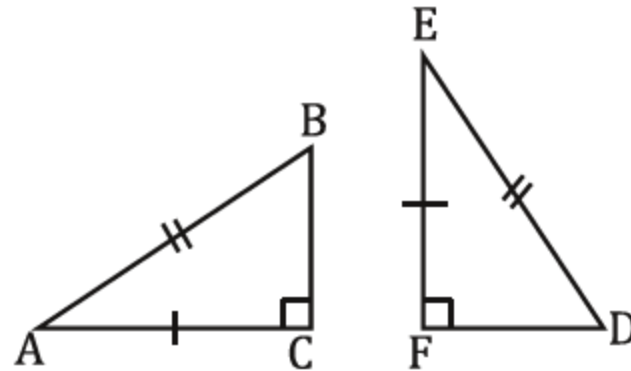
Given: $\angle U \cong \angle V$, $\angle T \cong \angle W$, and $\overline{TU} \cong \overline{VW}$



Prove: $\angle S \cong \angle X$

Statements	Reasons
1. $\angle U \cong \angle V$	1. Given
2. $\angle T \cong \angle W$	2. Given
3. $\overline{TU} \cong \overline{VW}$	3. Given
4. $\triangle STU \cong \triangle VWX$	4. ASA
5. $\angle S \cong \angle X$	5. CPCTC

19. Given: $\overline{AC} \cong \overline{EF}$, and $\overline{AB} \cong \overline{ED}$



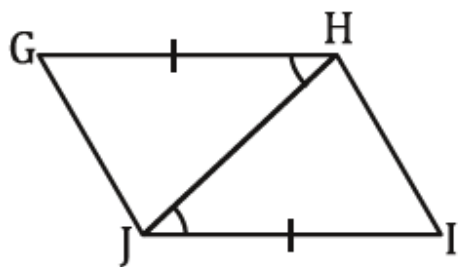
Prove: $\overline{BC} \cong \overline{FD}$

Statements	Reasons
1. $\overline{AC} \cong \overline{EF}$	1. Given
2. $\overline{AB} \cong \overline{ED}$	2. Given
3. $\triangle ABC \cong \triangle FED$	3. HL
4. $\overline{BC} \cong \overline{FD}$	4. CPCTC

Homework review

20.

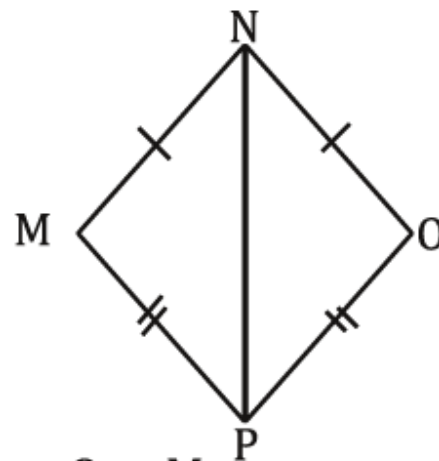
Given: $\overline{GH} \cong \overline{JI}$, $\angle GHJ \cong \angle IJH$



Prove: $\overline{GJ} \cong \overline{HI}$

Statements	Reasons
1. $\overline{GH} \cong \overline{JI}$	1. Given
2. $\angle GHJ \cong \angle IJH$	2. Given
3. $\overline{JH} \cong \overline{JH}$	3. Reflexive Property
4. $\triangle GHJ \cong \triangle IJH$	4. SAS
5. $\overline{GJ} \cong \overline{HI}$	5. CPCTC

21. Given: $\overline{MN} \cong \overline{NO}$, $\overline{MP} \cong \overline{OP}$

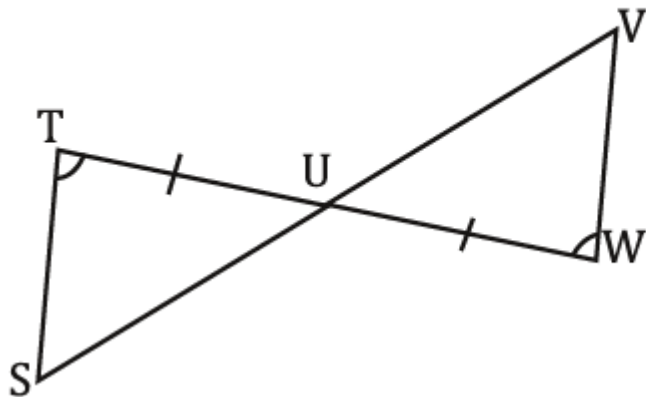


Prove: $\angle O \cong \angle M$

Statements	Reasons
1. $\overline{MN} \cong \overline{NO}$	1. Given
2. $\overline{MP} \cong \overline{OP}$	2. Given
3. $\overline{NP} \cong \overline{NP}$	3. Reflexive Property
4. $\triangle MNP \cong \triangle ONP$	4. SSS
5. $\angle O \cong \angle M$	5. CPCTC

Homework review

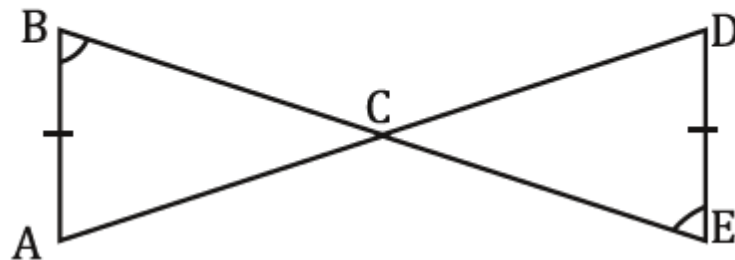
22. Given: $\overline{TU} \cong \overline{WU}$, $\angle T \cong \angle W$



Prove: $\overline{TS} \cong \overline{WV}$

Statements	Reasons
1. $\overline{TU} \cong \overline{WU}$	1. Given
2. $\angle T \cong \angle W$	2. Given
3. $\angle TUS \cong \angle WUV$	3. Vertical Angles
4. $\triangle TUS \cong \triangle WUV$	4. ASA
5. $\overline{TS} \cong \overline{WV}$	5. CPCTC

23. Given: $\overline{AB} \cong \overline{DE}$, $\angle B \cong \angle E$

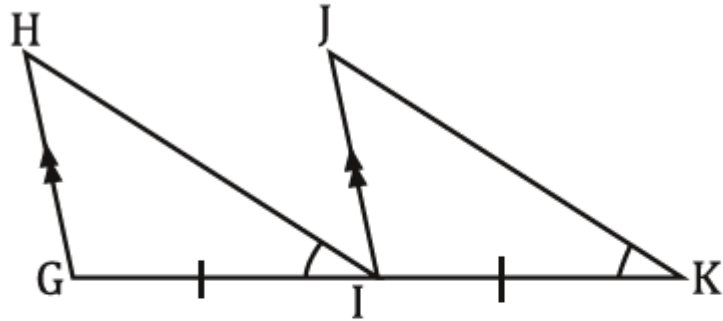


Prove: $\overline{AC} \cong \overline{DC}$

Statements	Reasons
1. $\overline{AB} \cong \overline{DE}$	1. Given
2. $\angle B \cong \angle E$	2. Given
3. $\angle BCA \cong \angle DCE$	3. Vertical Angles
4. $\triangle ABC \cong \triangle DEC$	4. AAS
5. $\overline{AC} \cong \overline{DC}$	5. CPCTC

Homework review

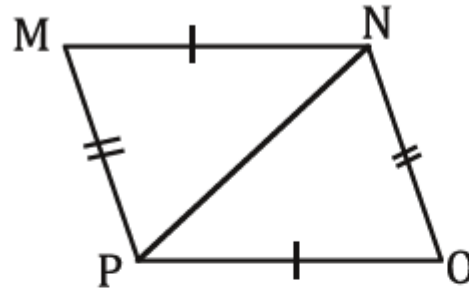
24. Given: $\overline{HG} \parallel \overline{JI}$, $\overline{GI} \cong \overline{IK}$, and $\angle HIG \cong \angle JKI$



Prove: $\angle C \cong \angle F$

Statements	Reasons
1. $\overline{HG} \parallel \overline{JI}$	1. Given
2. $\overline{GI} \cong \overline{IK}$	2. Given
3. $\angle HIG \cong \angle JKI$	3. Given
4. $\angle HGI \cong \angle JIK$	4. Corresponding
4. $\triangle ABC \cong \triangle DEC$	4. ASA
5. $\angle C \cong \angle F$	5. CPCTC

25. Given: $\overline{MN} \cong \overline{PO}$, $\overline{MP} \cong \overline{NO}$

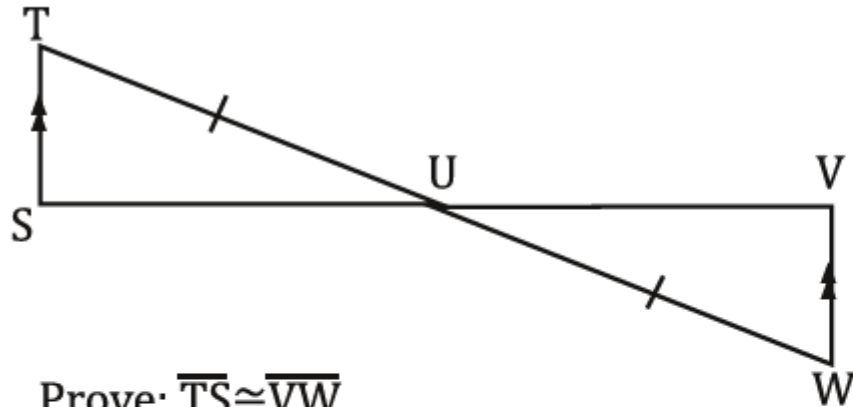


Prove: $\angle M \cong \angle O$

Statements	Reasons
1. $\overline{MN} \cong \overline{PO}$	1. Given
2. $\overline{MP} \cong \overline{NO}$	2. Given
3. $\overline{PN} \cong \overline{PN}$	3. Reflexive Property
4. $\triangle ABC \cong \triangle DEC$	4. SSS
5. $\angle M \cong \angle O$	5. CPCTC

Homework review

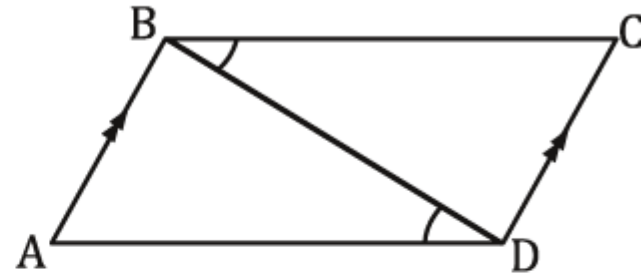
26. Given: $\overline{TS} \parallel \overline{VW}$, $\overline{TU} \cong \overline{WU}$



Prove: $\overline{TS} \cong \overline{VW}$

Statements	Reasons
1. $\overline{TS} \parallel \overline{VW}$	1. Given
2. $\overline{TU} \cong \overline{WU}$	2. Given
3. $\angle STU \cong \angle VWU$	3. Alternate Interior
4. $\angle TUS \cong \angle WUV$	4. Vertical
4. $\triangle STU \cong \triangle VWU$	4. ASA
5. $\overline{TS} \cong \overline{VW}$	5. CPCTC

27. Given: $\overline{AB} \parallel \overline{DE}$, $\angle CBD \cong \angle ADB$



Prove: $\overline{BC} \cong \overline{AD}$

Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$	1. Given
2. $\angle CBD \cong \angle ADB$	2. Given
3. $\angle ABD \cong \angle CDB$	3. Alternate Interior
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive Property
5. $\triangle ABD \cong \triangle CDB$	5. ASA
6. $\overline{BC} \cong \overline{AD}$	6. CPCTC

Homework

Each pair of figures is similar. Find the missing length.

9. Ratio of similarity = $\frac{2}{3}$.



$$\frac{2}{3} = \frac{8}{x}$$

$$2(x) = 3(8)$$

$$\frac{2x = 24}{2 \quad 2}$$

$$x = 12$$



11. Ratio of similarity = $\frac{2}{7}$.



$$\frac{2}{7} = \frac{x}{18}$$

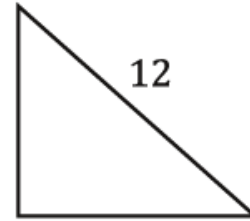
$$7(x) = 2(18)$$

$$\frac{7x = 36}{7 \quad 7}$$

$$x = 5.14$$



10. Ratio of similarity = $\frac{4}{5}$.

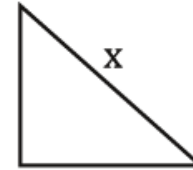


$$\frac{4}{5} = \frac{x}{12}$$

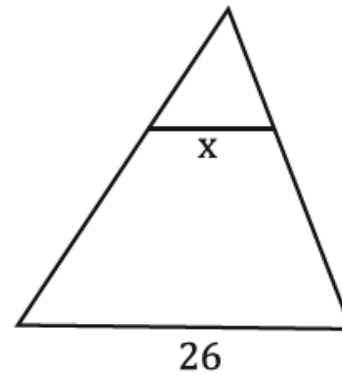
$$5(x) = 4(12)$$

$$\frac{5x = 48}{5 \quad 5}$$

$$x = 9.6$$



12. Ratio of similarity = $\frac{5}{13}$.



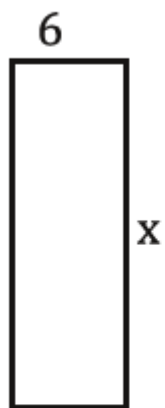
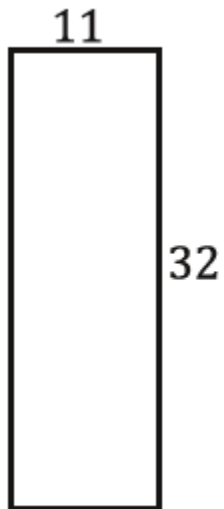
$$\frac{5}{13} = \frac{x}{26}$$

$$13(x) = 5(26)$$

$$\frac{13x = 130}{13 \quad 13}$$

$$x = 10$$

13.



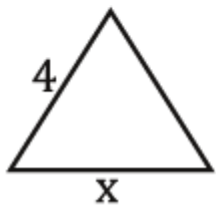
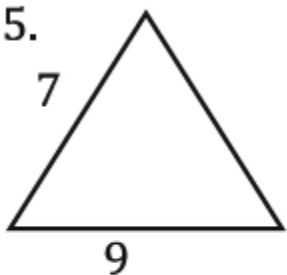
$$\frac{6}{11} = \frac{x}{32}$$

$$11(x) = 6(32)$$

$$\frac{11x = 192}{11 \quad 11}$$

$$x = 17.45$$

15.



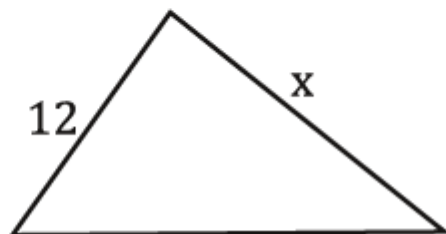
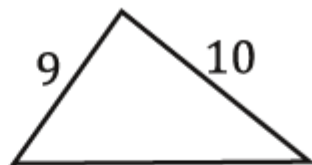
$$\frac{4}{7} = \frac{x}{9}$$

$$7(x) = 4(9)$$

$$\frac{7x = 36}{7 \quad 7}$$

$$x = 5.14$$

14.



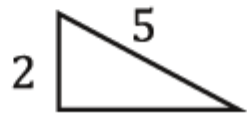
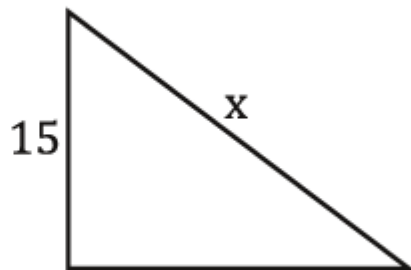
$$\frac{9}{12} = \frac{10}{x}$$

$$9(x) = 12(10)$$

$$\frac{9x = 120}{9 \quad 9}$$

$$x = 13.33$$

16.



$$\frac{2}{15} = \frac{5}{x}$$

$$2(x) = 15(5)$$

$$\frac{2x = 75}{2 \quad 2}$$

$$x = 37.5$$

Bubble the correct answer choice from each item above.

#7.

- A.
- B.
- C.
- D.

#8.

- A.
- B.
- C.
- D.

#9.

- A.
- B.
- C.
- D.

#10.

- A.
- B.
- C.
- D.

#11.

- A.
- B.
- C.
- D.

#12.

- A.
- B.
- C.
- D.

Bubble the correct answer choice from each item above.

#25.

- A.
- B.
- C.
- D.

#26.

- A.
- B.
- C.
- D.

#27.

- A.
- B.
- C.
- D.

#28.

- A.
- B.
- C.
- D.

#29.

- A.
- B.
- C.
- D.

#30.

- A.
- B.
- C.
- D.

Bubble the correct answer choice from each item above.

#31.

- A.
- B.
- C.
- D.

#32.

- A.
- B.
- C.
- D.

#33.

- A.
- B.
- C.
- D.

#34.

- A.
- B.
- C.
- D.

#35.

- A.
- B.
- C.
- D.

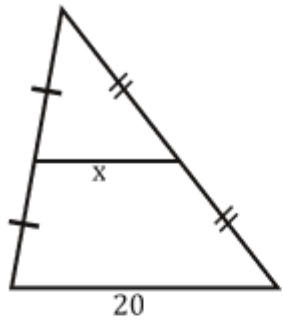
#36.

- A.
- B.
- C.
- D.

Homework review: Sections VI

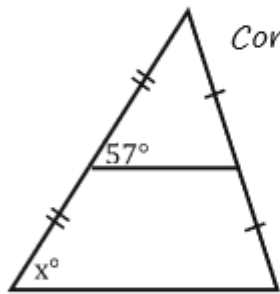
Find x for each...

1.



$$\frac{20}{2} = \frac{2x}{2}$$
$$10 = x$$

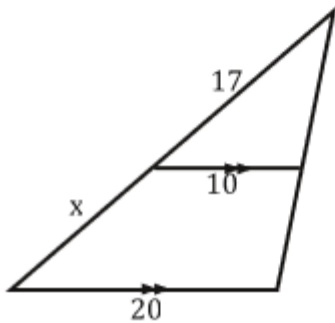
3.



Corresponding Angles

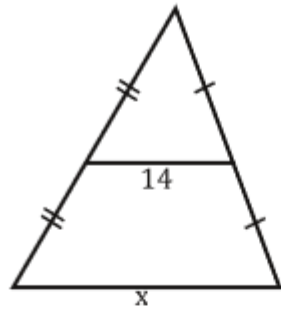
$$x = 57^\circ$$

5.



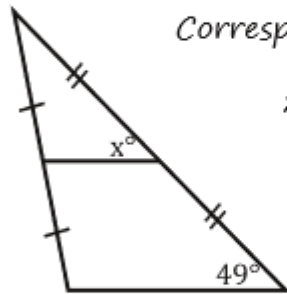
$$17 = x$$

2.



$$x = 2(14)$$
$$x = 28$$

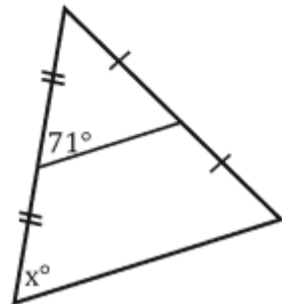
4.



Corresponding Angles

$$x = 49^\circ$$

6.

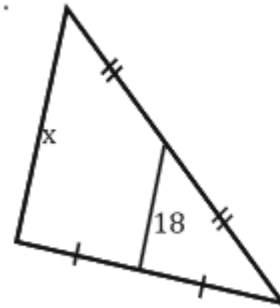


Corresponding Angles

$$x = 71^\circ$$

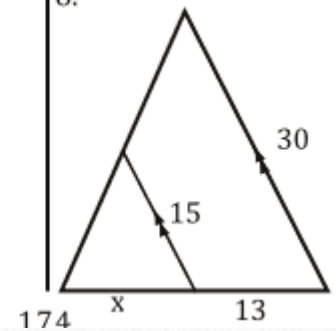
Homework review: Mid-segment Theorem

7.



$$x = 2(18)$$
$$x = 36$$

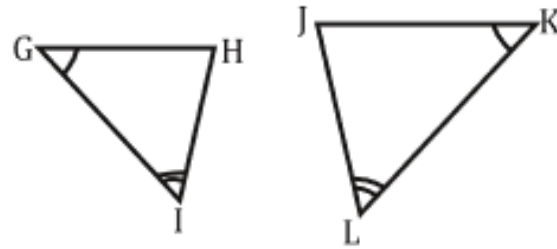
8.



$$13 = x$$

Homework review: Triangles Section 6

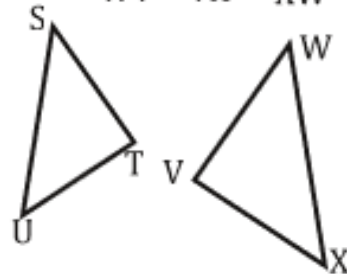
4. Given: $\angle G \cong \angle K$, and $\angle I \cong \angle L$



Prove: $\triangle GHI \sim \triangle KJL$

Statements	Reasons
1. $\angle G \cong \angle K$	1. <i>Given</i>
2. $\angle I \cong \angle L$	2. <i>Given</i>
3. $\triangle GHI \sim \triangle KJL$	3. <i>AA</i>

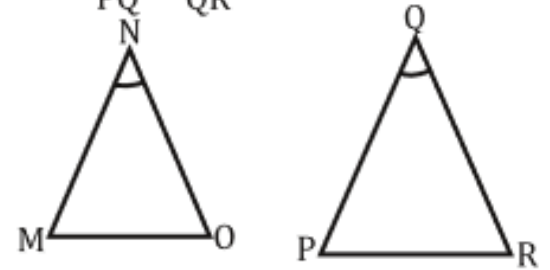
6. Given: $\frac{ST}{WV} = \frac{TU}{VX} = \frac{US}{XW}$



Prove: $\triangle STU \sim \triangle WVX$

Statements	Reasons
1. $\frac{ST}{WV} = \frac{TU}{VX} = \frac{US}{XW}$	1. <i>Given</i>
2. $\triangle STU \sim \triangle WVX$	2. <i>SSS</i>

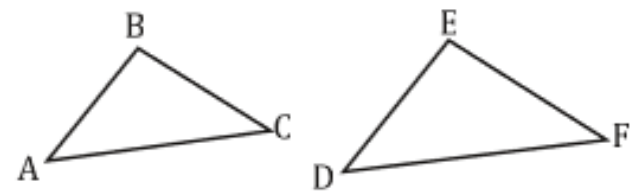
5. Given: $\frac{MN}{PQ} = \frac{NO}{QR}$, $\angle N \cong \angle Q$



Prove: $\triangle MNO \sim \triangle PQR$

Statements	Reasons
1. $\frac{MN}{PQ} = \frac{NO}{QR}$	1. <i>Given</i>
2. $\angle N \cong \angle Q$	2. <i>Given</i>
3. $\triangle MNO \sim \triangle PQR$	3. <i>SAS</i>

7. Given: $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

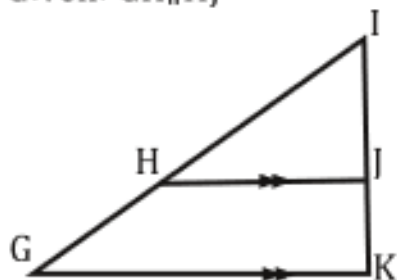


Prove: $\triangle ABC \sim \triangle DEF$

Statements	Reasons
1. $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$	1. <i>Given</i>
2. $\triangle ABC \sim \triangle DEF$	2. <i>SSS</i>

8.

Given: $\overline{GK} \parallel \overline{HI}$

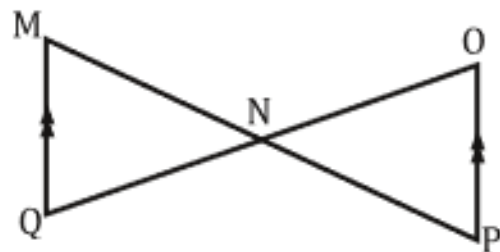


Prove: $\triangle GIK \sim \triangle HIJ$

Statements	Reasons
1. $\overline{GK} \parallel \overline{HI}$	1. Given
2. $\angle K \cong \angle HJI$	2. Corresponding Angles
3. $\angle G \cong \angle JHI$	3. Corresponding Angles
4. $\triangle GIK \sim \triangle HIJ$	4. AA

9.

Given: $\overline{MQ} \parallel \overline{OP}$

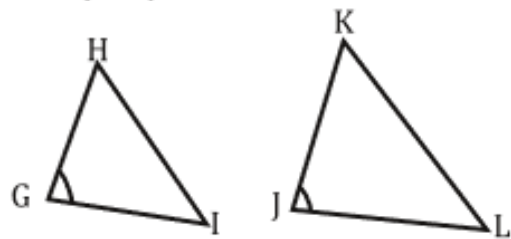


Prove: $\triangle MNQ \sim \triangle PON$

Statements	Reasons
1. $\overline{MQ} \parallel \overline{OP}$	1. Given
2. $\angle QMN \cong \angle OPN$	2. Alternate Interior
3. $\angle MNQ \cong \angle PNO$	3. Vertical Angles
4. $\triangle MNQ \sim \triangle PON$	4. AA

16.

Given: $\frac{GH}{KJ} = \frac{GI}{JL}$, $\angle G \cong \angle J$

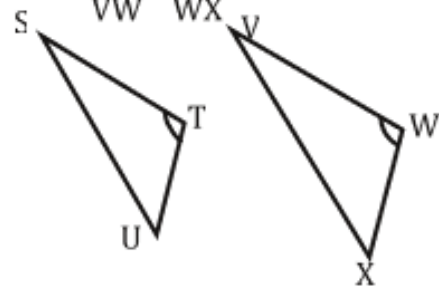


Prove: $\triangle GHI \sim \triangle JKL$

Statements	Reasons
1. $\frac{GH}{KJ} = \frac{GI}{JL}$	1. Given
2. $\angle G \cong \angle J$	2. Given
3. $\triangle GHI \sim \triangle JKL$	3. SAS

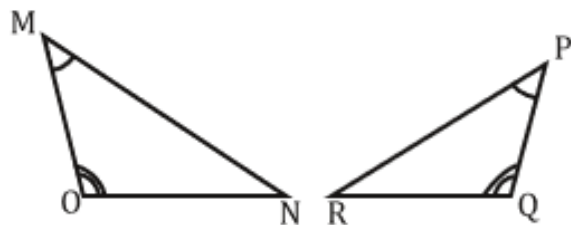
18.

Given: $\frac{ST}{VW} = \frac{TU}{WX}$, $\angle T \cong \angle W$



Prove: $\triangle STU \sim \triangle VWX$

Statements	Reasons
1. $\frac{ST}{VW} = \frac{TU}{WX}$	1. Given
2. $\angle T \cong \angle W$	2. Given
3. $\triangle STU \sim \triangle VWX$	3. SAS

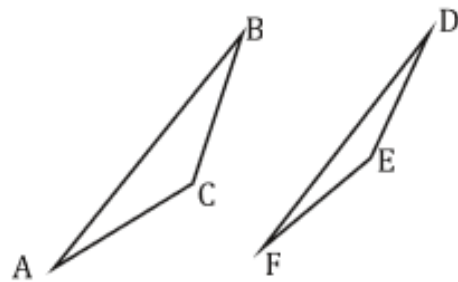
17. Given: $\angle M \cong \angle P$, $\angle O \cong \angle Q$ 

Prove: $\triangle OMN \sim \triangle PQR$

Statements	Reasons
1. $\angle M \cong \angle P$	1. Given
2. $\angle O \cong \angle Q$	2. Given
3. $\triangle OMN \sim \triangle PQR$	3. AA

19.

Given: $\frac{AB}{FD} = \frac{BC}{DE} = \frac{CA}{EF}$

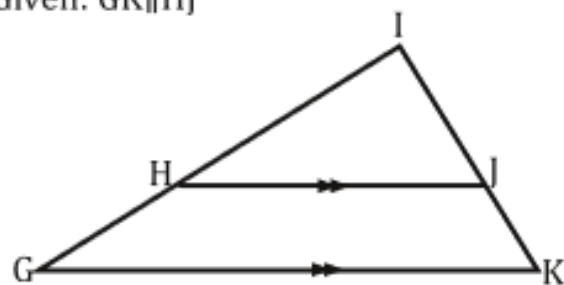


Prove: $\triangle ABC \sim \triangle FDE$

Statements	Reasons
1. $\frac{AB}{FD} = \frac{BC}{DE} = \frac{CA}{EF}$	1. Given
2. $\triangle ABC \sim \triangle FDE$	2. SSS

20.

Given: $\overline{GK} \parallel \overline{HJ}$

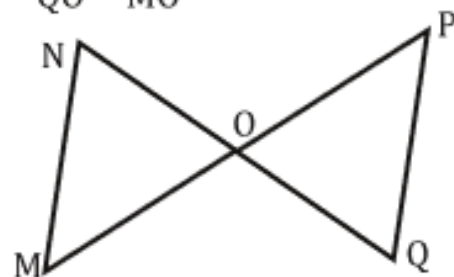


Prove: $\triangle GIK \sim \triangle HIJ$

Statements	Reasons
1. $\overline{GK} \parallel \overline{HJ}$	1. Given
2. $\angle G \cong \angle JHI$ Corresponding	2.
3. $\angle K \cong \angle HJI$	3. Corresponding
4. $\triangle GIK \sim \triangle HIJ$	4. AA

21.

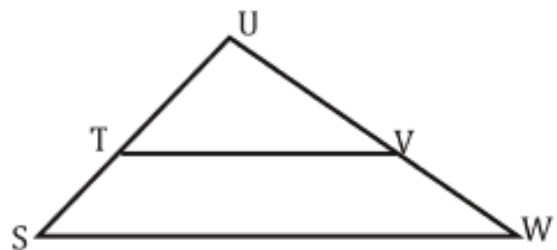
Given: $\frac{NO}{QO} = \frac{PO}{MO}$



Prove: $\triangle MNO \sim \triangle PQO$

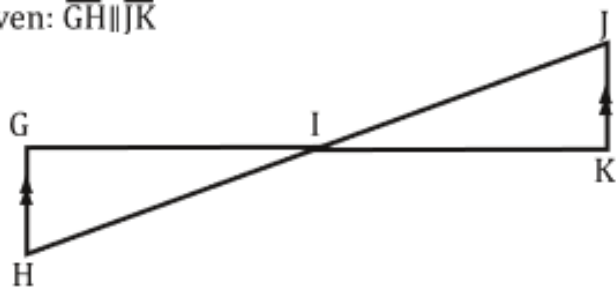
Statements	Reasons
1. $\frac{NO}{QO} = \frac{PO}{MO}$	1. Given
2. $\angle NOM \cong \angle POQ$	2. Vertical Angles
3. $\triangle MNO \sim \triangle PQO$	3. SAS

22.

Given: $\angle S \cong \angle UTV$ Prove: $\triangle SUW \sim \triangle TUV$

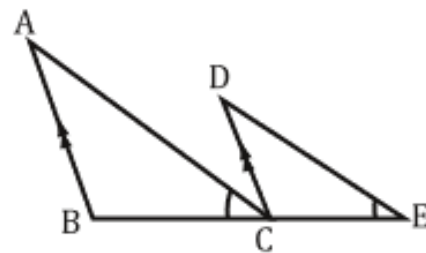
Statements	Reasons
1. $\angle S \cong \angle UTV$	1. Given
2. $\angle U \cong \angle U$	2. Reflexive Property
3. $\triangle SUW \sim \triangle TUV$	3. AA

24.

Given: $\overline{GH} \parallel \overline{JK}$ Prove: $\triangle GHI \sim \triangle KJI$

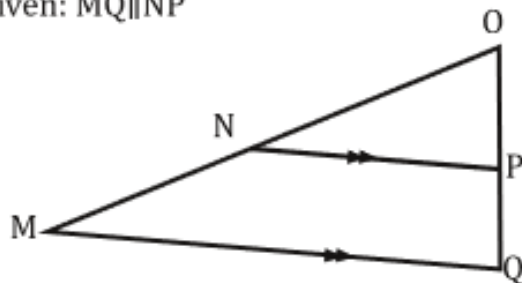
Statements	Reasons
1. $\overline{GH} \parallel \overline{JK}$	1. Given
2. $\angle HGI \cong \angle JKI$	2. Alternate Interior
3. $\angle GIH \cong \angle JIK$	3. Vertical
4. $\triangle GHI \sim \triangle KJI$	4. AA

23.

Given: $\overline{AB} \parallel \overline{DC}$, $\angle ACB \cong \angle E$ Prove: $\triangle ABC \sim \triangle DCE$

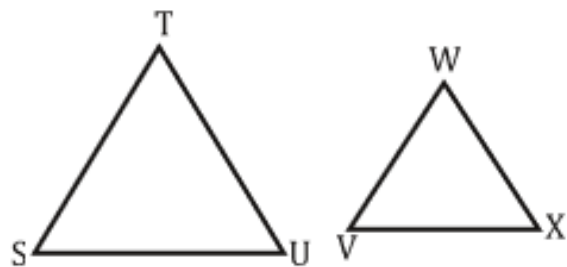
Statements	Reasons
1. $\overline{AB} \parallel \overline{DC}$	1. Given
2. $\angle ACB \cong \angle E$	2. Given
3. $\angle B \cong \angle DCE$	3. Corresponding
4. $\triangle ABC \sim \triangle DCE$	4. AA

25.

Given: $\overline{MQ} \parallel \overline{NP}$ Prove: $\triangle QMO \sim \triangle PNO$

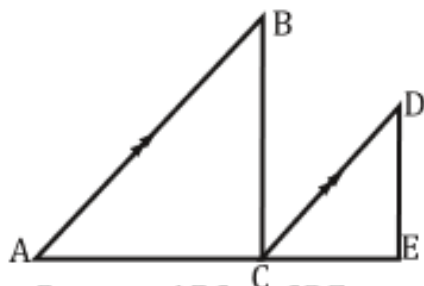
Statements	Reasons
1. $\overline{MQ} \parallel \overline{NP}$	1. Given
2. $\angle M \cong \angle PNO$	2. Corresponding
3. $\angle Q \cong \angle NPO$	3. Corresponding
4. $\triangle QMO \sim \triangle PNO$	4. AA

26.

Given: $\triangle ABD$ and $\triangle BCD$ are equilateralProve: $\triangle STU \sim \triangle VWX$

Statements	Reasons
1. $\angle S \cong \angle V$	1. Equilateral Triangle
2. $\angle T \cong \angle W$	2. Equilateral Triangle
3. $\angle U \cong \angle X$	3. Equilateral Triangle
3. $\triangle STU \sim \triangle VWX$	3. AAA

27.

Given: $\frac{AB}{DC} = \frac{AC}{CE}$, $\overline{AB} \parallel \overline{CD}$ Prove: $\triangle ABC \sim \triangle CDE$

Statements	Reasons
1. $\frac{AB}{DC} = \frac{AC}{CE}$	1. Given
2. $\overline{AB} \parallel \overline{CD}$	2. Given
2. $\angle A \cong \angle DCE$	2. Corresponding
3. $\triangle ABC \sim \triangle CDE$	3. SAS

Circles: Just what are they good for?



Apparently these people found a good use for them!

We will find even better uses for circles.

The GUTS of a circle...

Circumference

$$C = 2\pi r$$

Area

$$A = \pi r^2$$

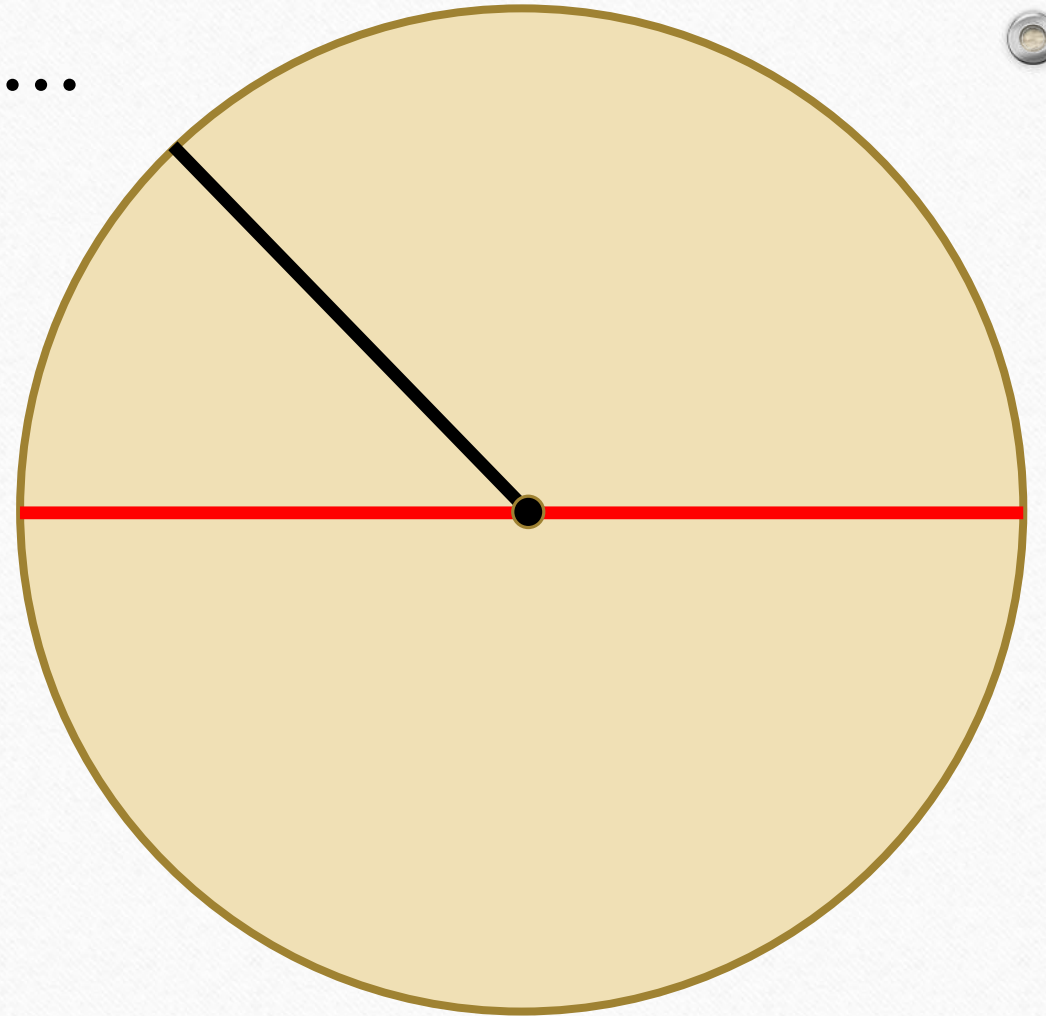
Diameter

Divides the circle into two equal parts.

Radius

Straight line connecting the center to the edge of the circle.

Half the length of the diameter.



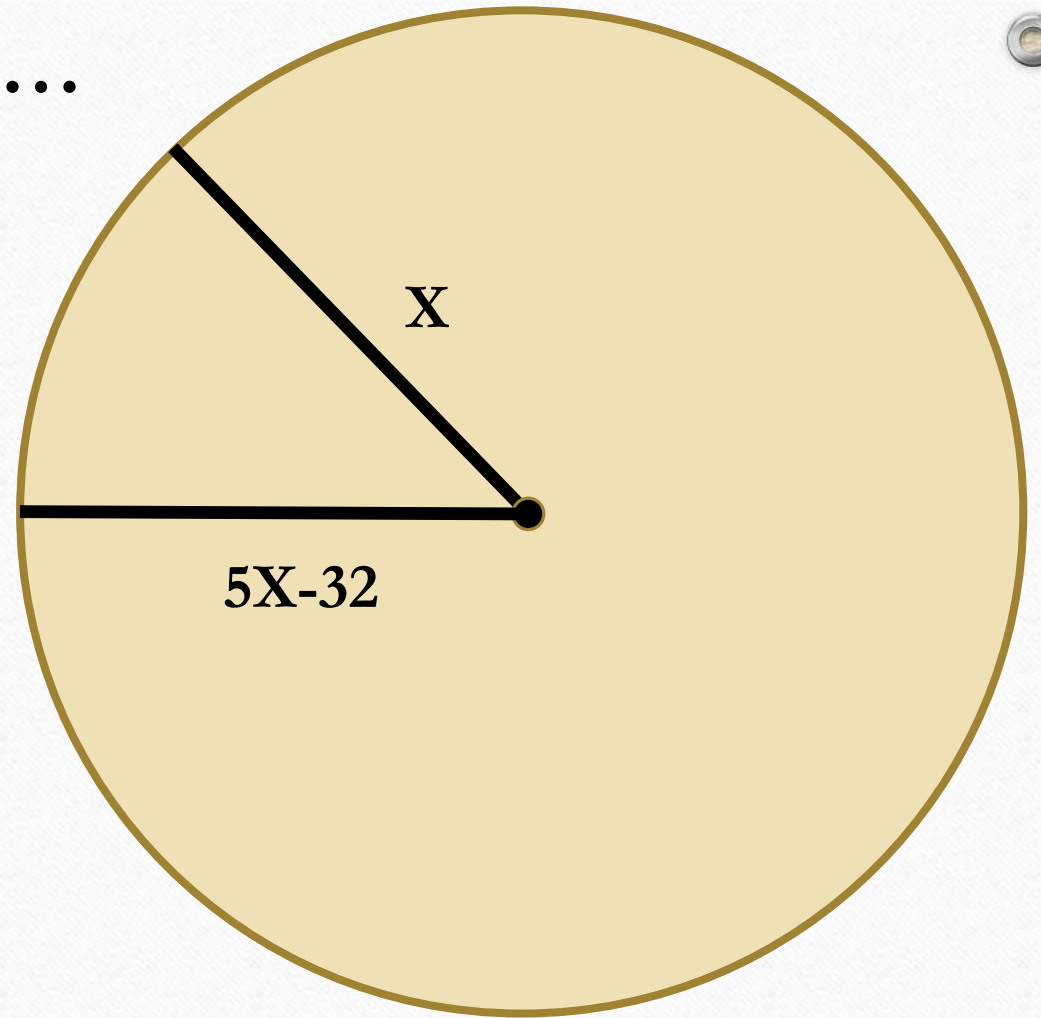
The GUTS of a circle...

Radius

Every radius in the same circle is equal to all the other radii in the same circle.

So what is the value of x ?

$$5x - 32 = x$$
$$x = 8$$

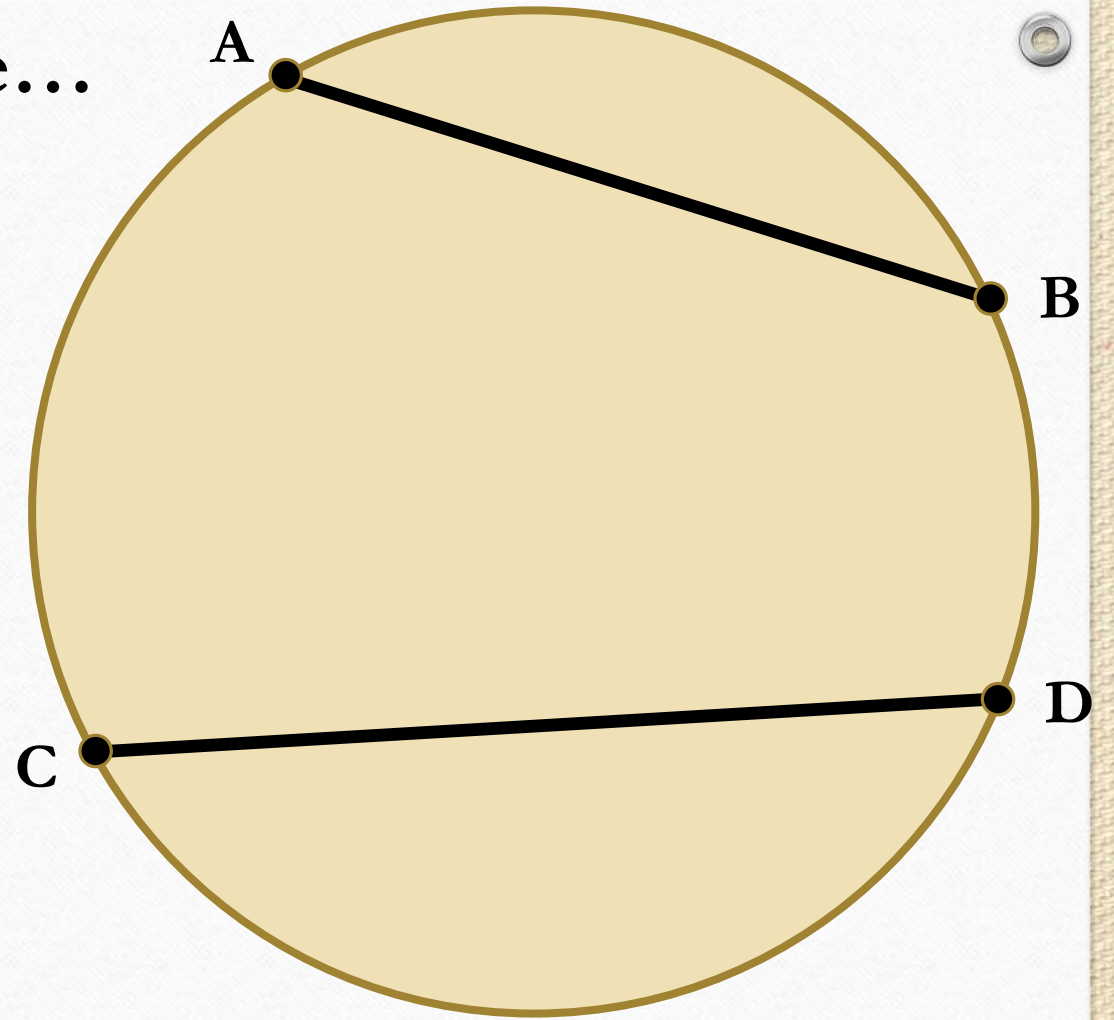


The GUTS of a circle...

Chord

Line drawn inside the circle that touches the circle at its endpoints.

Chords are named by their end points.

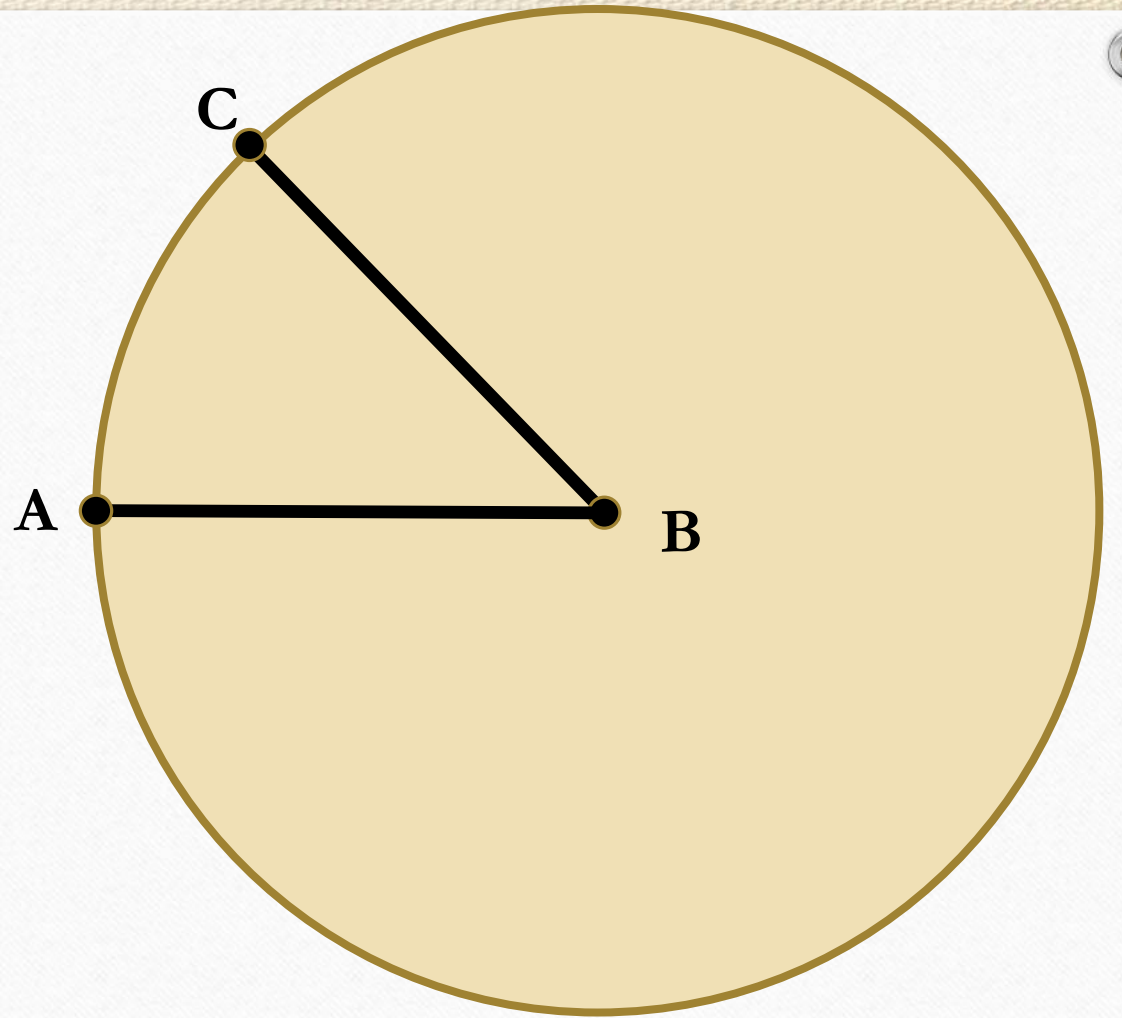


Circles guts

Central Angle

Vertex is the center of the circle and it extends to the edge of the circle.

$\angle ABC$ is a central angle

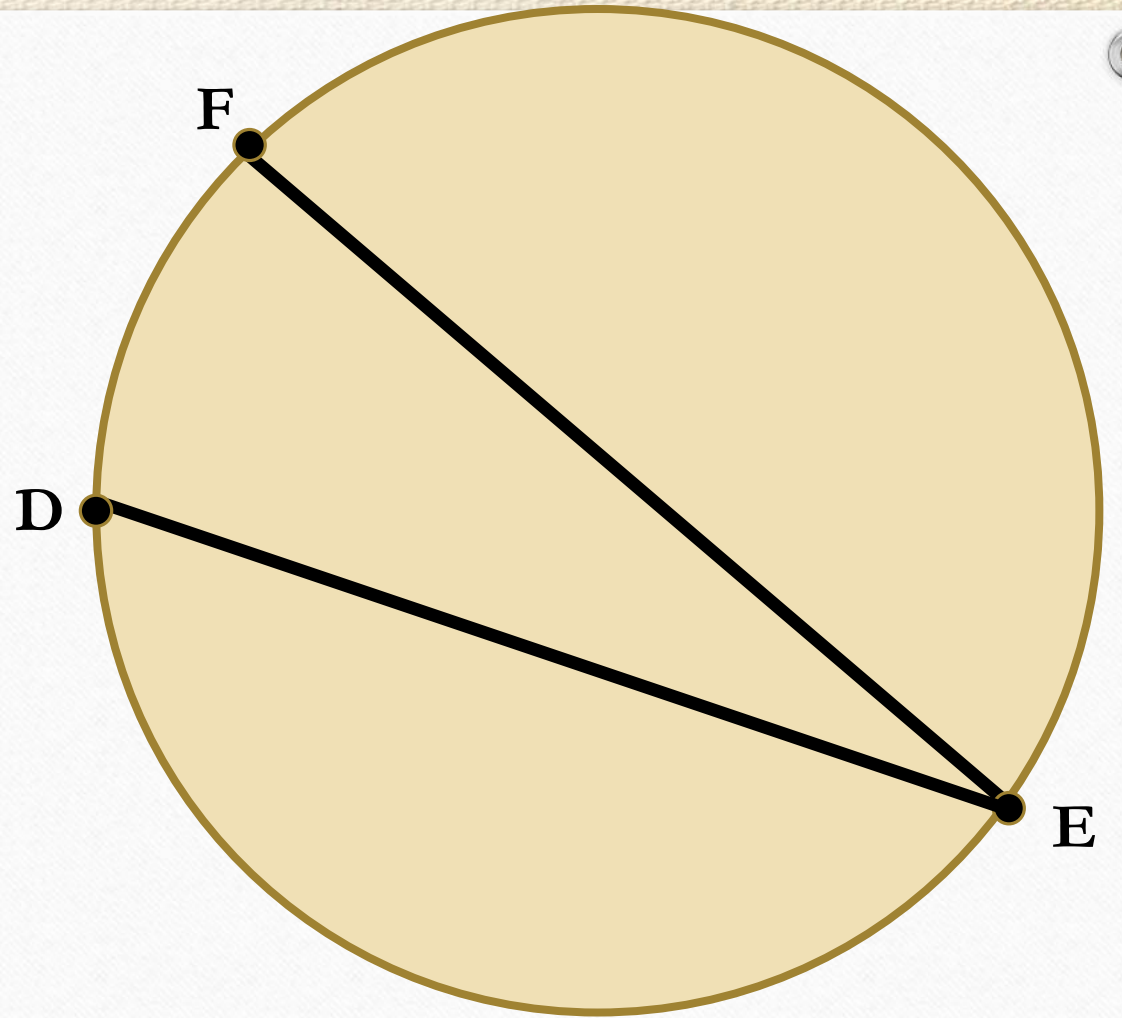


Circles guts

Inscribed Angle

Vertex is on the edge of the circle and extends inward to the opposite edge of the circle.

$\angle DEF$ is an inscribed angle



Quick Check

What is the circumference of a circle?

Did you say “pi are squared”?

WRONG

Pie are round!



Circles guts

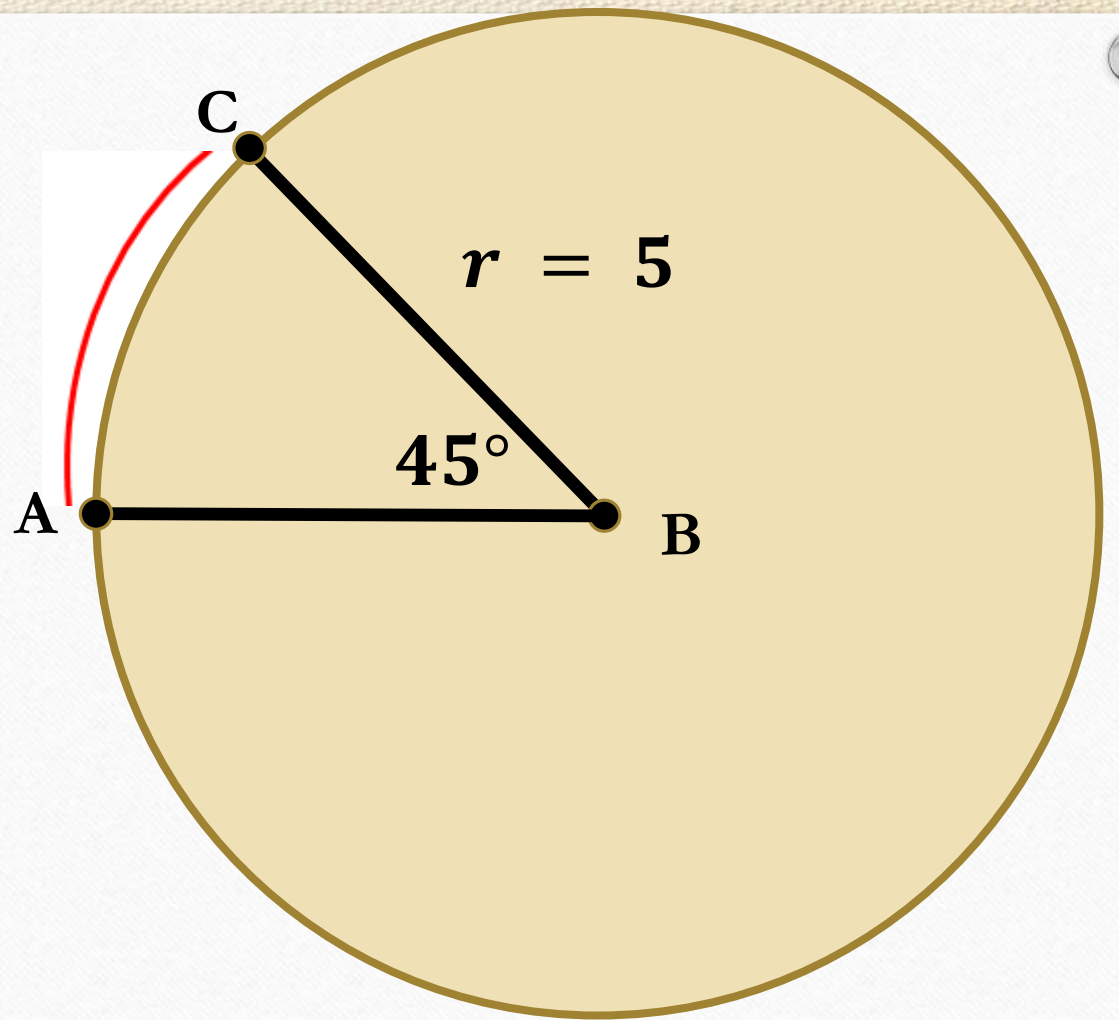
Arc

Part of the circumference cut off by an angle.

An Arc can be referred to by its measure **or** its length.

The measure of an Arcs is based on the central angle that intercepts the Arc.

$$m \widehat{ac} = 45$$



Circles guts

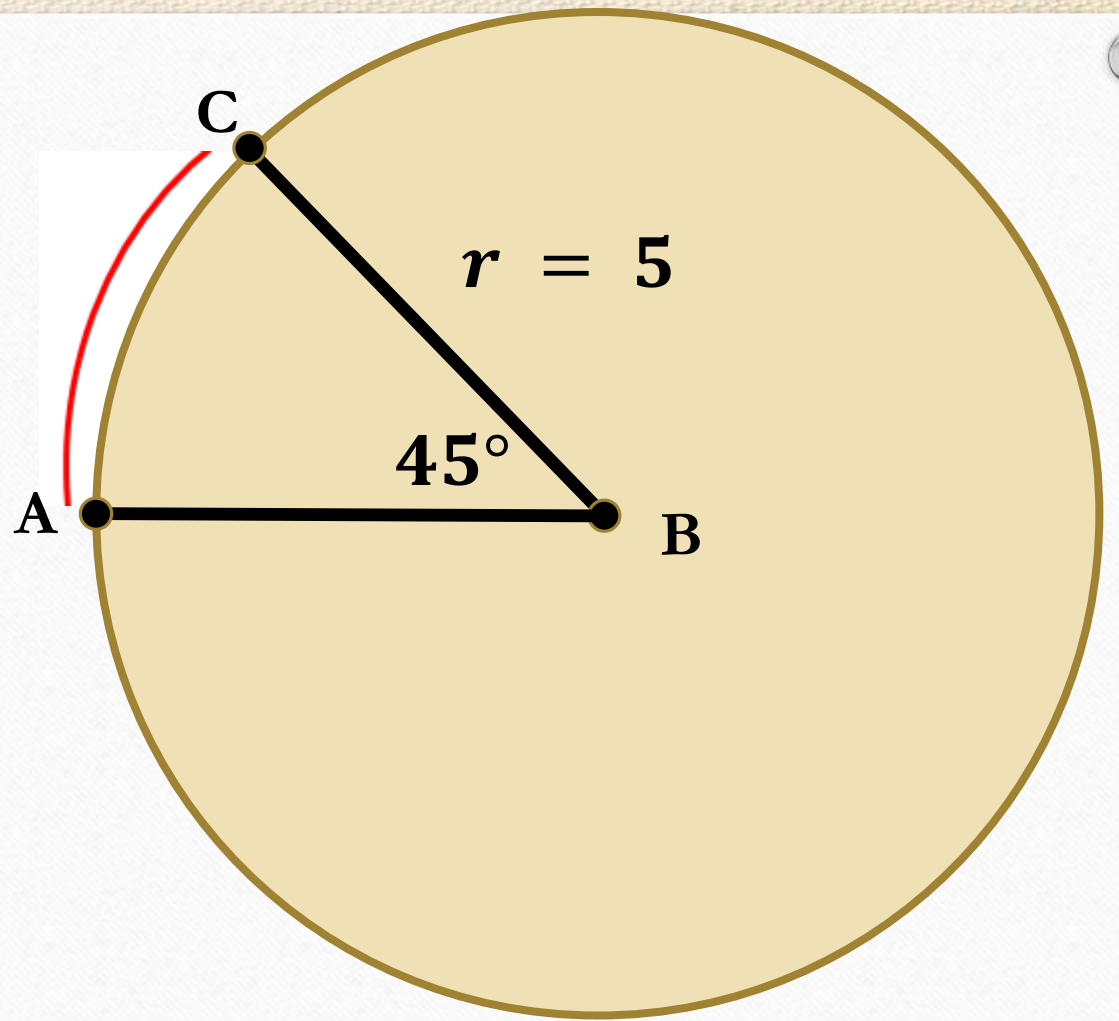
Arc

The length of an Arc is based on its portion of the circumference.

What percentage of this circle's circumference does this arc represent?

$$\text{percent} = \frac{\text{part}}{\text{whole}} = \frac{45}{360} = \frac{1}{8}$$

The arc length is equal to this percentage time the circumference of the circle.



$$l = \left(\frac{1}{8}\right) 2\pi r = \left(\frac{1}{8}\right) 2\pi(5) = \left(\frac{5}{4}\right) \pi$$

Circles guts

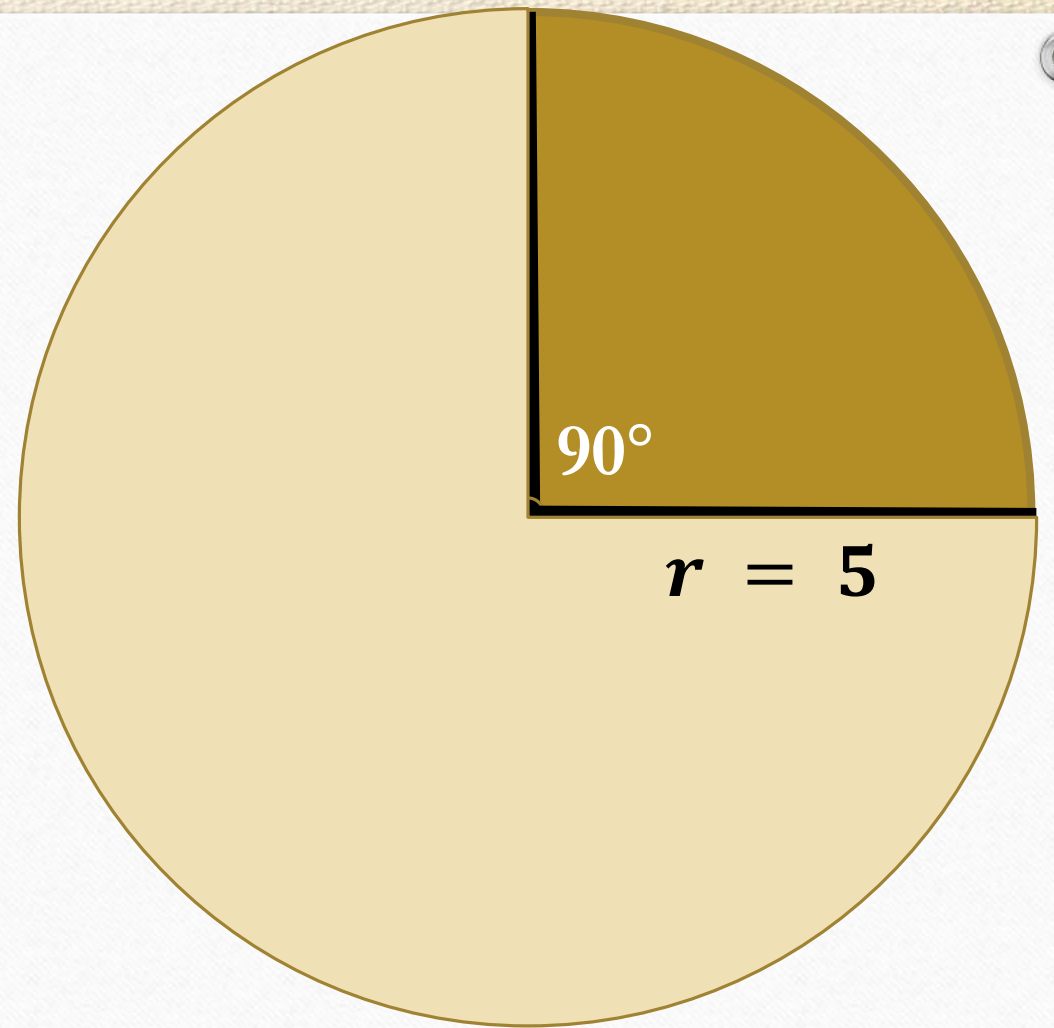
Sectors

A sector is like a pizza slice. It is a portion of the area of a circle.

What percentage of this circle's area does this sector represent?

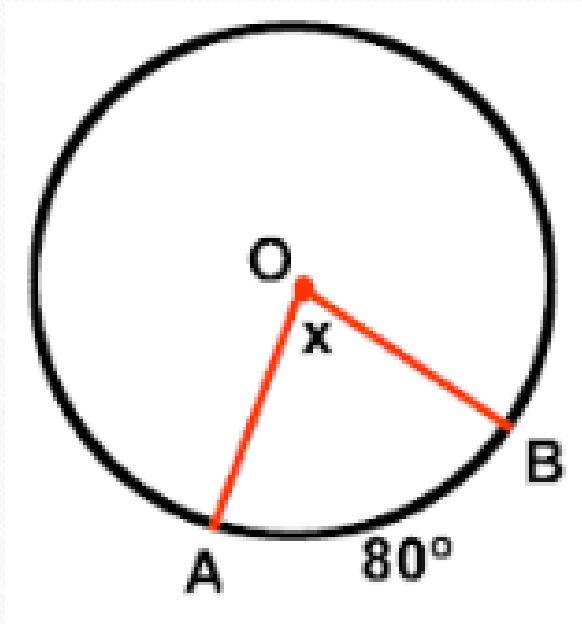
$$\text{percent} = \frac{\text{part}}{\text{whole}} = \frac{90}{360} = \frac{1}{4}$$

The sector area is equal to this percentage time the area of the circle.



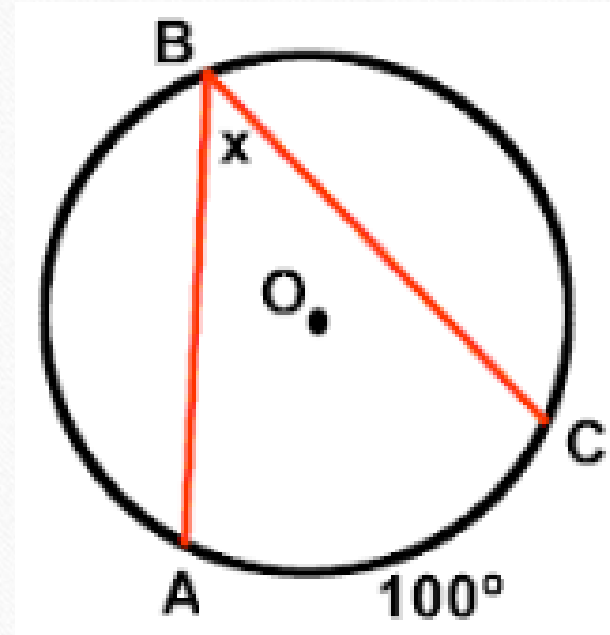
$$s = \left(\frac{1}{4}\right) \pi r^2 = \left(\frac{1}{4}\right) \pi (5^2) = \left(\frac{25}{4}\right) \pi$$

Central Angles vs. Inscribed Angles



A central angle is equal to the measure of its intercepted arc.

$$m\angle AOB = m\widehat{AB} = 80^\circ$$

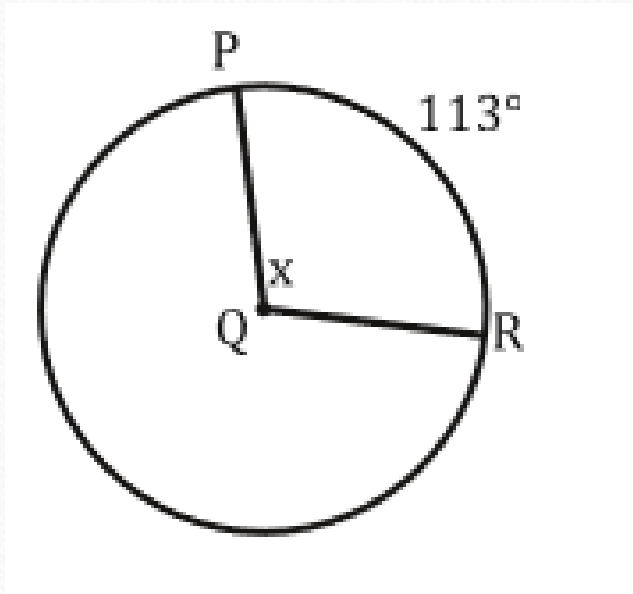


An inscribed angle is equal to one half the measure of its intercepted arc.

$$m\angle ABC = \frac{1}{2} m\widehat{AC} = 50^\circ$$

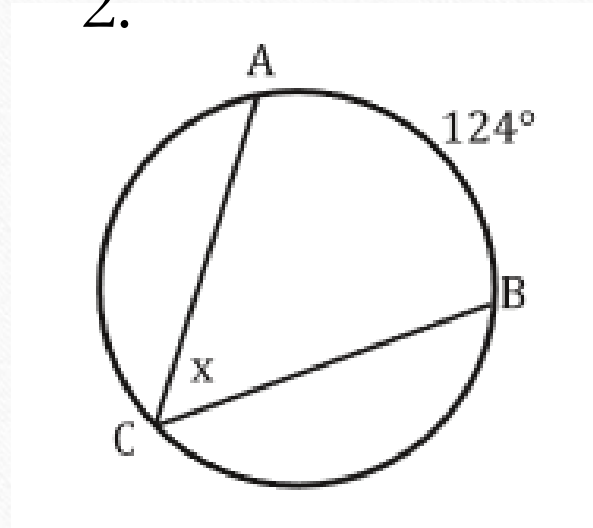
Find X (no pointing)

1.



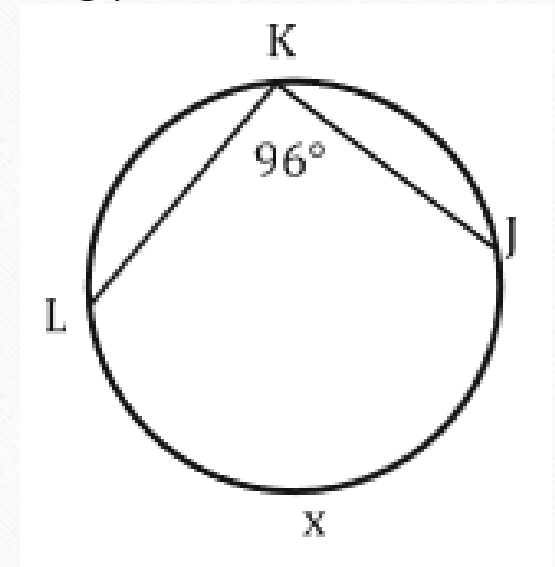
$$x = 113$$

2.



$$x = 62$$

3.



$$x = 192$$

Use the properties we just discussed to find the measure of angle ABC.

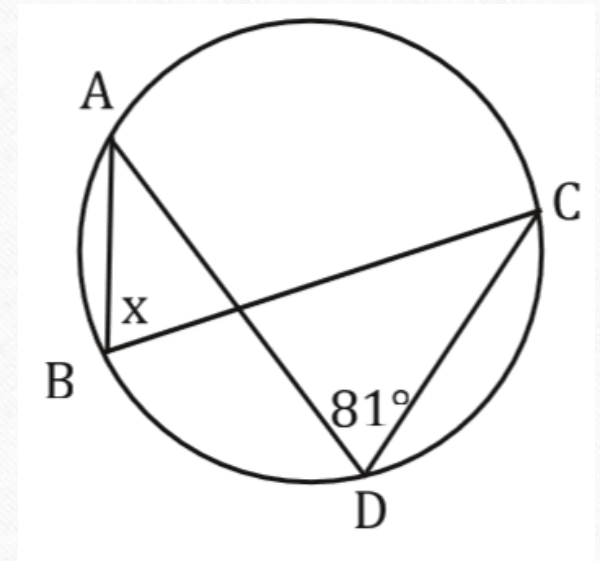
What do you notice about angle ABC and angle ADC?

They intercept the same arc!

How does that help you determine the value of x ?

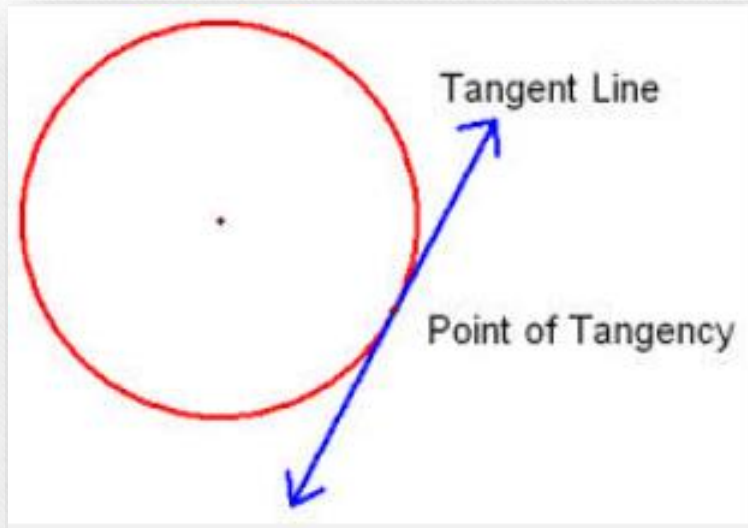
Because they intercept the same arc the two angles have the same measure.

Therefore the measure of angle ABC is also 81° .



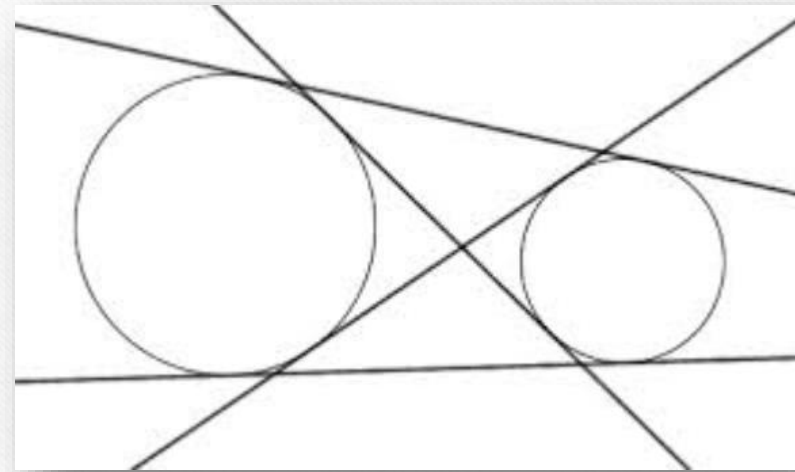
More Inside Angles.

But first a word about tangents.

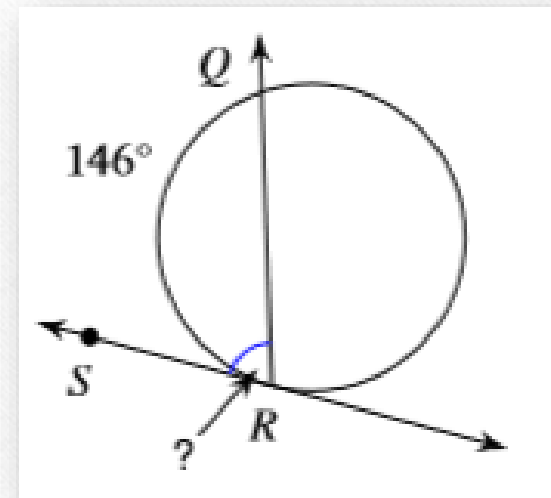
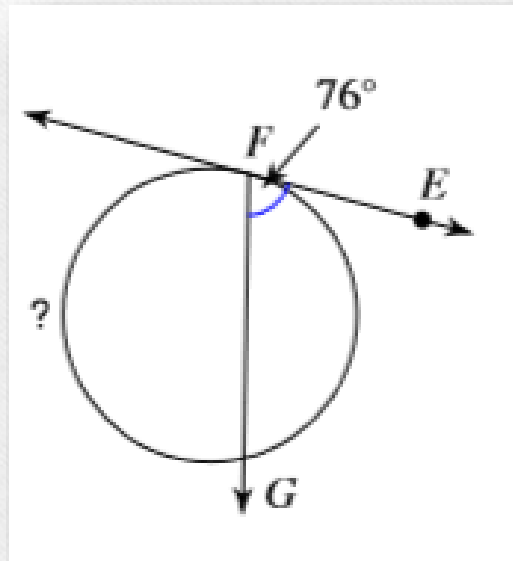
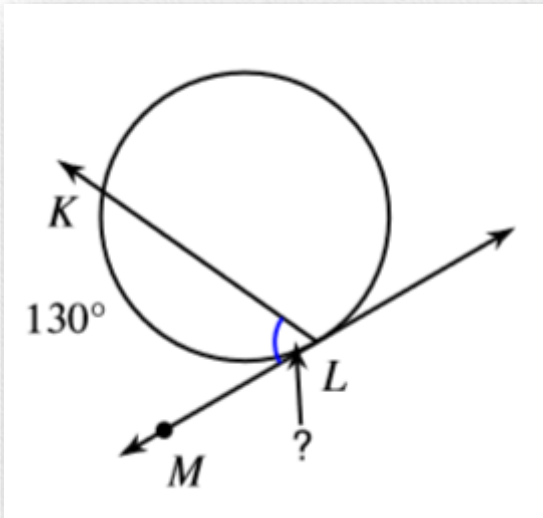


Tangent

In geometry, the tangent line (or simply tangent) to a plane curve at a given point is the straight line that "just touches" the curve at that point. Informally, it is a line through a pair of infinitely close points on the curve.



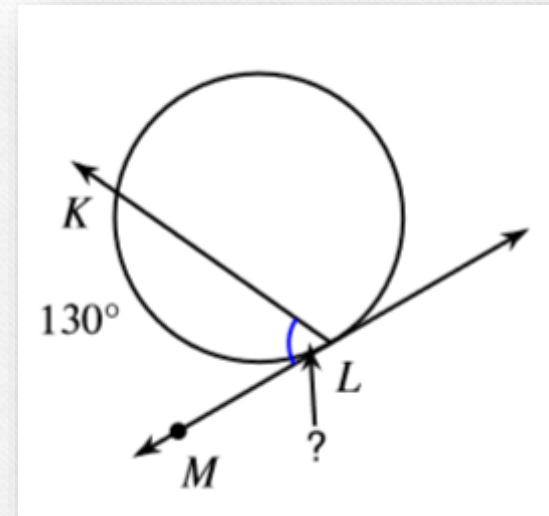
There is a special relationship between tangents and the arcs they intercept.
Notice these angles are inside the circle!



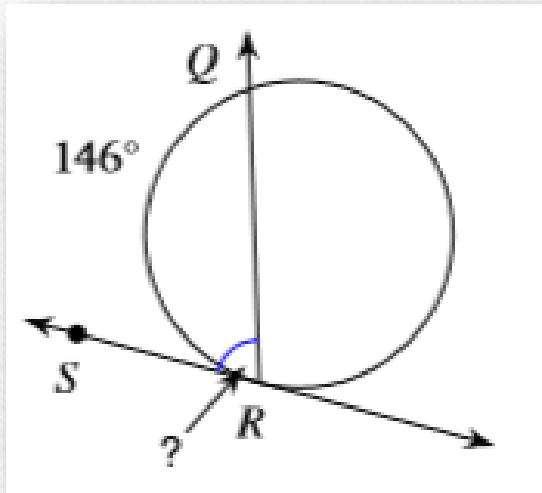
Write this formula down. It's not in your packet. (It's in your study guide)

Tangent Chord Angle = $\frac{1}{2}$ Intercepted arc

$$\begin{aligned}\angle MLK &= \frac{1}{2} m\widehat{KL} \\ &= \frac{1}{2} (130) \\ &= 65\end{aligned}$$

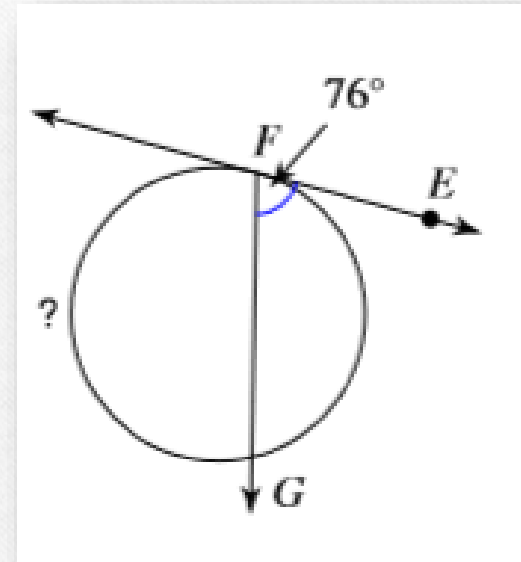


You try these two...



Find the measure of $\angle SRQ$

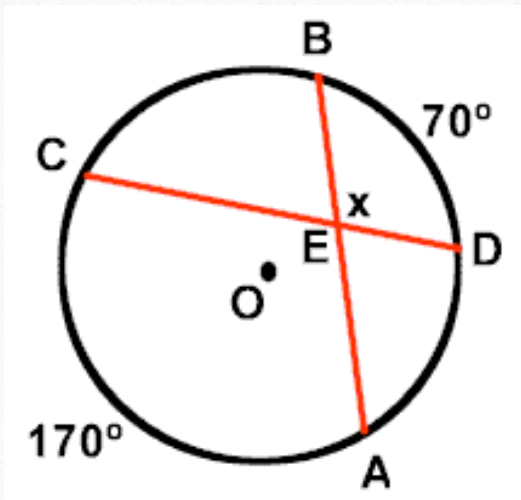
73



Find the measure of major arc \widehat{GF}

208

Lets talk about angles formed by two intersecting chords.



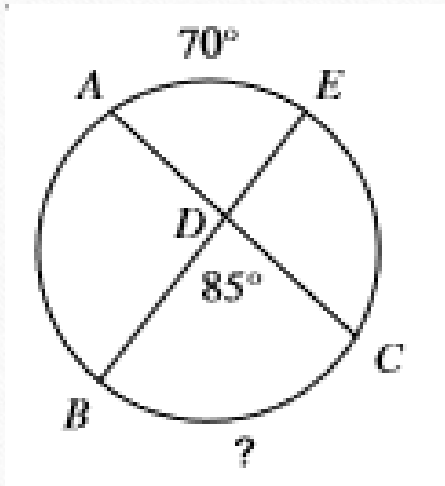
We can use the intercepted arcs to find angle measures.

Angle formed inside by intersecting chords

$$= \frac{1}{2} \text{ Sum of intersected arcs}$$

$$\begin{aligned}\angle BED &= \frac{1}{2} (m\widehat{AC} + m\widehat{BD}) \\ &= \frac{1}{2} (170 + 70) \\ &= 120\end{aligned}$$

Sometimes we have to work backward



Find $m\widehat{BC}$

$$\angle BDC = \frac{1}{2} (m\widehat{BC} + m\widehat{AE})$$

Use the formula

$$85 = \frac{1}{2} (m\widehat{BC} + 70)$$

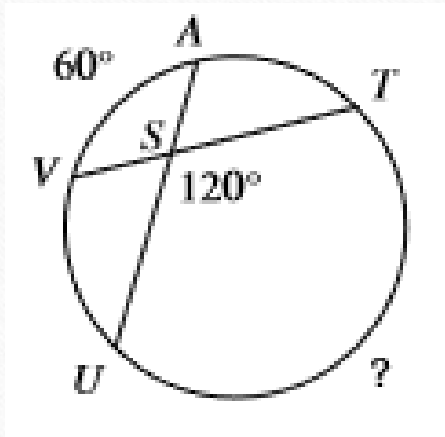
Fill in what you know

$$170 = m\widehat{BC} + 70$$

Solve for what
you don't know

$$100 = m\widehat{BC}$$

You try this one



Find $m\widehat{UT}$

$$\angle UST = \frac{1}{2}(m\widehat{UT} + m\widehat{VA})$$

Use the formula

$$120 = \frac{1}{2}(m\widehat{UT} + 60)$$

Fill in what you know

$$240 = m\widehat{UT} + 60$$

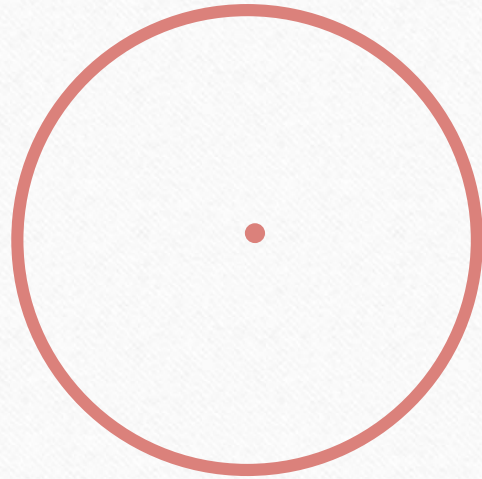
Solve for what
you don't know

$$180 = m\widehat{UT}$$

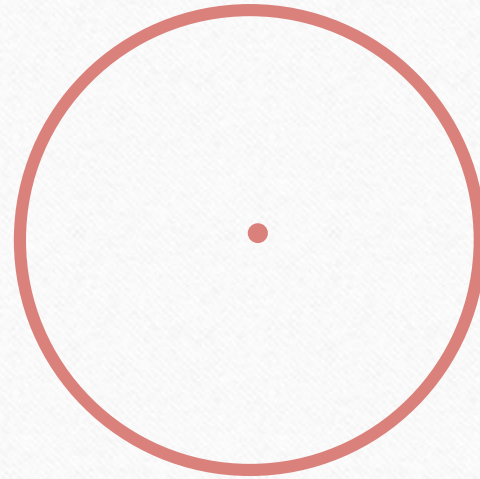
To Summarize



Central
Angle



Inscribed
Angle



Intersecting
Chord
Angles



Tangent
Angle

PERFECT PRACTICE MAKES PERFECT!

Work on your Circles packet.

Problems 24-31 in your study guide

If you finish it today's assignment before you leave, you can accumulate credits for a 2 point addition to your unit test grade.

You'll need 5 credits for 2 points.