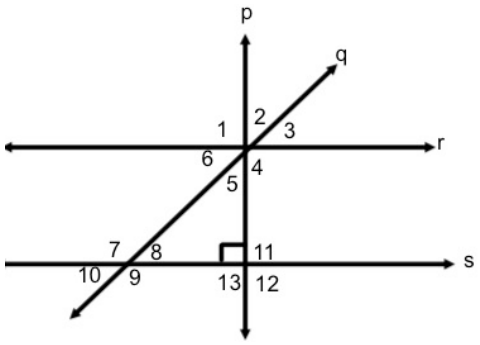
Geometry Review
Page 1

Use the diagram at right for Questions 1-5



1) Are < 2 and < 6 vertical?

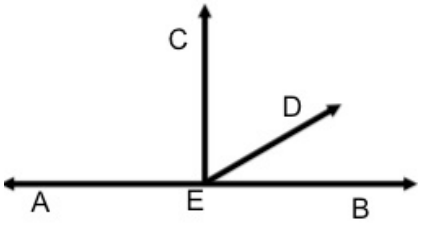
2) Are < 7 and < 8 supplementary?

3) If $\angle 6 \cong \angle 8$, which lines are parallel and why?

4) If r || s and m<5 = 27°, find m<3.

5) If r|| s and m<5 = 15°, find m<7.

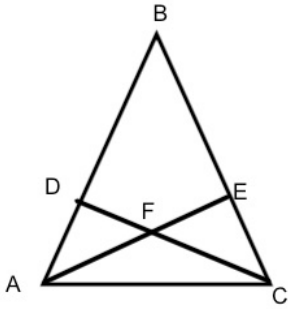
Use the diagram at right for questions 6-7



6) If $\overline{ED}$ bisects < CEB and m<DEB = 35°, then find m<CEB.

7) If $\overline{EC}$ bisects < AED, m<AEC = 2x + 10, and m<DEB = 6x then find m<AED.

For questions 8-10 use the diagram at right.



8) If $\Delta ADC \cong \Delta CEA$ then $\overline{DC} \cong$ _____

9) If $\Delta DFA \cong \Delta EFC$ then $\angle ADF \cong$ _____

10) If ΔFAC is equiangular, then m<AFC = _____

True or False?

11) If D is between M and T, then MD = DT – MT

12) If C is the midpoint of segment AT, then CT = 1/2TA.

13) Find the midpoint of the segment $\overline{MN}$, if M(9,9) and N(-2,1). Find the distance from M to N and find the equation of the line through M and N.

14) If S is the midpoint of $\overline{RT}$, RS = 7x – 13, ST = 4x + 5, then find length of RT.

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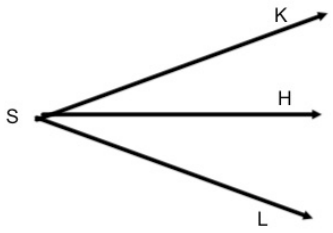
For questions 1-2, use the diagram at the right.



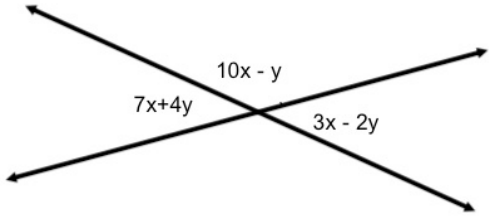
1) If m<KSH = 4x – 10, m< LSH = 3x and $\overline{SH}$ bisects < KSL, find the measure of all 3 angles.

2) If m<KSH = 2x + 5, m<KSL = 6x – 10, and $\overline{SH}$ bisects < KSL, find the measure of all 3 angles.

3) If angles M and N are complementary, m<M = 4x – 3, m<N = 2x +9, find the measure of both angles.

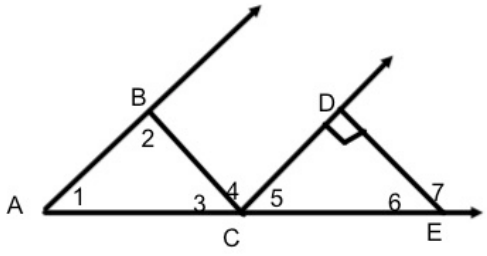
4) The measure of an angle is 12 less than 3 times the measure of its supplement. Find the measure of both angles.

5) Find the value of x and y in the figure below.



6) Triangle ABC has vertices at A(-3,2) B(4, -1) and C(1,6). What kind of triangle is ABC?

In the figure at right $\overline{AB} \parallel \overline{CD}, \overline{BC} \parallel \overline{DE}$ and m< 1 = 55°. Find the measure of each angle listed below.

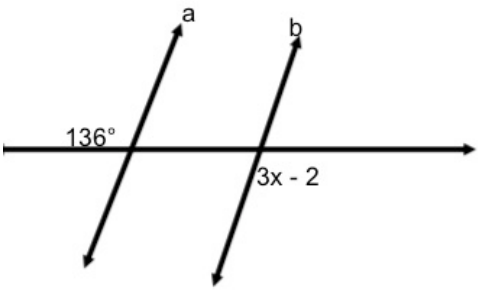


7) m< 4 = _____ 8) m< 5 = _____

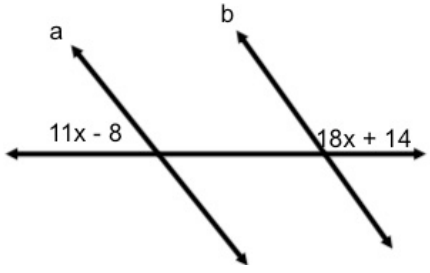
9) m< 6 = _____ 10) m< 7 = _____

Find the value of x so that a || b in each figure.

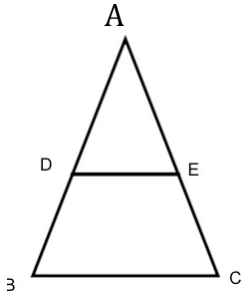
11)



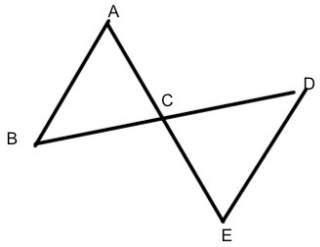
12)



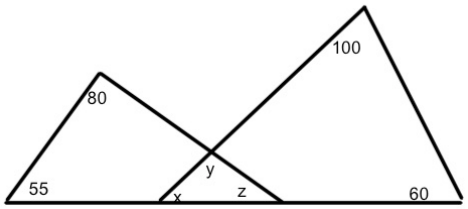
1) Given ΔABC and $\overline{DE} \parallel \overline{BC}$, m<C = $x^2 + 10x$, and m< AED= $2x^2 + x + 20$, solve for x.



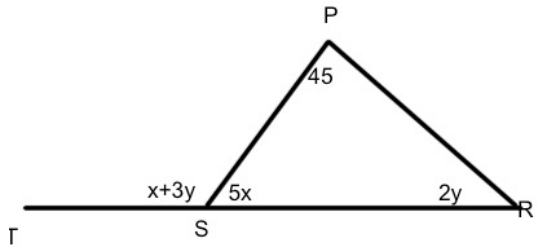
2) If $\overline{AB} \parallel \overline{DE}$, m< A = $3x^2 - 6x$, m<E = $2x^2 + 16$ then solve for x.



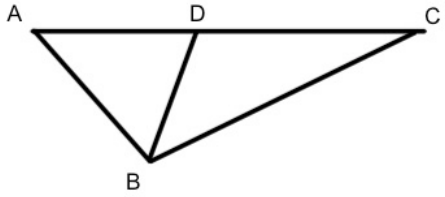
3) Solve for x, y and z in the figure below.



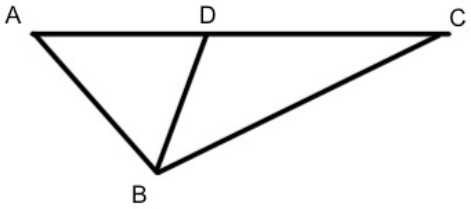
4) Find m < PST in the figure below.



5) In ΔABC , $\overline{BD}$ is a median, AC = 20, AD = 2x+3 AB = 6x BC = 4x + 10. Find perimeter of ΔABC .



6) In ΔABC , $\overline{BD}$ is an angle bisector <ABD = $x^2 + 8x$, < DBC = 6x + 8. Find m<ABC.



7) Given ΔABC , list the sides in order from shortest to longest if m< A = 4x -6, m< B = 2x – 4 and m< C = 8x + 22.

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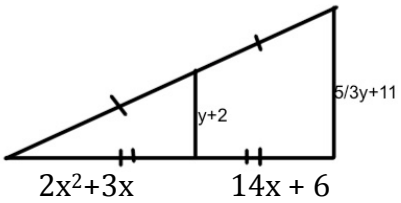
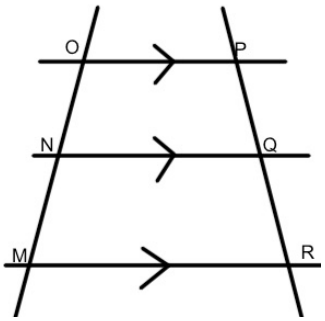
1) Find x and y in the diagram

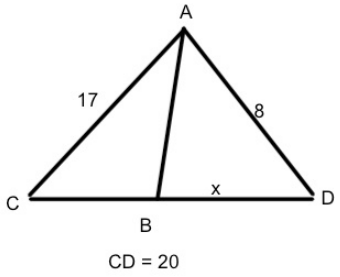


2) The legs of a right triangle are 6.4 and 9 cm long. The shorter leg of a similar right triangle is 9.6 cm long. Find the other leg of the 2nd triangle.

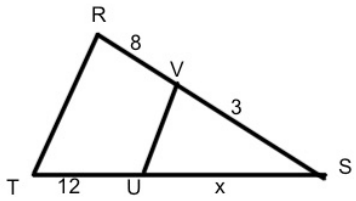
3) In the figure find QR if MN = 9, NO = 12 and PQ = 8



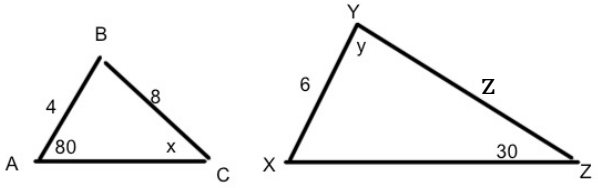
4) Find x if AB is an angle bisector



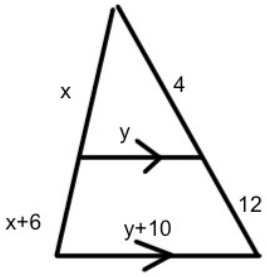
5) Find x if $\overline{UV} \parallel \overline{RT}$



6) $\Delta XYZ \sim \Delta ABC$, Solve for x, y and z



7) Solve for x and y



8) If the angles of a triangle are in the ratio of 3:4:5. Find the measure of the largest exterior angle of the triangle.

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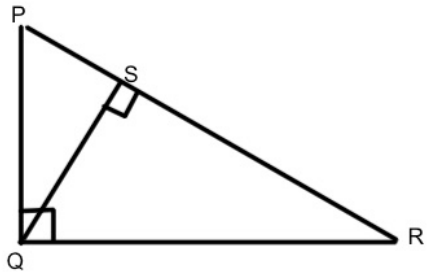
For questions 1 – 4, use the diagram at right.



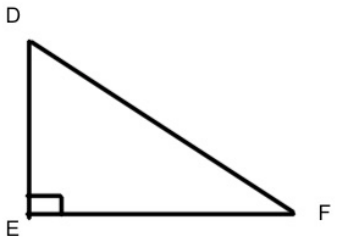
1) Find SR if QS = 6 and PS = 2

2) Find QR if PR = 5 and SR = 3

3) Find PS and RS if QR = 12 and PR = 16

4) Find QS if PS = 5 and SR = 9

For questions 5-6 use the diagram at right.



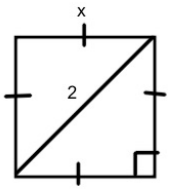
5) If DE = 9, EF = 12, Find DF.

6) If DF = 26 and DE = 10, find EF

7) In a right triangle, the legs are 2x and x +5, the hypotenuse is 10. Find the value of x.

Find the value of x in each picture.

8)



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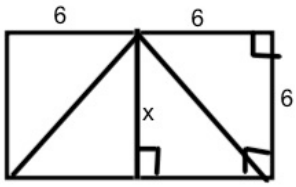

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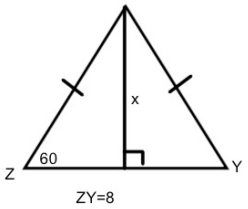


11) The perimeter of an equilateral triangle is 15. Find the length of the altitude.

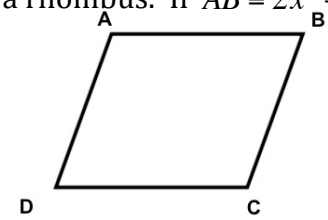
12) Find the measure of each interior angle of a regular decagon.

13) Find the measure of each exterior angle of a regular pentagon.

14) Find the sum of the exterior angles of a 19-gon,

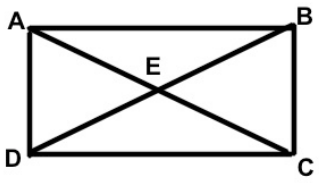
15) Find the sum of the interior angles of a heptagon.

16) In the diagram below, ABCD is a rhombus. If $AB = 2x^2 + 11x$ and $BC = 10x + 45$, find the value of x and find the perimeter of ABCD.

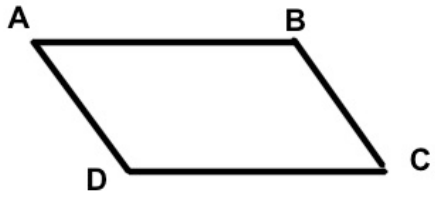


1) NOEL is a trapezoid with bases NO and EL. Decide if it is also an Isosceles Trapezoid if < N = 9x – 20.5, < O = 4x + 41, < E = 7x – 5.1 and < L = 6x + 4.

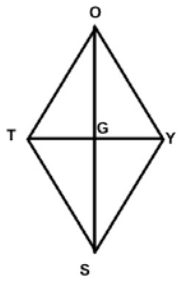
2) 13. In the figure below, ABCD is a rectangle, AD = 4x + 1, BD = 8x – 3, CD = 6x – 1, and ED = 3x + 2. Find the value of x and the perimeter of ABCD.



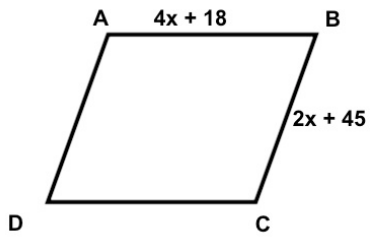
3) 16. In the figure below, ABCD is a ||-gram with m < A = 5x +3y, m< C = 6y - 3, and m < D = 20x - 3. Find the value of x, y and m< B.



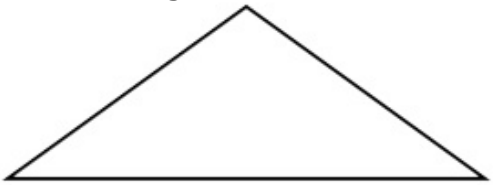
4) Given that TOYS is a rhombus, with TG = 2x + 8, GY = y + 4, OG = 3x + 9, GS = 2y – 2. Find the length of each diagonal.



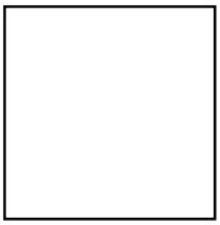
5) If ABCD is a rhombus, find its perimeter.



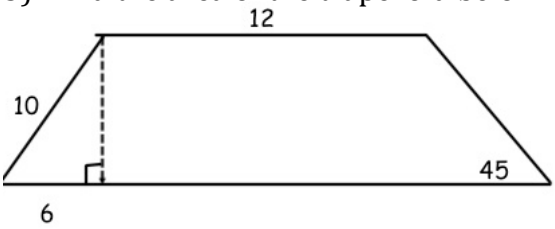
1) The altitude drawn from the vertex of an isosceles triangle is 18 cm. If the vertex angle has a measure of 120 degrees, what is the area of this triangle.



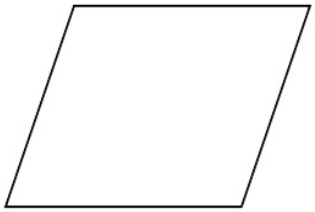
2) Find the area of a square with a diagonal of 12 feet.



3) Find the area of the trapezoid below.



4) Find the area of a rhombus with one side of length 12 cm and one diagonal of length 12 cm.



Find the area of each circle below with the given information. Exact answer unless otherwise requested.

5) Radius = 9 ft

6) Diameter = 12 inches

7) Diameter = 19 cm

8) Circumference = 14π cm

9) Circumference = 23π ft

10) Circumference = 21 cm (round to nearest hundredth)

11) Circumference = 304.81 inches (round to nearest hundredth)

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Find the area of each regular polygon below using the given information.

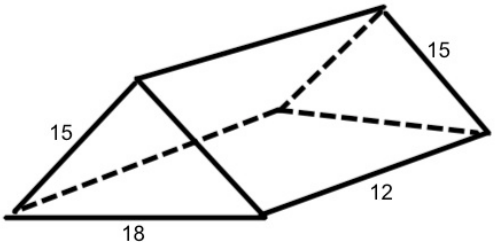
1) A regular pentagon with a side of 8 and apothem of 5.5 inches. (round to nearest hundredth)

2) A regular octagon with a side of 18 and apothem of 21.7 cm. (round to nearest hundredth)

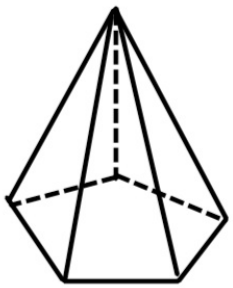
3) A Regular hexagon with a side of 10. (exact answer)

4) A regular triangle with a side of 6. (exact answer)

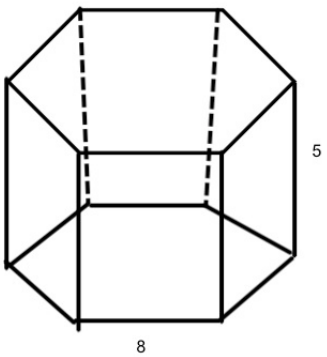
5) Find the lateral area and surface area of the figure below.



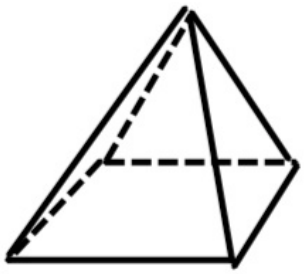
6) Find the lateral area of the regular Pentagonal pyramid below if the lateral edge is $4\sqrt{3}$ cm and the perimeter of the base is 60 cm.



7) Find the lateral and surface area of the regular hexagonal prism below.



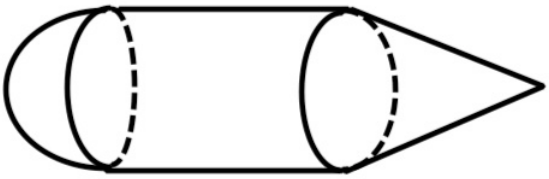
8) Find the lateral and surface area of Square pyramid below if the height of the pyramid is 15 meters and the side of length of the base is 16 meters.



1. Find the surface area of the hemisphere below if the circumference of the base is 25π .

S.A. = _____

2. Find the total surface area of the figure below if the slant height of the cone if 5 feet, the height of the cylinder is 8 feet and the diameter of hemisphere is 6 feet.

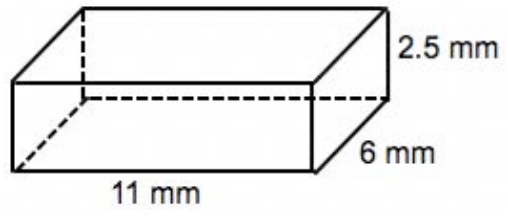


S.A. = _____

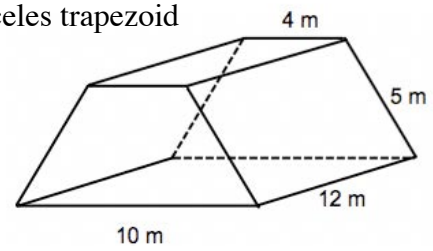
3. The height of a cylinder is twice the radius of the cylinder. Find the radius if the total surface area is 63.375π .

Find the total surface area (S.A.) and the volume (V) for each figure.

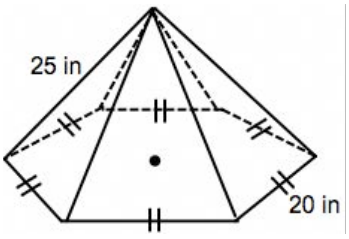
4)



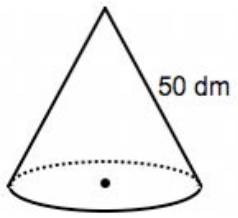
5) Base is an isosceles trapezoid



6) Base is a regular hexagon



7) 5) A cone with diameter of 28 decimeters



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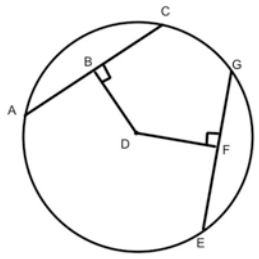
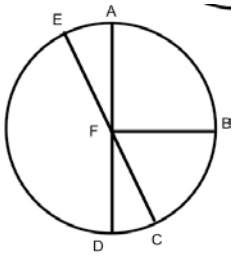
1) A chord is 6 units from the center of a circle. If the diameter of the circle is 18 units, how long is the chord?

2) In Circle D below, $\overline{BD} \cong \overline{DF}$, $AC = 3x - 17$, $EF = \frac{2}{3}x + 4$ and $DF = x + 8$. Find EG and the radius of the circle.



3) In Circle F below, $\overline{AF} \perp \overline{FB}$, $\overline{AD}$ is a diameter and $m\angle CFD$ =32°. Find the measure of arc AD, arc BD, arc ACD and arc ADC.



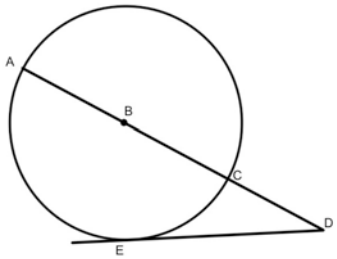
m arc AB = _____

m arc BC = _____

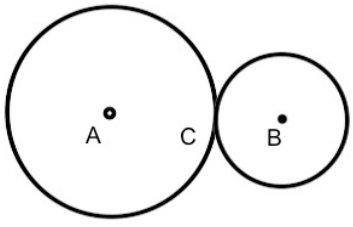
m arc ADC = _____

m arc ED = _____

4) In Circle E, $\overline{DE}$ is tangent at point E, $\overline{AC}$ is a diameter, AD = 16, and the radius is 4. Find DE.

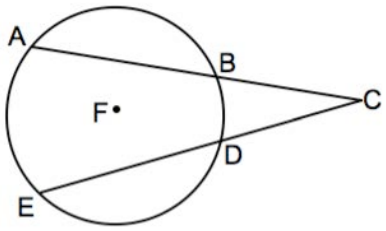


5) In the figure below, Circle A and Circle B are tangent at point C. If the radii of Circle A and Circle B are 9 and 6 units, find the length of the common external tangent.



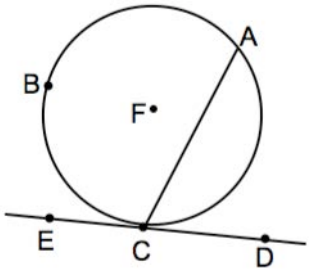
1) Given: $\odot F$, $m\angle C = 42°$ m arc $BD = 15°$

Find: m arc AE = _____



2) Given: $\odot F$,m arc $AC = 165°$ (minor arc) and m arc $AB = 108°$

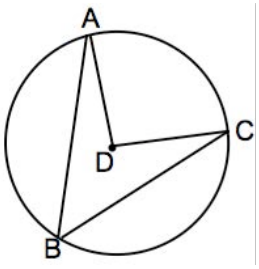
Find: $m\angle ACE$ = _____



3) Given: $\odot D$ arc $AB \cong$ arc BC, m arc $AB = 127°$

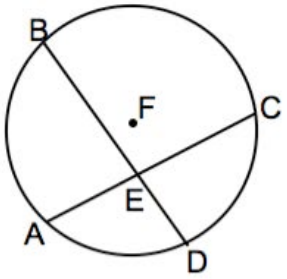
Find: $m\angle ADC$ = _____

$m\angle ABC$ = _____



4) Given: $\odot F$, m arc$BC = 100°$ m arc$AD = 60°$

Find: $m\angle BEA$ = _____



5) Given Circle O, $\overline{AB}$ is a diameter, $\overline{DA}$ and $\overline{DC}$ are tangents, m arc AC = 100°, m arc AE = 88° and m arc EG = 48°.

$m\angle 1$ = _____

$m\angle 2$ = _____

$m\angle 3$ = _____

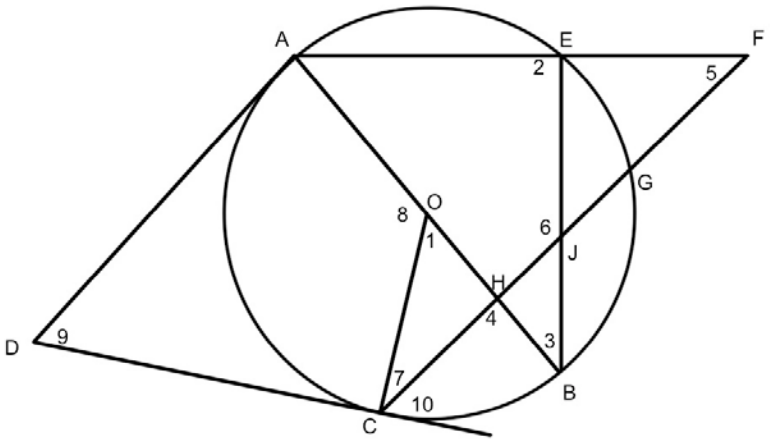
$m\angle 4$ = _____

$m\angle 5$ = _____

$m\angle 6$ = _____

$m\angle 7$ = _____

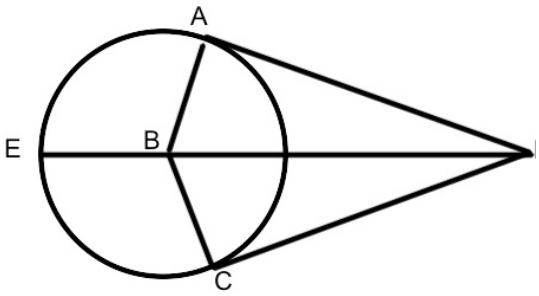
$m\angle 8$ = _____ , $m\angle 9$ = _____



Proofs – complete each 2 column proof

1. Given: $\overline{BD}$ bisects $\angle CBA$
Circle B

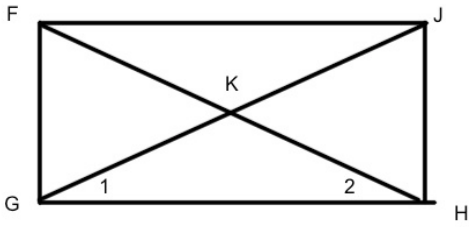
Prove: $\overline{DB}$ bisects $\angle CDA$



Statement	Reasons
1. $\overline{BD}$ bisects $\angle CBA$ Circle B	1. Given

2) Given: $\angle FGH$ is a right angle.
$\angle JHG$ is a right angle.
$\overline{FH} \cong \overline{JH}$

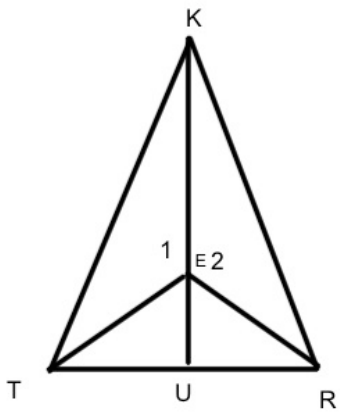
Prove: $\angle 1 \cong \angle 2$



Statement	Reasons
1. $\angle FGH$ is a right angle. $\angle JHG$ is a right angle. $\overline{FH} \cong \overline{JH}$	1. Given

3) Given: $\overline{UK}$ is an Altitude of ΔTRK
$\angle 1 \cong \angle 2$

Prove: $\Delta TEU \cong \Delta REU$

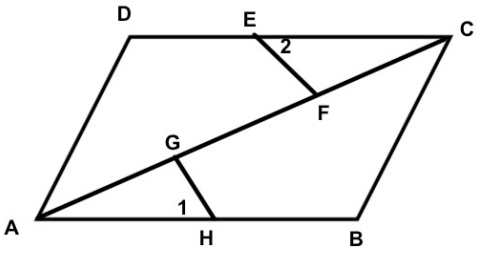


Statements	Reasons
1. $\overline{UK}$ is an Altitude of ΔTRK $\angle 1 \cong \angle 2$	1. Given

Statements	Reasons
1. ABCD is a ||-gram $\angle 1 \cong \angle 2$, $\overline{HB} \cong \overline{DE}$	1. Given

4) Given: ABCD is a ||-gram
$\angle 1 \cong \angle 2$
$\overline{HB} \cong \overline{DE}$

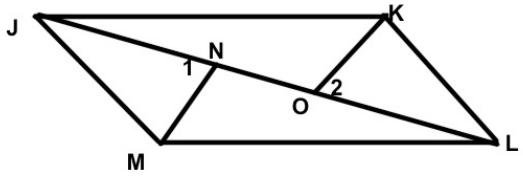
Prove: $\overline{GH} \cong \overline{EF}$



5) Given: $\angle 1 \cong \angle 2$, $\overline{MN} \cong \overline{KO}$
N and O trisect $\overline{JL}$

Prove: JKLM is a ||-gram

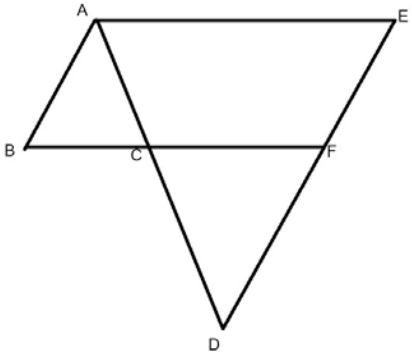
Statements	Reasons
1. $\angle 1 \cong \angle 2$, $\overline{MN} \cong \overline{KO}$ N and O trisect $\overline{JL}$	1. Given



6) Given: AEFB is a ||-gram

Prove: $\Delta ABC \sim \Delta DEA$

1. AEFB is a ||-Gram	1. Given



Page 1

1) No 2) Yes 3) r || s, If alternate interior angles are congruent, than lines are ||

4) 63° 5) 105° 6) 70° 7) x = 16, m<AED = 84° 8) $\overline{EA}$ 9) < CEF

10) 60° 11) False 12) True 13) Midpoint (3.5, 5) Distance = $\sqrt{185}$, Equation:

$y-9=\frac{8}{11}(x-9)$ or $y-1=\frac{8}{11}(x+2)$ or $y=\frac{8}{11}+\frac{27}{11}$ 14) 58

Page 2

1) < KSH and < LSH = 30°, < KSL = 60° 2) <KSH and < HSL = 25°, < KSL = 50°

3) x = 14, angles are 53° and 37° 4) angles are 48° and 132° 5)x = 12, y = -8

6) Isosceles (using distance formula – 2 sides are congruent 7) m<4 = 90° 8) m<5 = 55°

9) m< 6 = 35° 10) m< 7 = 145° 11) x = 46 12) x = 6

Page 3

1) x = 5,4 2) x = 8, -2 3) x = 20°, y = 115°, z = 45° 4) x = 15, y = 30

5)x = 3.5, Perimeter = 65 6) x = 2, m<ABC = 40° 7) $\overline{AC},\overline{BC},\overline{AB}$

Page 4

1) x = 6, y = 21 2) x = 13.5 cm 3) QR = 6 4) x = 6.4 5) x = 4.5

6) x = 30°, y = 70°, z = 12 7) x = 3, y = $3\frac{1}{3}$ 8) 135°

Page 5

1) SR = 18 2) QR = $\sqrt{15}$ 3) SR = 9, PS = 7 4) QS = $3\sqrt{5}$ 5) DF = 15

6) EF = 24 7) x = 3 8) x = $\sqrt{2}$ 9) x = 6 10) x = $4\sqrt{3}$

11) $\frac{5}{2}\sqrt{3}$ 12) 144° 13) 72° 14) 360° 15) 900° 16) x = 4.5,

perimeter = 360

Page 6

1) x = 13.1, no it is not because base angles are not congruent 2) x = 3.5, perimeter = 80

3) x = 6, y = 11, m<B = 117° 4) x = 3, y =10 TY = 28, OS = 36

5) x = 3.5, perimeter =70

Page 7

1) $324\sqrt{3}$ 2) 72 3) 152 4) $72\sqrt{3}$ 5) 81π

6) 36π 7) $\frac{361}{4}\pi$ 8) 49π 9) $\frac{529}{4}\pi$ 10) 35.09 11) 7393.47

Page 8

1) 110 2) 1562.4 3) $150\sqrt{3}$ 4) $9\sqrt{3}$

5)LA = 576, TA = 792 6) LA = $60\sqrt{3}$ 7) LA = 240, TA = $240+192\sqrt{3}$

8) LA = 544, TA = 800

Page 9

1) $\frac{1875}{4}\pi$ 2) 81π 3) r = 3.25 4) A = 217, V = 165

5) A = 344, V = 336 6) A = $600\sqrt{3}+300\sqrt{21}$, V = $3000\sqrt{3}$

7) A = 896π, V = 3136π

Page 10

1) $6\sqrt{5}$ 2) EG = 28, Radius = $5\sqrt{29}$ 3) Arc AB = 90°, Arc BC = 58°, Arc ADC = 212°, Arc ED = 148° 4) $8\sqrt{2}$ 5) $6\sqrt{6}$

Page 11

1) 99° 2) 97.5 ° 3) m<ADC = 106°, m< ABC = 53° 4) m< BEA = 100°

5) m< 1 = 80°, m < 2 = 90°, m < 3 = 44°, m< 4 = 108°, m< 5 = 26°, m< 6 = 116°, m< 7 = 28° m< 8 = 100°, m< 9 = 80°

Proofs

1

2) $< ABD \cong < CBD$, If an angle is bisected, then 2 congruent angles

3) $\overline{AB} \cong \overline{CB}$, If 2 radii of a circle, then 2 congruent radii

4) $\overline{BD} \cong \overline{BD}$, Reflexive

5) $\Delta ABD \cong \Delta CBD$, SAS

6) $< ADB \cong < CDB$, CPTCT

7) $\overline{DB}$ bisects < CDA, If 2 angles are congruent, then the angle is bisected

#2)

2) $< FGH \cong < JHG$, If two angles are right angles, they are congruent

3) $\overline{GH} \cong \overline{GH}$, Reflexive

4) $\Delta FGH \cong \Delta JHG$,SAS

5) $< 1 \cong < 2$, CPCTC

#3

2) $\overline{TR} \perp \overline{KU}$, If an altitude, then it forms perpendicular segments

3) < KUT, < KUR are right angles, If perpendicular, then right angles

4) $< KUT \cong < KUR$, If 2 angles are right angles, then they are congruent

5)< 1 supp < TEU, < 2 supp < REU, If 2 angles form a straight angle, then they are supplementary

6) < TEU ≅ < REU, If 2 angles are supp to congruent angles, then they are congruent.

7) $\overline{EU} \cong \overline{EU}$, Reflexive

8) $\Delta TEU \cong \Delta REU$, ASA

#4

2) $\overline{DC} \cong \overline{AB}$, If a figure is a parallelogram, then opposite sides are congruent

3) $\overline{DC} \parallel \overline{AB}$, If a figure is a parallelogram, then opposite sides are parallel.

4) $\overline{EC} \cong \overline{EC}$, Segment Subtraction

5) $< ECA \cong < BAC$, If || lines, then alternate interior angles are congruent.

6) $\Delta ECF \cong \Delta HAG$, ASA
$\overline{GH} \cong \overline{EF}$, CPCTC

#5
2) $\overline{JN} \cong \overline{NO} \cong \overline{OL}$, If a segment is trisected, then divided into 3 congruent segments
3) $\Delta JNM \cong \Delta LOK$, SAS
4) $< MJN \cong < KLO, \overline{JM} \cong \overline{LK}$, CPCTC
5) $\overline{JM} \parallel \overline{KL}$, If alternate interior angles are congruent, then lines are parallel.
JKLM is a parallelogram, If one pair of sides are congruent and parallel, then the figure is a parallelogram

#6)
2) $< B \cong < E$, If parallelogram, then opposite angles congruent
3) $\overline{AB} \parallel \overline{DE}$, If parallelogram, then opposite sides are parallel.
4) $< BAC \cong < EDA$, If parallel then alternate interior angles are congruent
5) $\Delta ABC \sim \Delta DEA$, AA