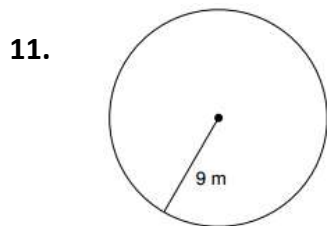
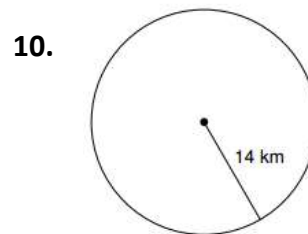
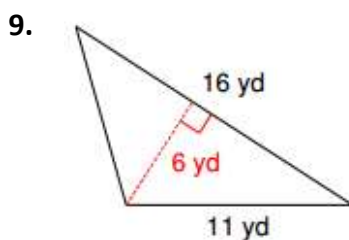
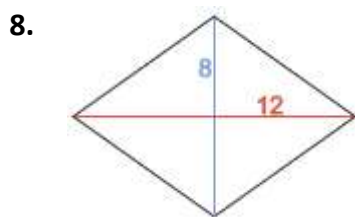
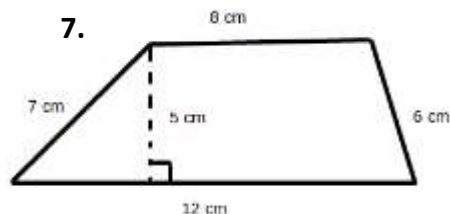
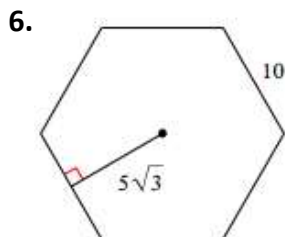
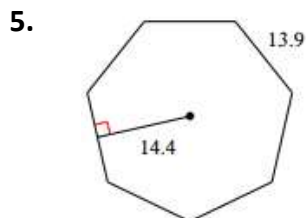
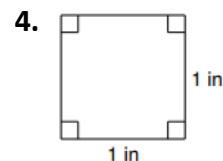
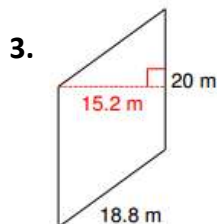
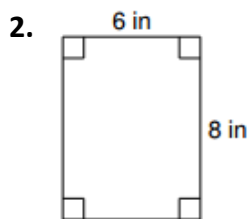
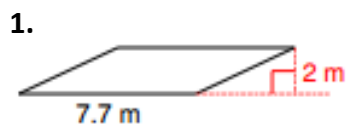


Honors Geometry – Semester 2 Review

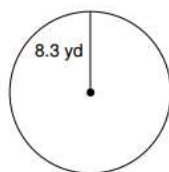
starting from the most recent

Test 5: Volume and Area (ch. 11)

Find the area of the following figures. Give answers in terms of pi when necessary, otherwise round to the nearest tenth.



12. Find the circumference



13.

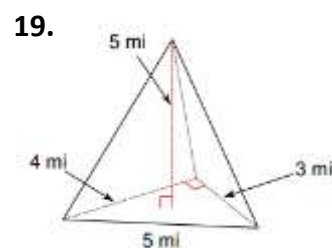
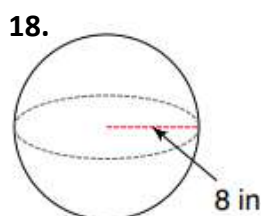
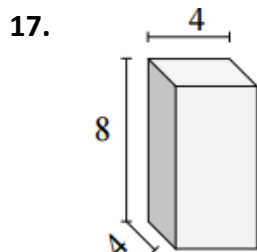
Find the radius of a circle so that its area and circumference have the same value.

14. Find the area of a circle if the circumference is 6π yd.

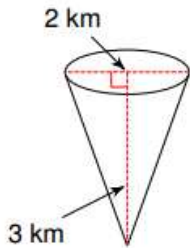
15. Find the diameter of a circle if the area is 201.1 in^2

16. Find the radius of a circle if the circumference is 62.8 mi.

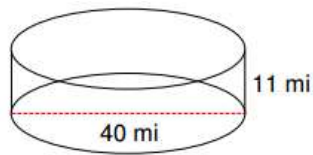
For #17 – 23: Find the volume and surface area of the following figures. Give answers in terms of pi when necessary, otherwise round to the nearest tenth.



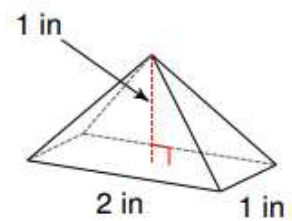
20.



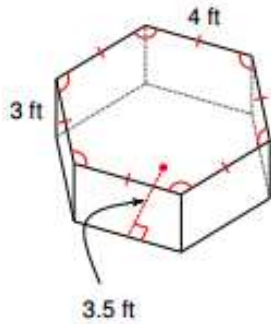
21.



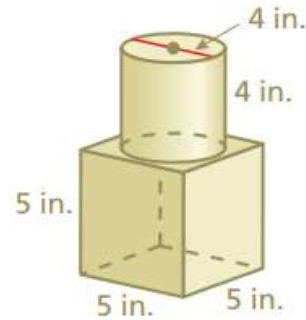
22.



23.

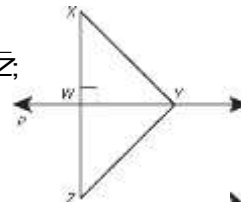


24. Find the volume of the composite figure.

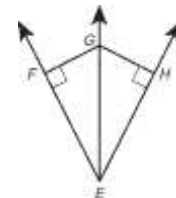


Test 4: Special Points and Segments in Triangles & Parallelograms (Ch. 6 and 7.1-7.2)

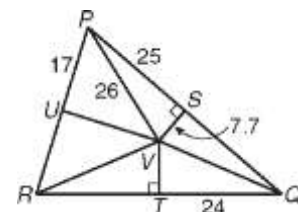
25. a) Given that $XZ = 38$, $YX = 27$, and $YZ = 27$, find ZW .
 b) Given that line p is the perpendicular bisector of \overline{XZ} ;
 c) $XY = 4n$, and $YZ = 14$, find n .



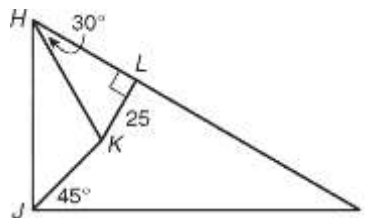
26. a) Given that $FG = HG$ and $m\angle FEH = 58$, find $m\angle GEH$.
 b) Given that \overline{EG} bisects $\angle FEH$ and $GF = \sqrt{2}$, find GH .
 c) Given that $\angle FEG \cong \angle HEG$, $FG = 10z - 30$, and $HG = 7z + 6$, find FG .



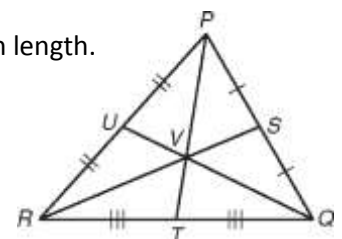
27. Use the figure. \overline{SV} , \overline{TV} , and \overline{UV} are perpendicular bisectors of the sides of $\triangle PQR$. Find each length.
 a) RV
 b) TR
 c) PR



28. Use the figure. \overline{HK} and \overline{JK} are angle bisectors of $\triangle HIJ$. Find each measure.
 a) the distance from K to \overline{JI}
 b) angle JHK
 c) angle HJI

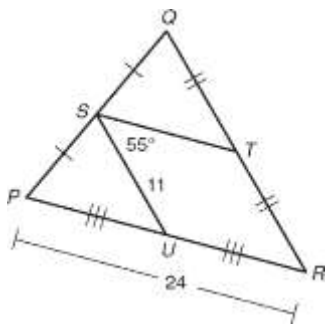


29. Use the figure. \overline{QU} , \overline{PT} and \overline{RS} are medians of $\triangle PQR$. $RS = 21$ and $VT = 5$. Find each length.
 a) RV
 b) SV
 c) TP

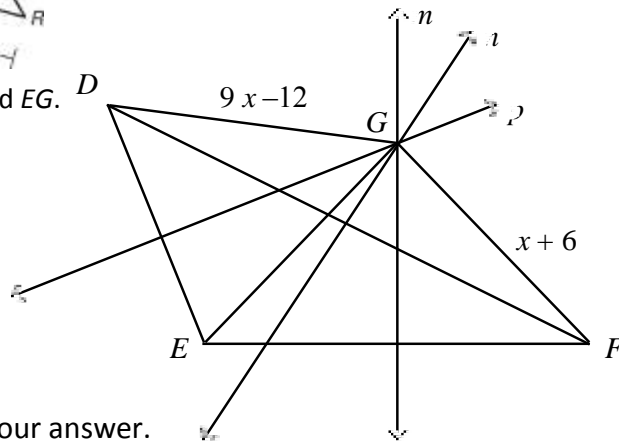


30. Use the figure. Find each measure.

- a) ST
- b) QR
- c) PU
- d) $m\angle SUP$

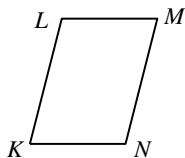


31. Lines m , n , and p are the perpendicular bisectors of $\triangle DEF$. Find EG .

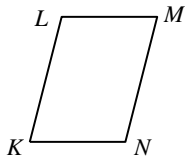


32. Determine if the quadrilateral is a parallelogram. Justify your answer.

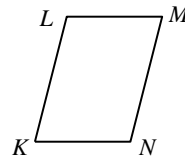
a) $\overline{LK} \cong \overline{MN}$ and $\overline{LM} \parallel \overline{KN}$



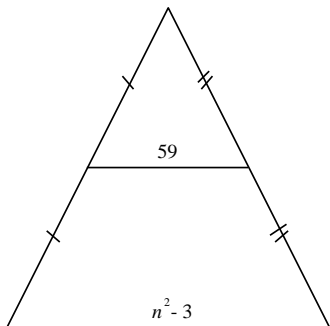
b) $\overline{LK} \cong \overline{MN}$ and $\angle KLM \cong \angle LMN$



c) $\angle KLM \cong \angle MNK$ and $\angle LMN \cong \angle NKL$



33. Find the value of n in the triangle.

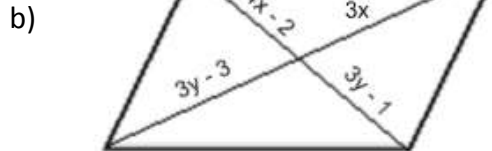
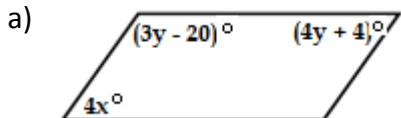


34. Compare incenter and circumcenter. How are they similar? How are they different? (Be detailed.)

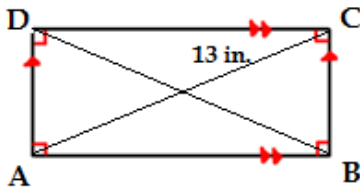
35. Draw $\triangle DEF$ on a piece of graph paper. Find the orthocenter of $\triangle DEF$ with vertices $D(2, 3)$, $E(2, -4)$, $F(-4, -3)$. Include any relevant math. Label the orthocenter M .

36. Draw $\triangle ABC$ on a piece of graph paper. Find the centroid of $\triangle ABC$ with vertices $A(0, 1)$, $B(4, 7)$, $C(8, -2)$. Include any relevant math. Label the centroid K .

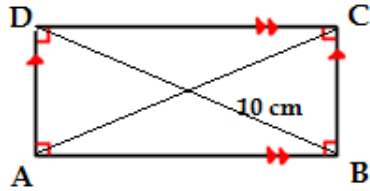
37. For each parallelogram, find the missing variables.



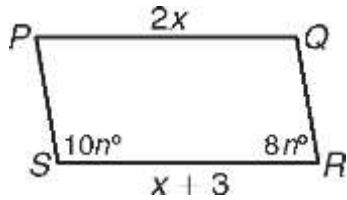
c) Find AC



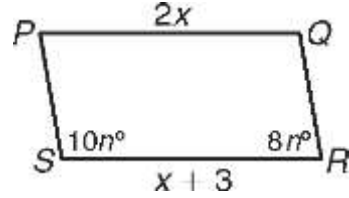
d) Find DB



e) RS



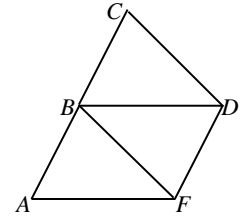
e) angle S



38. Complete the two-column proof.

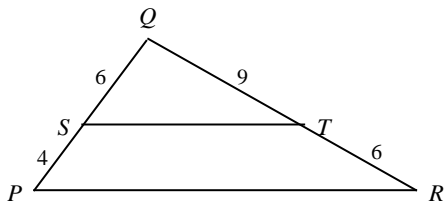
Given: $ABDF$ and $FBCD$ are parallelograms.

Prove: $\angle BCD \cong \angle ABF$

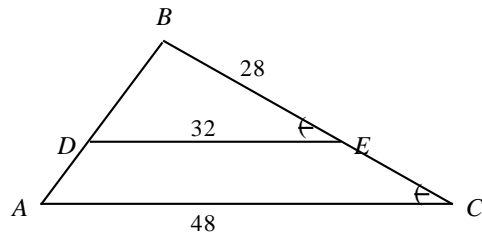


Statements	Reasons
1. $ABDF$ and $FBCD$ are parallelograms.	1. Given
2. $\angle BCD \cong \angle DFB$	2. _____
3. $\overline{DF} \parallel \overline{AB}$	3. Opposite sides in a parallelogram are parallel.
4. $\angle DFB \cong \angle ABF$	4. _____
5. $\angle BCD \cong \angle ABF$	5. Substitution

39. Verify that $\triangle PQR \sim \triangle SQT$.



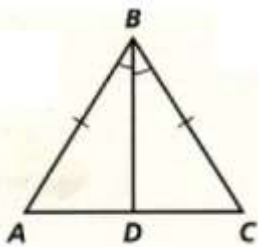
40. Explain why $\triangle ABC \sim \triangle DBE$ and then find BC.



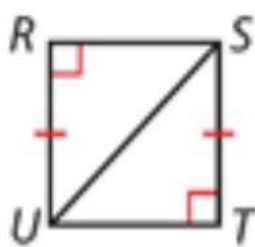
Test 3: Proving Triangles Congruent (ch. 5)

For #41 – 49: Determine which postulate/theorem (if any) can be used to prove the given triangles congruent. Explain. Give a congruence statement, if applicable.

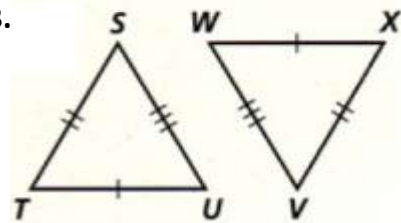
41.

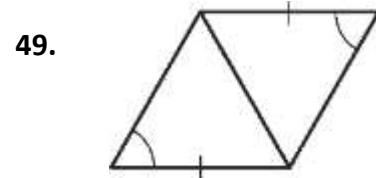
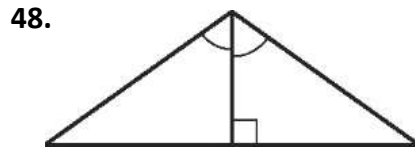
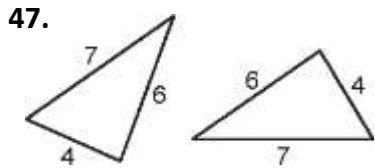
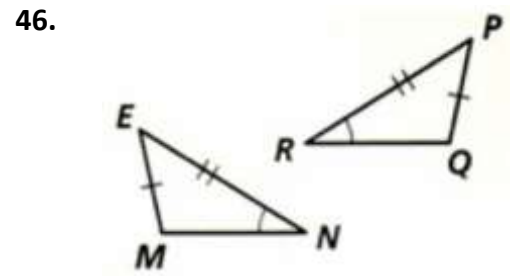
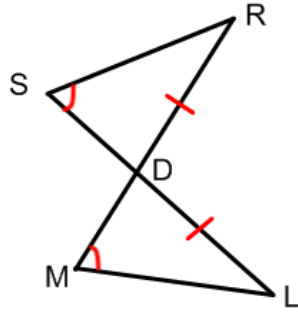
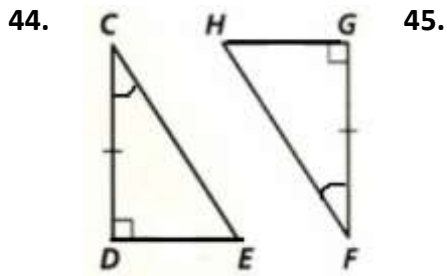


42.

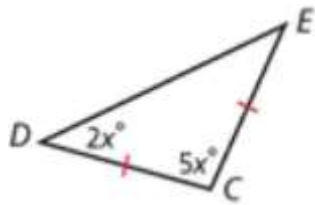


43.

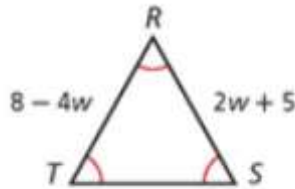




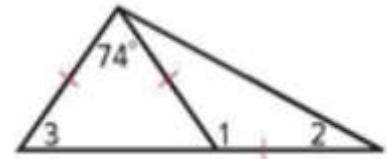
50. Find x .



51. Find w .

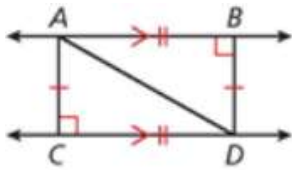


52. Find $m\angle 3$, $m\angle 1$, and $m\angle 2$.



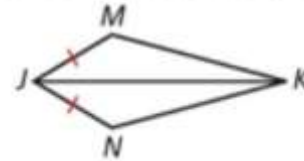
53. Write a two-column proof.

Given: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, $\overline{AB} \cong \overline{CD}$, $\overline{AC} \cong \overline{BD}$,
 $\overline{AC} \perp \overline{CD}$, $\overline{DB} \perp \overline{AB}$
 Prove: $\triangle ACD \cong \triangle DBA$



54. Write a two-column proof.

Given: \overline{JK} bisects $\angle MJN$. $\overline{MJ} \cong \overline{NJ}$
 Prove: $\triangle MJK \cong \triangle NJK$



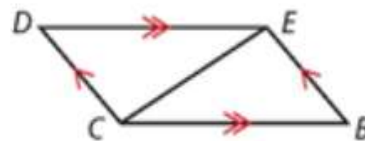
55. Write a two-column proof.

Given: $\overline{PQ} \cong \overline{RQ}$,
 $\overline{PS} \cong \overline{RS}$
 Prove: \overline{QS} bisects $\angle PQR$.

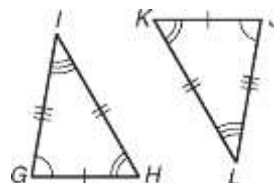


56. Write a two-column proof.

Given: $\overline{CD} \parallel \overline{BE}$, $\overline{DE} \parallel \overline{CB}$
 Prove: $\angle D \cong \angle B$

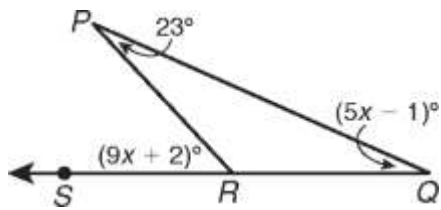


57. Name all of the corresponding parts if $\triangle GHI$ and $\triangle JKL$.

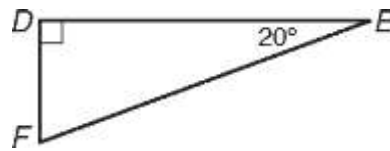


Find the measure of each angle. Write the theorem that supports your answer.

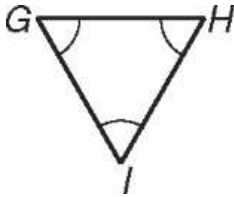
58.



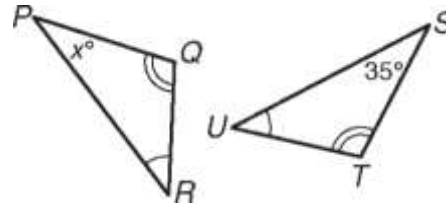
59.



60.



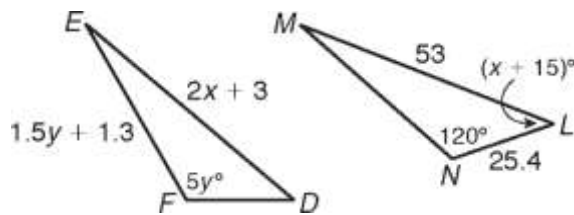
61.



62. Given: $\triangle DEF \cong \triangle LMN$. Find each value.

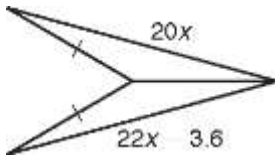
a) $m\angle L$

b) EF

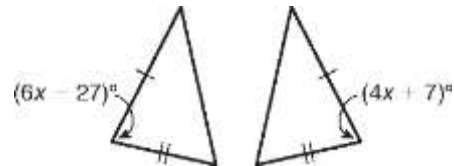


Find the value of x so that the triangles are congruent.

63.



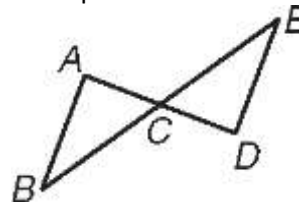
64.



65. The Hatfield and McCoy families are feuding over some land. Neither family will be satisfied unless the two triangular fields are exactly the same size. You know that C is the midpoint of each of the intersecting segments. Write a two-column proof that will settle the dispute.

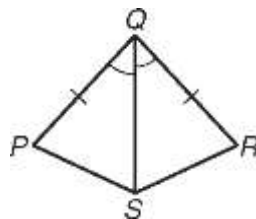
Given: C is the midpoint of \overline{AD} and \overline{BE} .

Prove: $\triangle ABC \cong \triangle DEC$



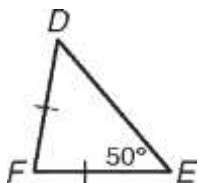
66. **Given:** $\overline{PQ} \cong \overline{RQ}$, $\angle PQS \cong \angle RQS$

Prove: $\angle P \cong \angle R$

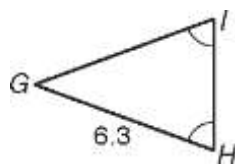


For 67 – 72: Find each value.

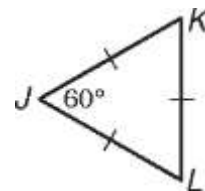
67. angle D



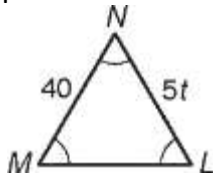
68. GI



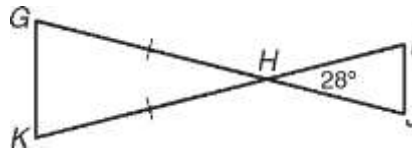
69. angle L



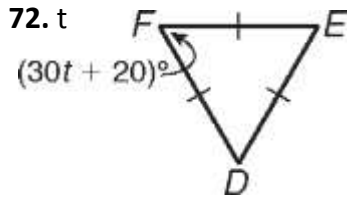
70. T



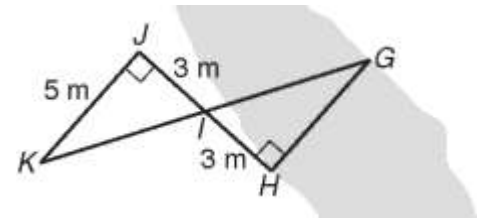
71. angle K



72. t



73. Some hikers come to a river in the woods. They want to cross the river but decide to find out how wide it is first. So they set up congruent right triangles. The figure shows the river and the triangles. Find the width of the river, GH , and give your reasoning.



74. Identify and describe each of the following transformations according to their rules. Then tell whether or not the transformation is an isometry.

a) $M: (x, y) \rightarrow (x - 2, y + 3)$

b) $M: (x, y) \rightarrow (-x, y)$

c) $M: (x, y) \rightarrow (-y, x)$

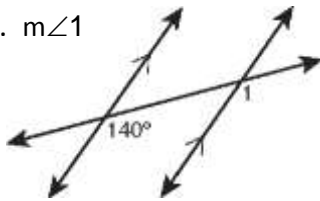
d) $M: (x, y) \rightarrow (3x, 3y)$

75. Draw the following polygon on a piece of graph paper: A (2, 3), B(-2, 5), C(-3, 0), D(1, -3), and E(4, -1). Then, translate the polygon 5 units down and 2 units right to get image 1. Next, reflect the polygon over the x-axis to get image 2. Finally rotate the polygon 180° to get image 3. Make sure to label all points appropriately.

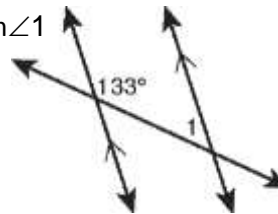
Test 2: Proving Theorems about Lines and Angles (ch. 3 and 4)

Find each angle measure. Write the theorem that justifies how you found your answer.

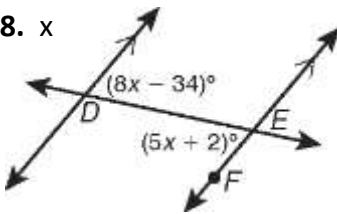
76. $m\angle 1$



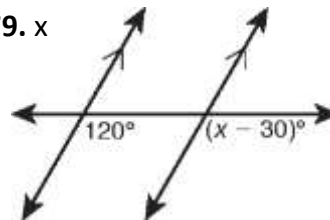
77. $m\angle 1$



78. x



79. x



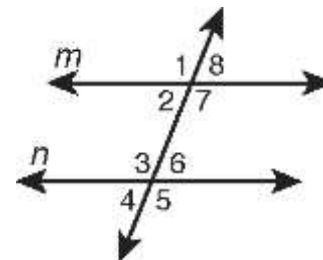
80. Use the figure for the following questions. Tell whether lines m and n must be parallel from the given information. If they are, state your reasoning.

a) $\angle 7 \cong \angle 5$

b) $\angle 7 \cong \angle 6$

c) $\angle 1 \cong \angle 5$

d) $\angle 2 \cong \angle 8$

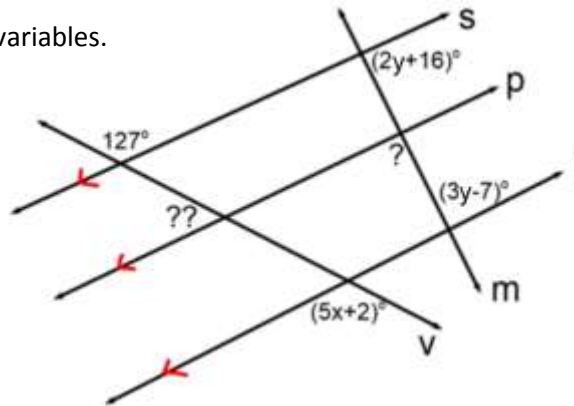


81. Segment Constructions: (a) Draw a line segment label the endpoints F and G. Construct the perpendicular bisector. (b) Draw a line segment label the endpoints K and L. Construct a congruent segment labeled M and N.

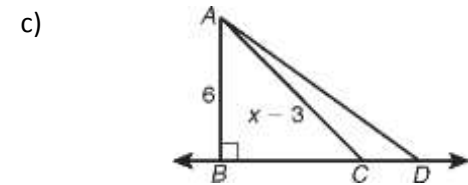
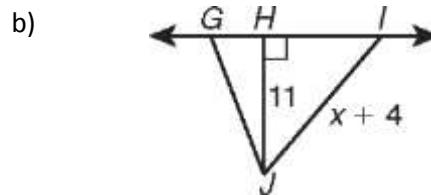
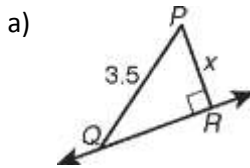
82. Angle Constructions: (a) Draw an angle label it A. Construct the angle bisector. (b) Draw an angle, label B. Construct a congruent angle to B and label it C.

83. Draw line m . Construct a line parallel to line m .

84. Solve for x, y and the missing variables.

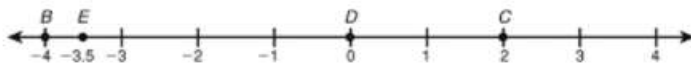


85. Name the shortest segment from the point to the line and write an inequality for x .



Test 1: Tools of Geometry/Algebraic & Geometric Proofs (ch. 1 and 2)

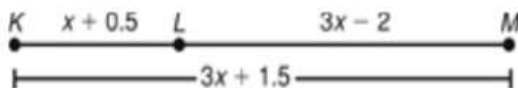
86. Find the length of the segment EC, BD, BE using the Ruler Postulate.



87. T is in the interior of $\angle PQR$. Find x .

$m\angle PQR = (10x - 7)^\circ$, $m\angle RQT = 5x^\circ$, and $m\angle PQT = (4x + 6)^\circ$

88. Find LM.

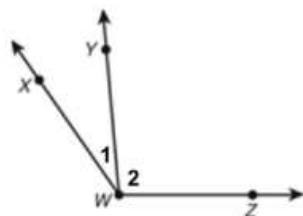


89. \overline{GJ} bisects $\angle FGH$, $m\angle FGJ = (7x - 9)^\circ$, and $m\angle HGJ = (2x + 36)^\circ$. What is $m\angle FGH$?

90. H is the midpoint of IJ . $IJ = 9.4$. Find IH .

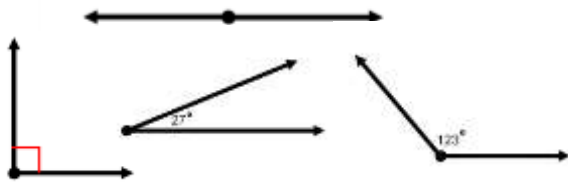
91. What is the next letter in the sequence? D, H, L, P, ...

92. Name each of the angles in as many ways as possible.



93. Complete the conjecture. Provide at least three examples. The square of any negative number is _____.

94. Classify each angle below.



95. Show that each conjecture is false by finding a counterexample.

For any number n , $2n > n$.

96. Using the conditional below: Negate the conditional statement, then write the converse and the inverse.

"If a figure has four sides, then it is a square."

97. Use the indicated property to complete each statement.

- a) Reflexive Property of Congruence: $9 - 2x =$ _____
- b) Division Property of Equality: If $5x = 30$, then _____.
- c) Symmetric Property of Equality: If $x = -2$, then _____.
- d) Transitive Property of Congruence: $\angle A \cong \angle B$ and $\angle B \cong \angle C$, so _____.

98. Name the property that justifies each of the following statements.

- a) $3 - x = 3 - x$
- b) If $x = -2$, then $-2 = x$
- c) If $x - 2 = 2$, then $x = 4$
- d) $\overline{EF} \cong \overline{EF}$
- e) If $a = 2$, and $2 = p$, then $a = p$
- f) If $3x = 12$, then $x = 4$
- g) If $x + 2 = 6$, then $x = 4$
- h) If $3(x - 9)$, then $3x - 27$
- i) If $a = 2$, then 2 can be plugged in for a in any expression
- j) $\angle A \cong \angle B$ and $\angle B \cong \angle C$, so $\angle A \cong \angle C$.
- k) $\angle 1 \cong \angle 2$, so $\angle 2 \cong \angle 1$.
- l) If $a = b$, then $a - c = b - c$
- m) If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$

99. Solve the following equations. Show all your steps and write a justification for each step.

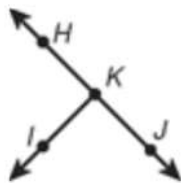
- a) $\frac{2}{5}(m + 10) = -4$
- b) $4y - 1 = 27$
- c) $60 = 2(x + 12)$

100. Write a two-column proof for the problem below.

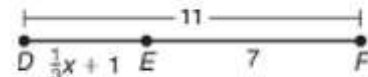
Given: $\angle HKJ$ is a straight angle.

\overline{KI} bisects $\angle HKJ$.

Prove: $\angle IKJ$ is a right angle.



101. Complete the following algebraic proof.

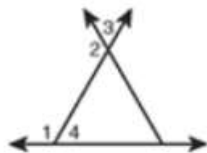


$$\begin{aligned}
 DE + EF &= DF && \underline{\hspace{2cm}} \\
 \left(\frac{1}{3}x + 1\right) + 7 &= 11 && \underline{\hspace{2cm}} \\
 \frac{1}{3}x + 8 &= 11 && \underline{\hspace{2cm}} \\
 \frac{1}{3}x &= 3 && \underline{\hspace{2cm}} \\
 x &= 9 && \underline{\hspace{2cm}}
 \end{aligned}$$

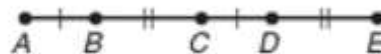
102. Write a two-column proof for the problem below.

Given: $\angle 4 \cong \angle 3$

Prove: $m\angle 1 = m\angle 2$



103. Write a two-column proof for the problem below.



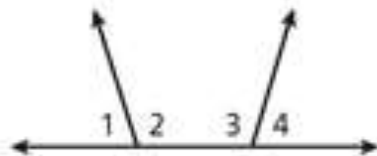
Given: $AB = CD, BC = DE$

Prove: C is the midpoint of \overline{AE} .

104. Write a two-column proof for the problem below.

Given: $m\angle 1 + m\angle 3 = 180^\circ$

Prove: $\angle 1 \cong \angle 4$

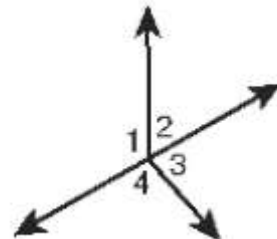


105. Use the given plan to write a two-column proof.

Given: $\angle 1$ and $\angle 2$ form a linear pair, and $\angle 3$ and $\angle 4$ form a linear pair.

Prove: $m\angle 1 + m\angle 2 + m\angle 3 + m\angle 4 = 360^\circ$

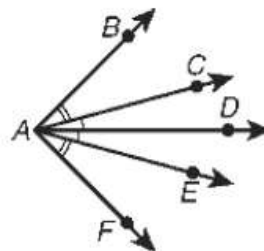
Plan: The Linear Pair Theorem shows that $\angle 1$ and $\angle 2$ are supplementary and $\angle 3$ and $\angle 4$ are supplementary. The definition of supplementary says that $m\angle 1 + m\angle 2 = 180^\circ$ and $m\angle 3 + m\angle 4 = 180^\circ$. Use the Addition Property of Equality to make the conclusion.



106. Write a two-column proof for the problem below.

Given: $m\angle BAC = m\angle EAF, m\angle CAD = m\angle DAE$

Prove: $m\angle BAD = m\angle DAF$



107. Miguel breaks a 17-centimeter-long pencil into two pieces. One of the pieces is 9 centimeters long. Use the given paragraph proof to complete the two-column proof showing that the other piece is 8 centimeters long.

Given: $AC = 17, AB = 9$

Prove: $BC = 8$

