

Name: _____ Hour: _____

Geometry CP - Midterm Exam Review

- **Be Organized.** Successful studying begins with getting organized. Bring this packet with you to class every day. Gather up all of your old quiz and test reviews and USE THEM to help when you get stuck on a problem.

- **Attempt all assigned problems.** We have learned all of the content necessary to complete this review. If you don't remember how to do something, use your resources to help!

  What if you don't know how to start/complete a problem?
  - *Draw & label a picture using the given info and key words.*
  - *Look back in your notes for definitions, formulas, or theorems you can use to help.*
  - *Look back at your quiz/test reviews for similar problems. How did you get started/what did you look for there?*

- **Stay on schedule.** Do the problems that are assigned every night and check your answers. Come to class prepared to ask about any questions you have.

- **Highlight/Make notes as you work.** Identify key…
  formulas definitions theorems diagrams questions

- **Take this seriously.** The grade you earn on this exam is worth *20% of your semester grade*.

Date Assigned **DUE: the next school day**	**Assignment**	☑
Friday, January 9	**Ch. 4**: ALL problems	
Monday, January 12	**Ch. 6**: ODDS	
Tuesday, January 13	**Ch. 3**: All problems	
Wednesday, January 14	**Ch. 1**: ODDS	
Thursday, January 15	**Ch. 2**: All problems	
Friday, January 16	Study for your exam! Review problems you got wrong, key terms/ideas from each chapter, complete the **optional Ch. 5 Review** and/or extra problems that were not assigned.	

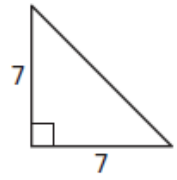
Exam Schedule

Monday, Jan. 19	Tuesday, Jan. 20	Wednesday, Jan. 21	Thursday, Jan. 22	Friday, Jan. 23
No School MLK Day	Midterm Exams Hours 1 & 2	Midterm Exams Hours 4 & 5	Midterm Exams Hours 6 & 7	Midterm Exam Hour 3

Chapter 4 Midterm Review

Classify the triangle by its angles AND sides. Circle the "most specific" one from each!

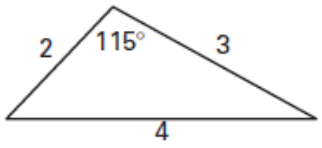
1.



Sides: Equil. Isos. Scal.

Angles: Acute Obtuse Right Equiangular

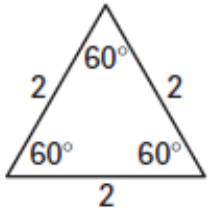
2.



Sides: Equil. Isos. Scal.

Angles: Acute Obtuse Right Equiangular

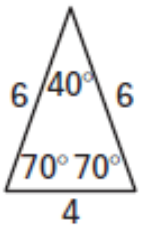
3.



Sides: Equil. Isos. Scal.

Angles: Acute Obtuse Right Equiangular

4.

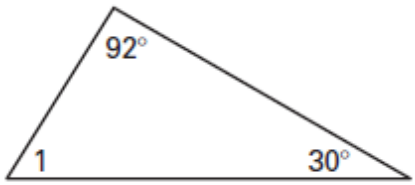


Sides: Equil. Isos. Scal.

Angles: Acute Obtuse Right Equiangular

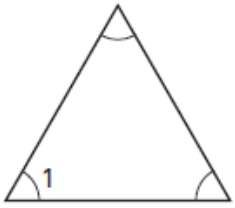
Find the measure of each angle.

5.



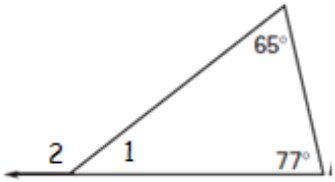
$m\angle 1 =$ _____

6.



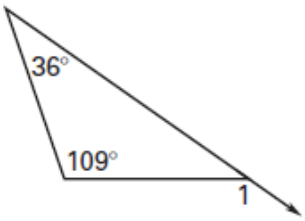
$m\angle 1 =$ _____

7.



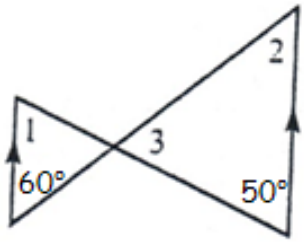
$m\angle 1 =$ _____ $m\angle 2 =$ _____

8.



$m\angle 1 =$ _____

9.

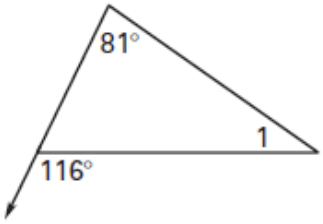


$m\angle 1 =$ _____

$m\angle 2 =$ _____

$m\angle 3 =$ _____

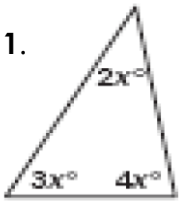
10.



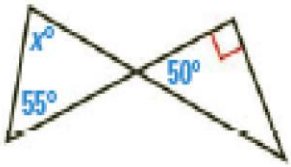
$m\angle 1 =$ _____

Find the value of x.

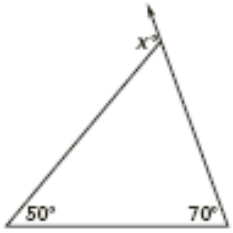
11.



12.



13.



14. Find the measure of each of the missing angles.

a. $m\angle 4$

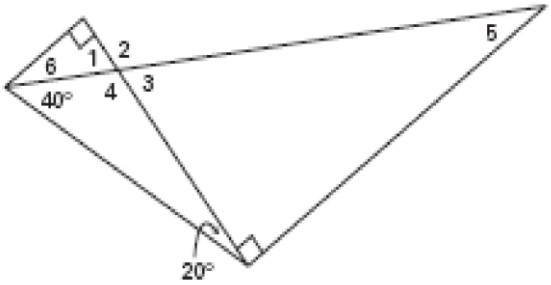
b. $m\angle 2$

c. $m\angle 3$

d. $m\angle 1$

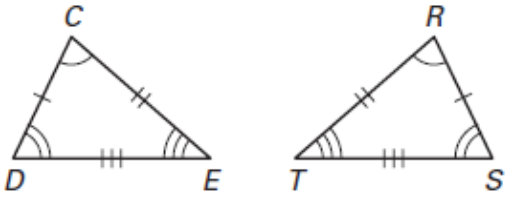
e. $m\angle 6$

f. $m\angle 5$



Study the <u>picture</u> to name all the <u>pairs</u> of corresponding sides and angles. Order of the letters matters! Then state the congruence statement.

15.

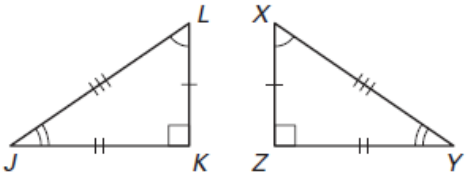


$\overline{CD} \cong$ _____ $\overline{CE} \cong$ _____ $\overline{DE} \cong$ _____

$\angle D \cong$ _____ $\angle C \cong$ _____ $\angle E \cong$ _____

$\Delta DEC \cong$ _____

16.



$\overline{JL} \cong$ _____ $\overline{LK} \cong$ _____ $\overline{JK} \cong$ _____

$\angle J \cong$ _____ $\angle L \cong$ _____ $\angle K \cong$ _____

$\Delta YXZ \cong$ _____

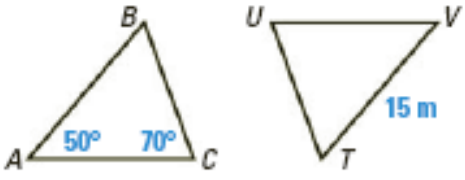
In the diagram, $\Delta ABC \cong \Delta VTU$. Fill in the blanks.

17. $\angle B \cong$ ___ and $m\angle B =$ _____

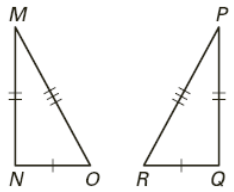
18. $AB =$ _____ and $\overline{AB} \cong$ ____

19. $m\angle T =$ ___ and $\angle T \cong$____

20. $m\angle V =$ ____ and $\angle V \cong$ ___

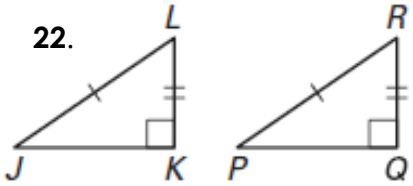


Name the property which could be used to show the triangles are congruent. Don't forget to mark "free" sides and angles! Fill in the congruence statement where indicated. Choices are: SSS, SAS, ASA, AAS, HL or none.

21. 

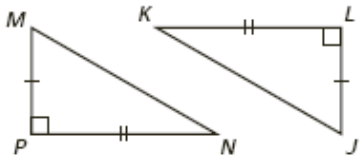
Property _____

$\Delta MNO \cong$ _____

22. 

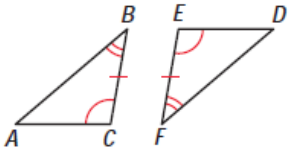
Property _____

$\Delta QRP \cong$ _____

23. 

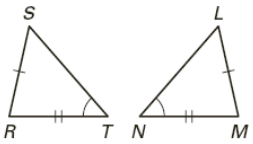
Property _____

$\Delta NPM \cong$ _____

24. 

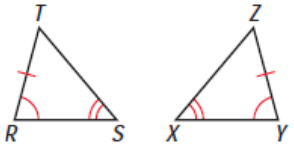
Property _____

$\Delta ACB \cong$ _____

25. 

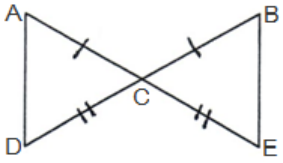
Property _____

$\Delta SRT \cong$ _____

26. 

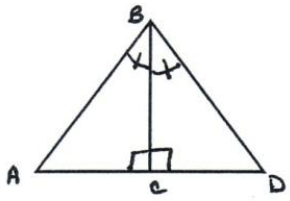
Property _____

$\Delta YZX \cong$ _____

27. 

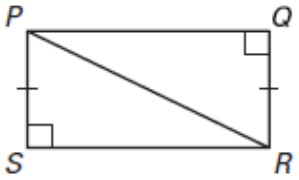
Property _____

$\Delta ACD \cong$ _____

28. 

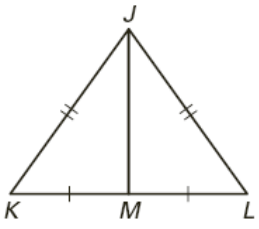
Property _____

$\Delta CDB \cong$ _____

29. 

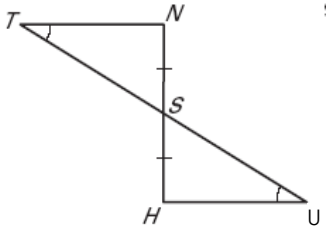
Property _____

$\Delta QPR \cong$ _____

30. 

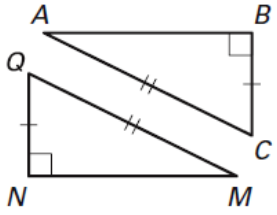
Property _____

$\Delta MJK \cong$ _____

31. 

Property _____

$\Delta NST \cong$ _____

32. 

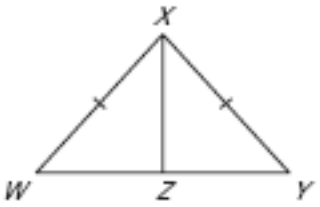
Property _____

$\Delta CAB \cong$ _____

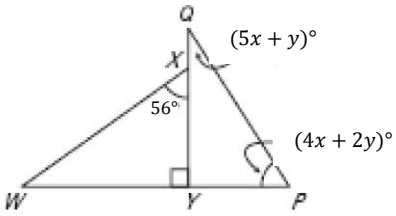
In #33, you need to use the given information to <u>explain why</u> the triangles are congruent.

- **Your diagram should include congruent markings.**
- **Your explanation should include more than just one property/reason.**

33. If $\overline{WX} \cong \overline{YX}$, Z is the midpoint of $\overline{WY}$, then $\Delta WXZ \cong \Delta YXZ$

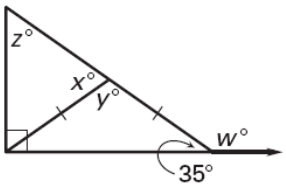


34. Find the values of x and y.

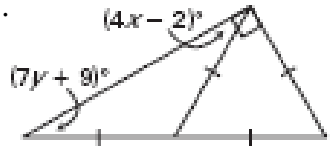


Find the value of each variable.

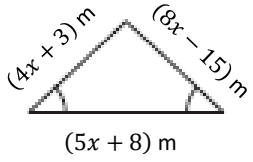
35.



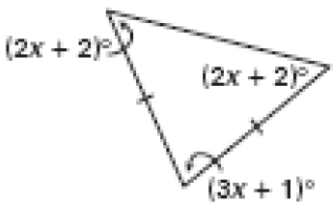
36.



37.



38.



Chapter 6 Midterm Review

Simplify the ratio.

1. 27 ft: 9 ft

2. $\frac{7\ m}{21\ cm}$

3. 9 months: 5 years

4. The area of a rectangle is $294\ yd^2$. The ratio of the length to the width of the rectangle is 3: 2. Find the length and the width of the rectangle.

5. The perimeter of a rectangle is 280 cm. The ratio of the length to the width of the rectangle is 11: 9. Find the length and the width of the rectangle.

Solve the following proportions.

6. $\frac{x}{16} = \frac{24}{12}$

7. $\frac{3}{11} = \frac{27}{x}$

8. $\frac{20}{6x-1} = \frac{8}{14}$

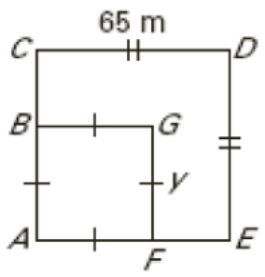
9. $\frac{19}{32} = \frac{7d+3}{15d-11}$

10. $\frac{x}{111} = \frac{5x-28}{333}$

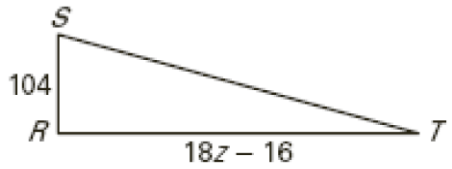
11. $\frac{4x}{6x+4} = \frac{x}{25}$

Use the given ratio and information in the figure to find the value of the variable.

12. $\frac{CD}{AB} = \frac{5}{3}$



13. $\frac{RS}{RT} = \frac{13}{25}$

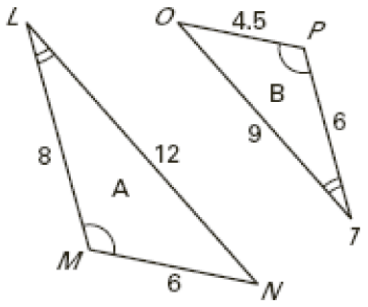


Find the exact geometric mean of the following numbers.

14. 7 and 28 **15**. 4 and 12 **16**. 15 and 45

Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor of Figure A to Figure B.

17.



In the diagram at the right, quadrilateral BCDE~WXYZ

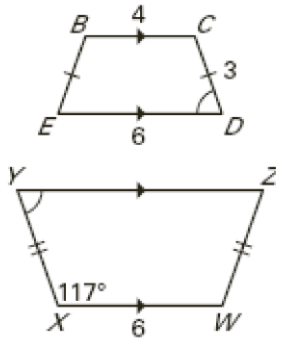
18. **a**. Find the scale factor of quad. $BCDE$ to quad. $WXYZ$

b. Find the scale factor of quad $WXYZ$ to quad. $BCDE$

c. Find XY

d. Find $m\angle C$

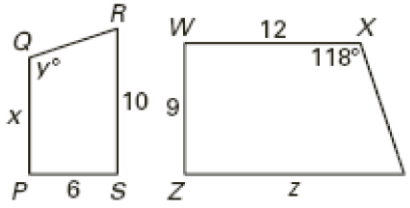
e. Find the perimeter of quad. $WXYZ$



In the diagram, $PQRS \sim WXYZ$.

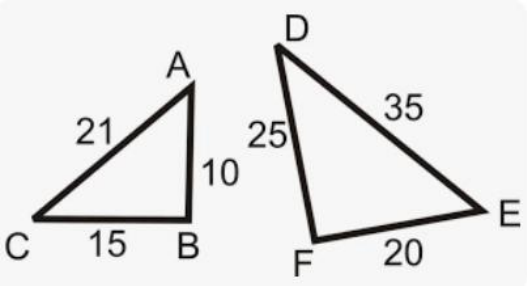
19. **a**. Find the scale factor of $PQRS$ to $WXYZ$

b. Find the values of x, y and z



In 20-29, Determine whether the triangles are similar using AA, SAS or SSS Similarity. If they are similar, explain specifically why they are [what evidence is there in the picture to say they are!], and write a similarity statement. If they are not similar, circle "no," write "none" in the similarity statement and still explain WHY they are NOT similar. Don't forget when comparing sides to use sides that "go together…" for example, the smaller side of one triangle to the smaller side of the other!

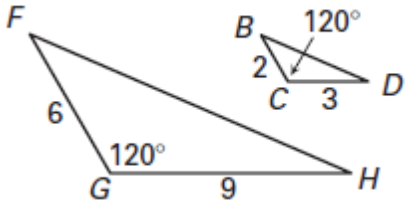
20.



Similar? Yes No $\Delta EDF \sim$ _____

Why?

21.

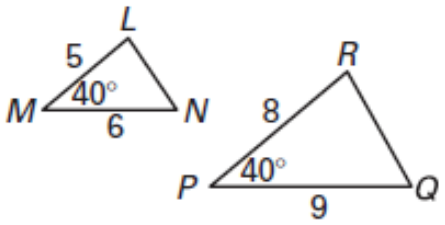


Similar? Yes No $\Delta DBC \sim$ _____

Why?

.

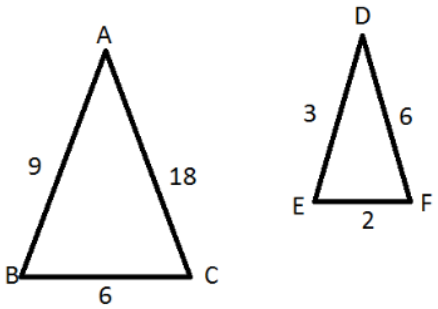
22.



Similar? Yes No $\Delta LNM \sim$ _____

Why?

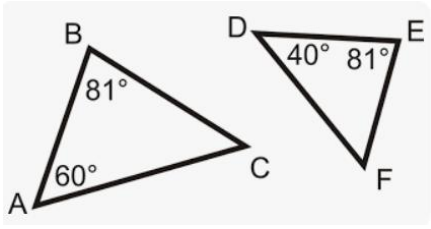
23.



Similar? Yes No $\Delta CBA \sim$ _____

Why?

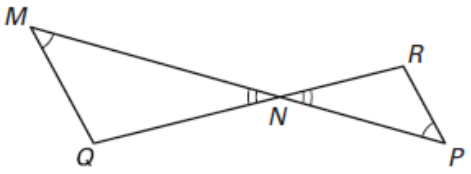
24.



Similar? Yes No $\Delta BAC \sim$ _____

Why?

25.

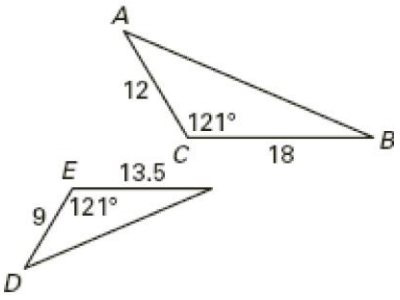


Similar? Yes No $\Delta NPR \sim$ _____

Why?

In 20-29, Determine whether the triangles are similar using AA, SAS or SSS Similarity. If they are similar, explain specifically why they are [what evidence is there in the picture to say they are!], and write a similarity statement. If they are not similar, circle "no," write "none" in the similarity statement and still explain WHY they are NOT similar. Don't forget when comparing sides to use sides that "go together…" for example, the smaller side of one triangle to the smaller side of the other!

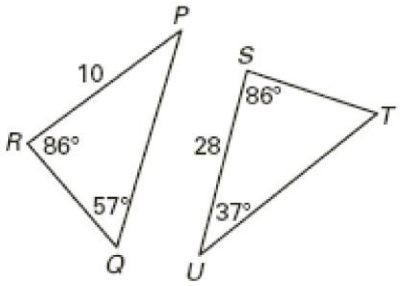
26.



Similar? Yes No $\Delta BAC \sim$ _____

Why?

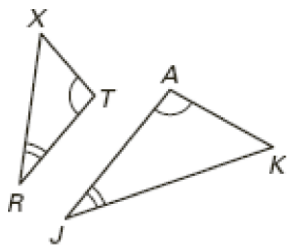
27.



Similar? Yes No $\Delta QPR \sim$ _____

Why?

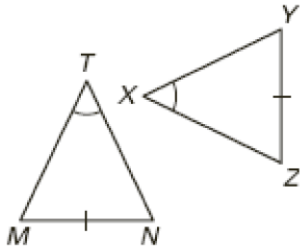
28.



Similar? Yes No $\Delta XTR \sim$ _____

Why?

29.

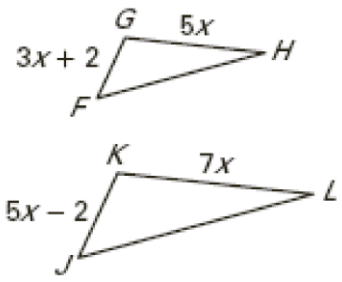


Similar? Yes No $\Delta MTN \sim$ _____

Why?

Find all possible values for x in the similar triangles.

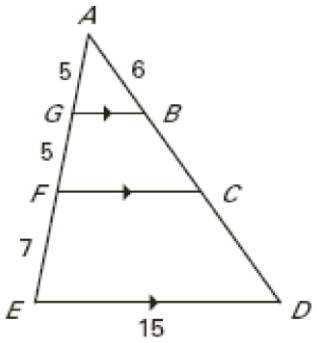
30. $\triangle FGH \sim \triangle JKL$



Determine the length of each segment. (Hint: you might need to draw separate triangles)

31. $\overline{BC}$

32. $\overline{FC}$

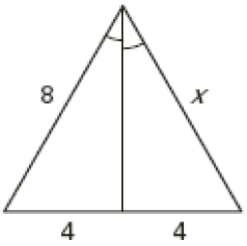


33. $\overline{GB}$

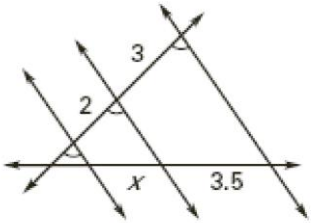
34. $\overline{CD}$

Find the value of x.

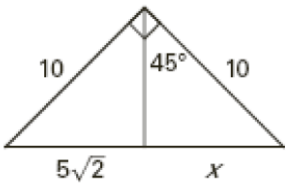
35.



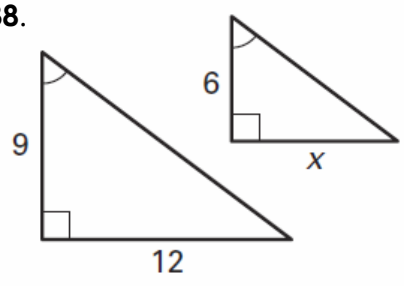
36.



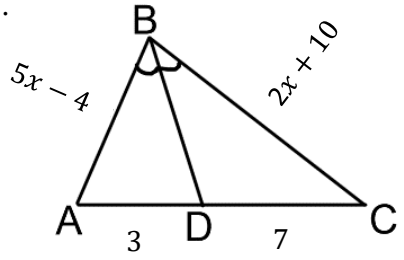
37.



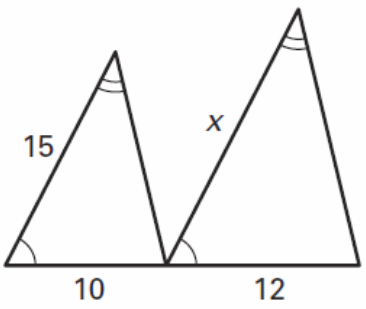
38.



39.

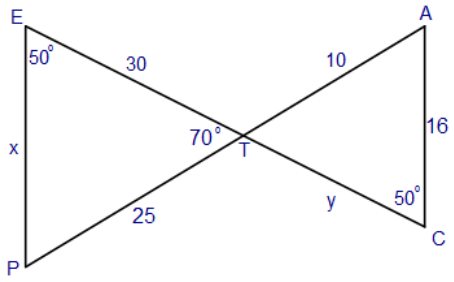


40.



Find the missing angles and set up proportions to find the missing side lengths for the similar triangles.

41.



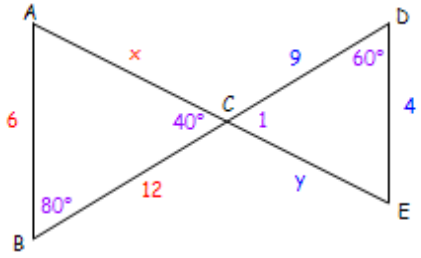
$\Delta PET \sim \Delta$_____

Proportion to find x:

Proportion to find y:

$m\angle P =$ _____ $m\angle ATC =$ _____ $m\angle A =$ _____

42.



$\Delta CAB \sim \Delta$_____

Proportion to find x:

Proportion to find y:

$m\angle 1 =$ _____ $m\angle A =$ _____ $m\angle E =$ _____

Chapter 3 Midterm Review

Determine whether the given figure shows parallel, perpendicular, or skew lines.

1.

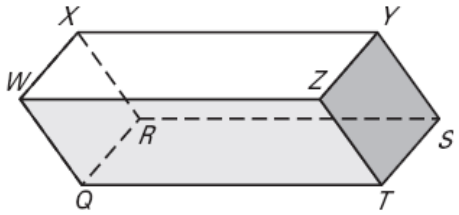


a.) The top of the fence & the basketball pole.

b.) The top of the fence & the fence posts.

c.) The fence posts & the basketball pole.

2. All angles shown are right angles.



a.) $\overline{XY}$ and $\overline{WZ}$ **b**.) $\overline{XY}$ and $\overline{ZT}$

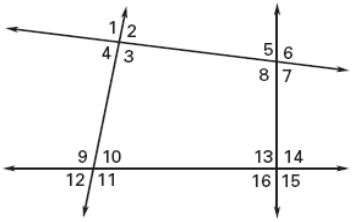
c.) $\overline{XY}$ and $\overline{YS}$ **d**.) $\overline{XY}$ and $\overline{QT}$

3. Classify the following pairs of angles: AIA, AEA, CA, SSI, Vertical Angles, Linear Pair or none.

a.) $\angle 1$ & $\angle 5$ **b**.) $\angle 1$ & $\angle 9$ **c**.) $\angle 1$ & $\angle 3$

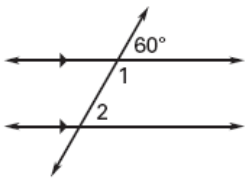
d.) $\angle 1$ & $\angle 4$ **e**.) $\angle 2$ & $\angle 8$ **f**.) $\angle 3$ & $\angle 8$

g.) $\angle 3$ & $\angle 9$ **h**.) $\angle 9$ & $\angle 15$ **i**.) $\angle 4$ & $\angle 9$

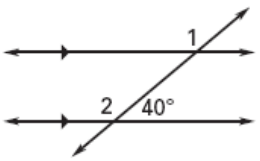


Find the measure of $\angle 1$ and $\angle 2$.

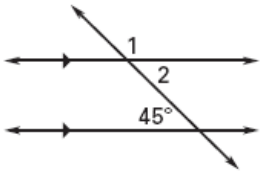
4.



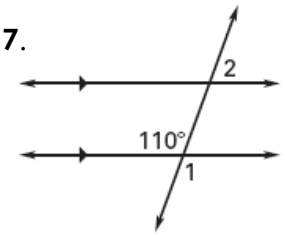
5.



6.

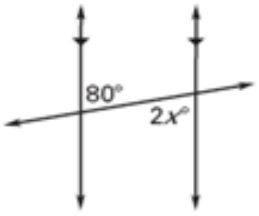


7.

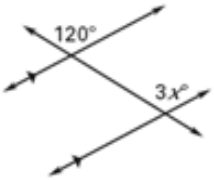


Find the value of x in each of the following diagrams.

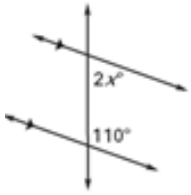
8.



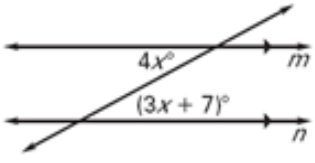
9.



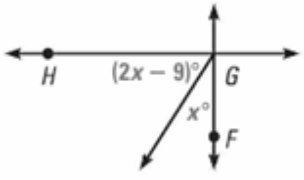
10.



11.

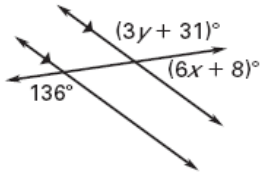


12. $\overleftrightarrow{FG} \perp \overleftrightarrow{GH}$

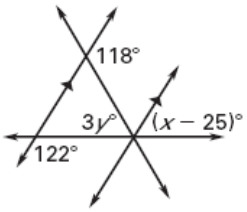


Find the values of x and y in each of the following diagrams.

13.

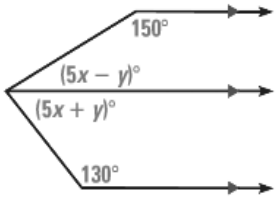


14.

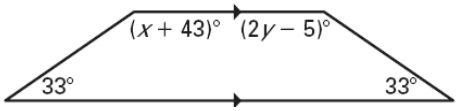


Find the values of x and y in each of the following diagrams

15.



16.



17. Determine which lines are parallel (if any) based on the given angle relationship.

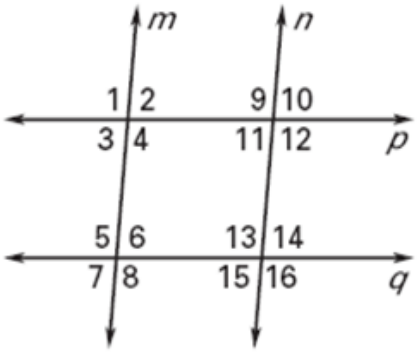
a. $\angle 1 \cong \angle 5$

b. $\angle 4 \cong \angle 9$

c. $\angle 6$ is supp. to $\angle 13$

d. $\angle 12$ is supp. to $\angle 14$

e. $\angle 10 \cong \angle 15$



Find the slope of the line that passes through the given points. (Remember slope = $\frac{y_2 - y_1}{x_2 - x_1}$)

18. $(2, 4)$ & $(8, 4)$

19. $(5, 0)$ & $(5, -4)$

Using slopes, determine if the lines are parallel, perpendicular, or neither. (Remember slope = $\frac{y_2 - y_1}{x_2 - x_1}$)

20. Line 1: $(1,1)$ & $(3,3)$
Line 2: $(2, 2)$ & $(0, 4)$

21. Line 1: $(-2, 3)$ & $(-5, 2)$
Line 2: $(4, 1)$ & $(5, 3)$

22. Line 1: $(-3, -2)$ & $(1, 2)$
Line 2: $(1, 3)$ & $(4, 6)$

Determine an equation for each line. (Remember: $y = mx + b$)

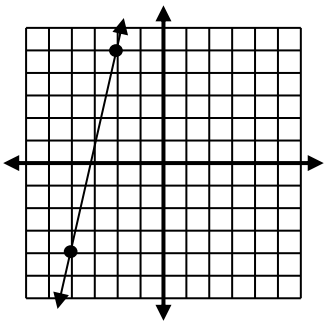
23. Passes through $(0, 4)$ with a slope of 2.

24. Passes through $(2,6)$ with a slope of -5.

25. Passes through $(2, 6)$ and $(4, 12)$.

26. Passes through $(2,6)$ & is perpendicular to $y = 2x + 9$.

27.

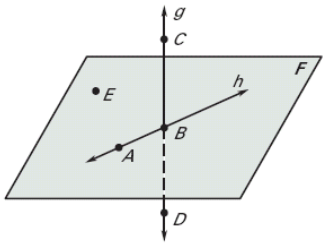


28. Passes through $(2, -3)$ that is parallel to $y = 6x + 4$.

29. $f(3) = 4,\ f(1) = -6$

Chapter 1 Midterm Review

Use the diagram, to complete the following.



1. Give two other names for $\overleftrightarrow{AB}$

2. Name three points that are collinear

3. Give another name for plane F

4. Name a point that is not coplanar with A, B, and C

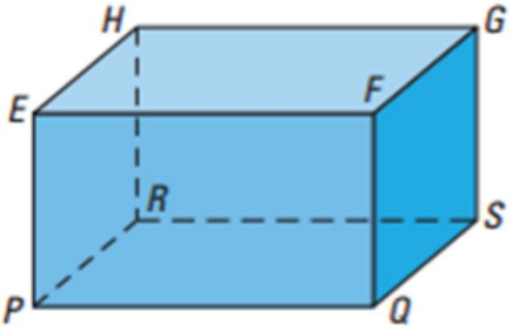
5. Give another name for $\overline{CD}$

6. Name three rays with endpoint B

7. Name a pair of opposite rays

8. Give another name for $\overrightarrow{CD}$

Use the diagram to complete the following.



9. Name the intersection of $\overleftrightarrow{PR}$ and $\overleftrightarrow{HR}$

10. Name the intersection of plane EFG and plane FGS

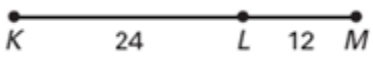
11. Name the intersection of plane PQS and plane HGS

12. Are points P, Q and F collinear? Are they coplanar?

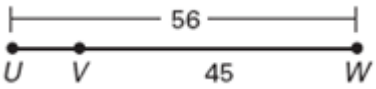
13. Are points P, E, G and S coplanar?

Find the indicated length.

14. Find KM



15. Find UV



Use the number line to find the indicated distance.



16. JK

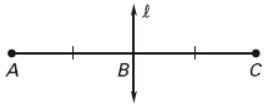
17. KL

18. LM

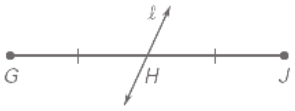
19. JL

Line l bisects the segment. Find the indicated length.

20. Find AC if $AB = 6$ cm.

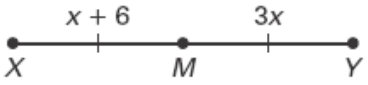


21. Find GJ if $HJ = 10$ cm.

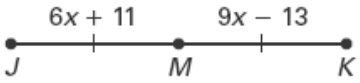


In each diagram, M is the midpoint of the segment. Find the indicated length.

22. Find XM



23. Find JK



Find the coordinate of the midpoint of the segment with the given endpoints.

24. $R(3,1)$ and $S(3,7)$

25. $V(2,4)$ and $W(6,6)$

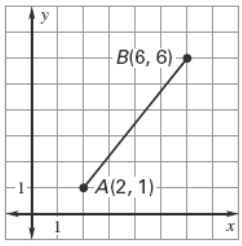
Use the given endpoint Y and MIDPOINT M of $\overline{YZ}$ to find the coordinates of the other endpoint Z.

26. Y $(0,5)$ and M $(3,3)$

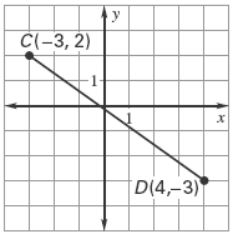
27. Y $(-1,-3)$ and M $(5,9)$

Find the EXACT length of the segment.

28.



29.

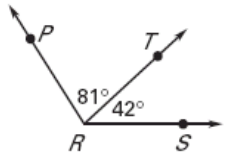


Classify the angle with the given measure as acute, right or obtuse.

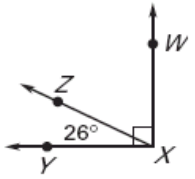
30. $m\angle A = 115°$ **31**. $m\angle A = 85°$ **32**. $m\angle A = 90°$ **33**. $m\angle A = 170°$

Find the indicated angle measure.

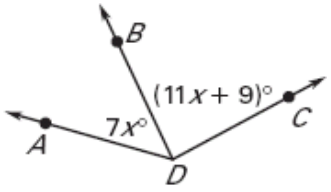
34. $m\angle PRS$



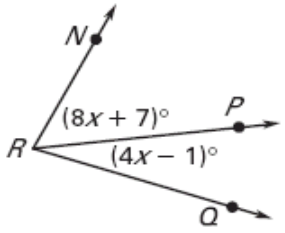
35. $m\angle WXZ$



36. Given $m\angle ADC = 135°$, find $m\angle BDC$

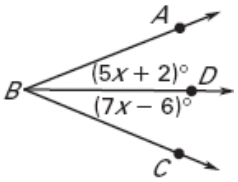


37. Given $m\angle NRQ = 78°$, find $m\angle PRQ$

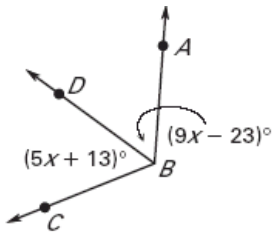


In each diagram below, $\overrightarrow{BD}$ bisects $\angle ABC$. Find $m\angle ABC$.

38.

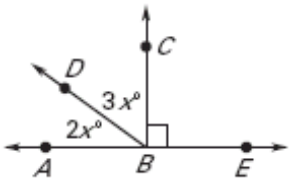


39.

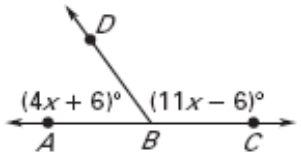


Find the $m\angle ABD$ and $m\angle DBC$.

40.

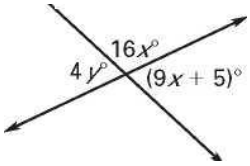


41.

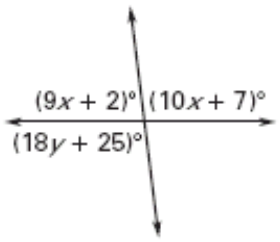


Find the values of x and y.

42.



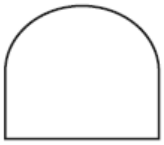
43.

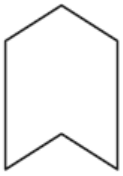


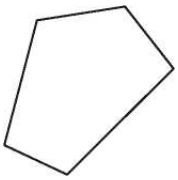
44. The measure of one angle is three times the measure of its complement. Find the measure of each angle.

45. The measure of one angle is 41° less than its supplement. Find the measure of each angle.

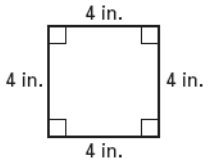
Tell whether each figure is a polygon, If it is not, explain why. If it is, tell whether it is convex or concave.

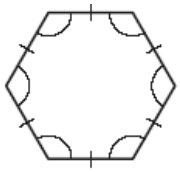
46. 

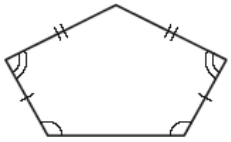
47. 

48. 

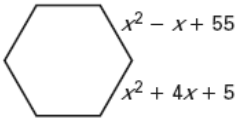
Classify the polygon by the number of sides. Tell whether the polygon is equilateral, equiangular or regular.

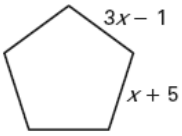
49. 

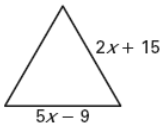
50. 

51. 

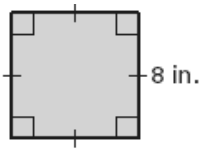
Each figure is a regular polygon. Find the value of x.

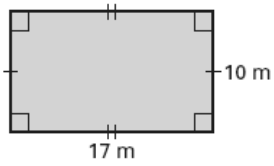
52. 

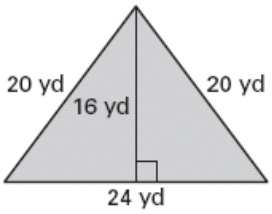
53. 

54. 

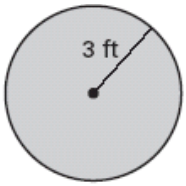
Find the perimeter AND the area of each figure.

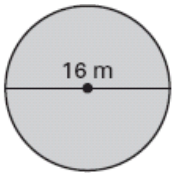
55. 

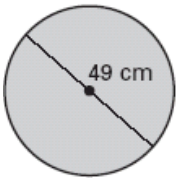
56. 

57. 

Find the EXACT circumference and area of the circle.

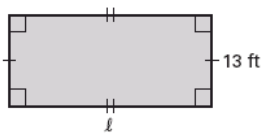
58. 

59. 

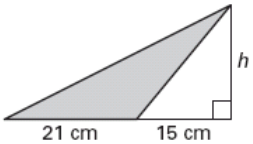
60. 

Use the information about the figure to find the indicated measure.

61. Perimeter = 84 ft ; find the length



62. Area = 189 sq. cm; find the height



Chapter 2 Midterm Review

Give the next 2 numbers in the sequence

1. $-3, 3, 9, 15, \ldots$ **2**. $21, 12, 3, -6, \ldots$ **3**. $1, 8, 27, 64, \ldots.$

Decide if the statement is true or false. If false, provide a counterexample.

4. The cube of a number is greater than the square

5. If $XY = YZ$, then Y is the midpoint of $\overline{XY}$

6. If two planes intersect, their intersection is a segment

7. Through any two points, there exists exactly one line

8. If two lines intersect, their intersection is a point

9. A line can be in more than one plane

Write the converse of each statement. Tell whether each is true or false.

10. If the measure of an angle is less than $90°$, then the angle is acute

Converse: _____

11. If two angles are supplementary, then they are adjacent

Converse: _____

12. If two rays share a vertex, then they are opposite rays

Converse: _____

For #13-15, use the Chain Rule to make a true statement.

13. If you like to study history, then you like to read books. If you like to read books, then you enjoy going to the library.

_____

For #13-15, use the Chain Rule to make a true statement.

14. If you can drive a car, then you must act responsibly. If you pass a driver's test, then you can drive a car.

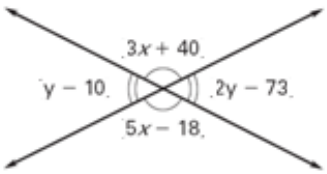
_____

15. If a triangle has a right angle, then it's a right triangle. If a polygon is a right triangle, then the two acute angles are complementary

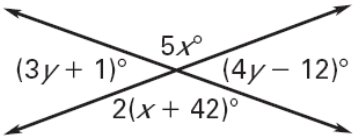
_____

Find the value of x and y in each problem

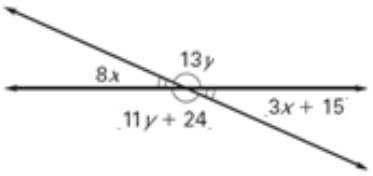
16.



17.



18.

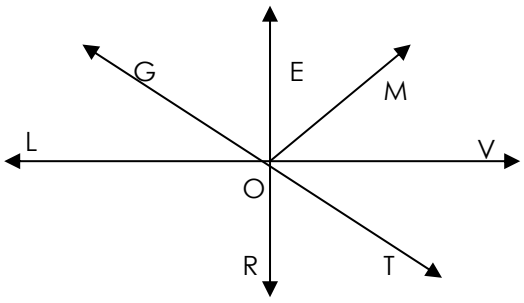


16. $x =$ _____ $y =$ _____ **17**. $x =$ _____ $y =$ _____ **18**. $x =$ _____ $y =$ _____

Given: $\overleftrightarrow{ER} \perp \overleftrightarrow{LV}$ and $\overleftrightarrow{OM} \perp \overleftrightarrow{TG}$ and $m\angle GOE = 47°$. Find the following:

19. $m\angle GOM$ =_____ **20**. $m\angle ROT$ =_____

21. $m\angle LOR$ =_____ **22**. $m\angle TOL$ =_____



Fill in the blank(s). Hint: look back at your vocab and/or **draw a picture** to help! Based on the given information, what can you conclude?

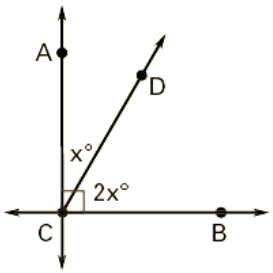
23. If B is the midpoint of $\overline{AC}$, then _____≅_____.

24. If $\overrightarrow{BD}$ bisects $\angle ABC$, then _____≅_____.

25. If two angles are _____ then they add up to $180°$.

26. Find the measure of NA if A is between N and V, $NV = 6x - 2$, $NA = 4x$ and $AV = 16$. Hint: Draw a diagram!

Use the diagram to determine whether each statement is true or false.

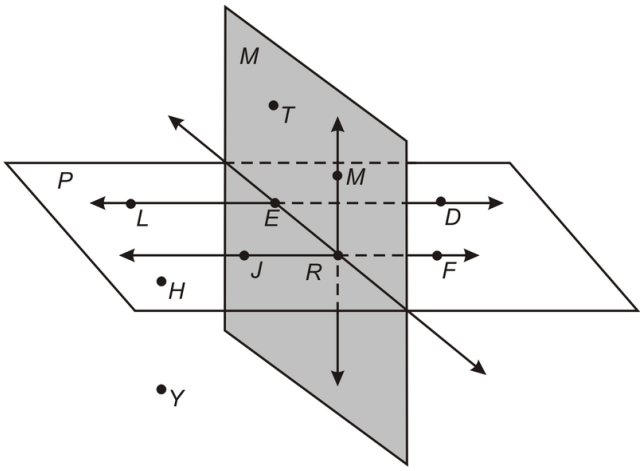


27. $\overleftrightarrow{AC}$ is perpendicular to $\overleftrightarrow{BC}$

28. $\angle ACD$ and $\angle DCB$ are complementary

29. $\overrightarrow{CD}$ bisects $\angle ACB$

Use the diagram to determine whether each statement is true or false.



30. $T, M,$ and F are collinear.

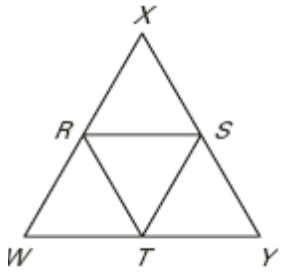
31. $L, E, J,$ and F are coplanar.

32. $\overline{MR} \cong \overline{JR}$.

33. Plane M is perpendicular to Plane P.

Chapter 5 Midterm Review

Use Δ WXY, where R, S, and T are midpoints of the sides.



1. $\overline{RS}$ // _____

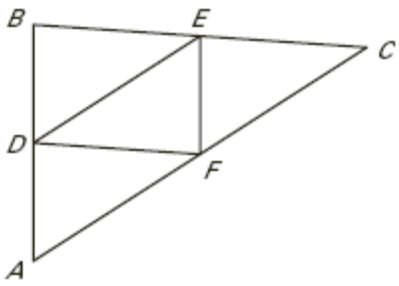
2. $\overline{ST}$ // _____

3. If $TY = 4$, then $RS =$ _____

4. If $RT = 7$, then $XY =$ _____

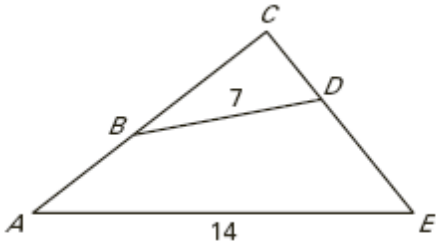
In 5-6, use the diagram of ΔABC where D, E, and F are the midpoints of the sides.

5. If $FE = 6.5x - 1$ and $AB = 3x + 20$, then $AB =$ _____



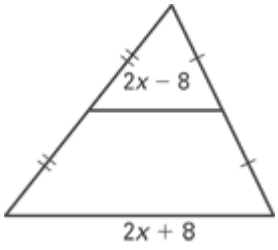
6. If $DF = 3.5\,x + 6$ and $BC = 3x + 36$, then $DF =$ _____

7. Explain why $\overline{BD}$ is not a midsegment of ΔACE.

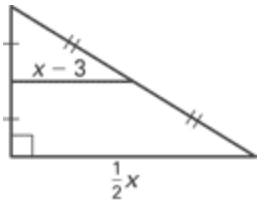


Find the value of x.

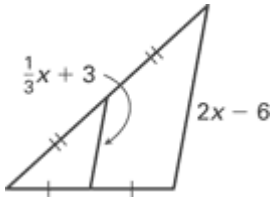
8.



9.

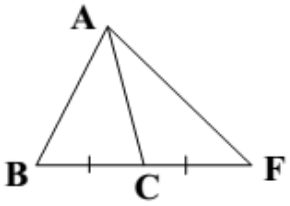


10.

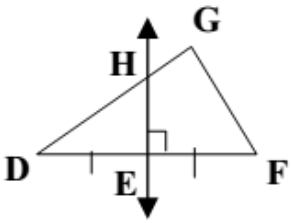


In #11-14, name the type of segment (perpendicular bisector, angle bisector, median, altitude).

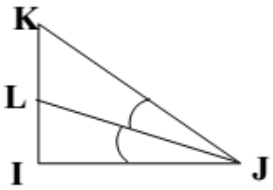
11. $\overline{AC}$



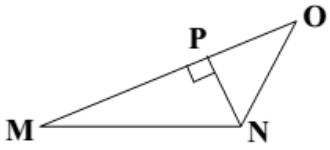
12. $\overline{HE}$



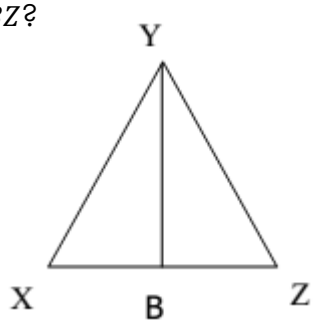
13. $\overline{JL}$



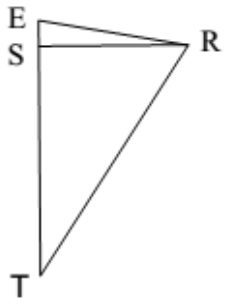
14. $\overline{PN}$



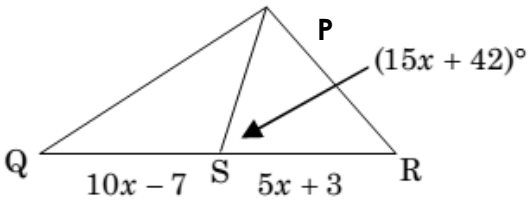
15. $\overline{YB}$ is an altitude of $\triangle XYZ$ and $m\angle YBZ = (6x - 6)°$. Find the value of x. What is the measure of $\angle YBZ$?



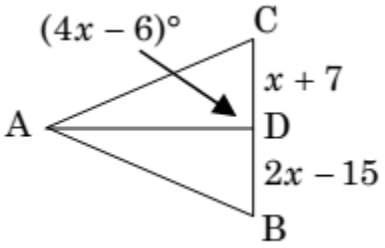
16. $\overline{RS}$ is an altitude of $\triangle RTE$, m $\angle SRT = (4x - 8)°$ and $m\angle STR = (6x + 13)°$. Find the value of x.



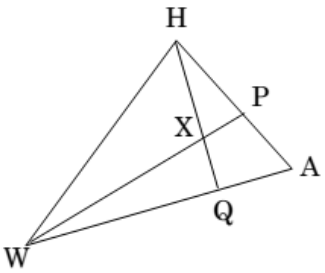
17. Find x and the measure of $\angle PSR$ if $\overline{PS}$ is a median.



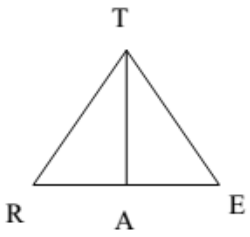
18. Find x, CD, and DB if $\overline{AD}$ is an alititude of $\triangle ABC$.



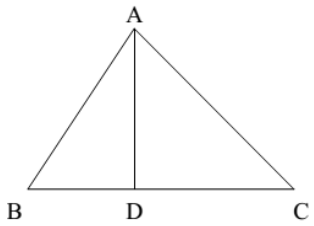
19. $\triangle WHA$, if $\overline{WP}$ is a median and an angle bisector, $AP = 3y + 11, PH = 7y - 5, m\angle HWP = x + 12$, $m\angle PAW = 3x - 2$, and $m\angle HWA = 4x - 16$, find x and y. Is $\overline{WP}$ also an altitude? Explain.



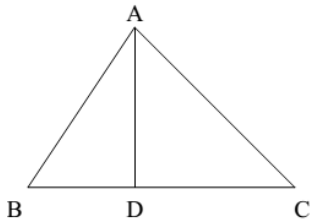
20. In $\triangle RTE$, $\overline{TA}$ bisects $\angle RTE$, $m\angle RTA = (3y - 4)°$ and $m\angle ETA = (4y - 17)°$. Find the measure of $\angle RTE$.



21. Given $\overline{AD}$ is a **<u>median</u>** of ΔABC, if $m\angle ADB = 2x + 9$, $BD = 6x^2 - 15x$ and $DC = 99$, find x.

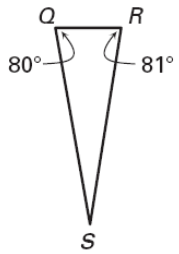


22. Given $\overline{AD}$ is an **altitude** of ΔABC, $BD = 4x - 2$, $DC = 2x + 8$, and $\angle ADC = 3x^2 + 7x + 14$. Find BC.

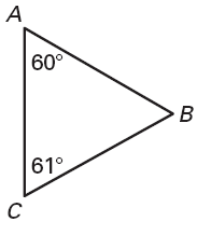


List the sides in order from smallest to largest.

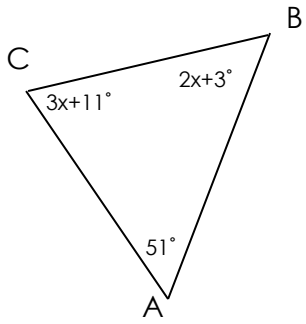
23.



24.



25.



26. Which of the following could be measures of the side lengths of a triangle? Circle all that will work.

(a) $2, 5, 7$ **(b)** $3, 3, 5$ **(c)** $7, 7, 15$ **(d)** $9, 11, 15$ **(e)** $6, 6, 5$