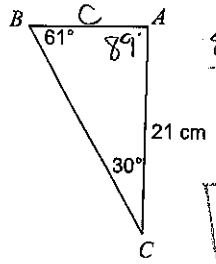
Geometry Name KEY

Ch. 6 Review

Date

Find each measurement indicated. Round your answers to the nearest tenth.

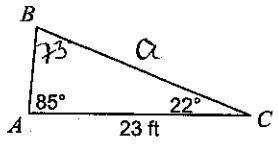
1) Find AB



$\frac{\sin 30}{c} = \frac{\sin 61}{21}$

$c = 12.01$ cm

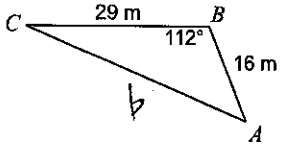
2) Find BC



$\frac{\sin 85}{a} = \frac{\sin 73}{23}$

$a = 23.96$ ft

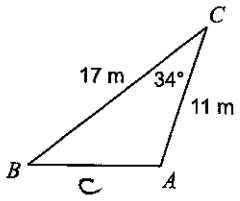
3) Find AC



$b^2 = 16^2 + 29^2 - 2(16)(29)\cdot\cos 112°$

$b = 38.01$ m

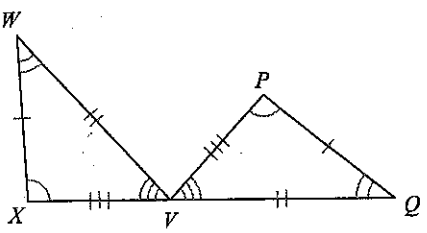
4) Find AB



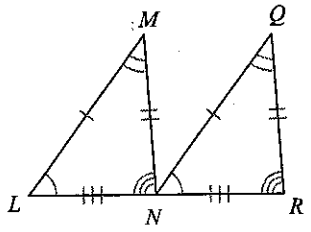
$c^2 = 11^2 + 17^2 - 2(11)(17)\cos 34$

$c = 9.997$ m

Write a statement that indicates that the triangles in each pair are congruent.

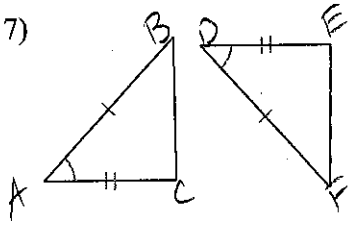
5) 

$\triangle WXV \cong \triangle QPV$

6) 

$\triangle LMN \cong \triangle NQR$

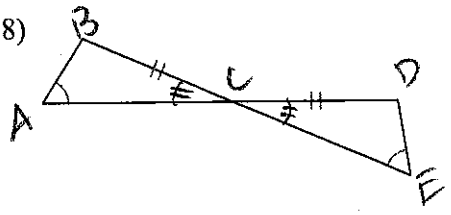
State if the two triangles are congruent. If they are, use a flowchart to justify.

7) 

$\angle A = \angle D$ $\quad AB = DF$ $\quad AC = DE$

$\triangle ABC \cong \triangle DFE$

SAS≅

8) 

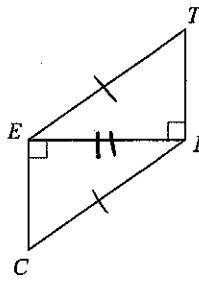
$\angle A = \angle E$ $\quad \angle ACB = \angle ECD$ $\quad BC = DC$

$\triangle ACB \cong \triangle ECD$

AAS≅

State what additional information is required in order to know that the triangles are congruent for the reason given.

9) HL



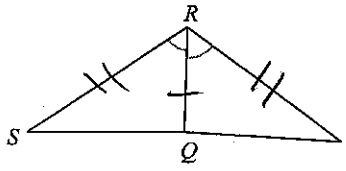
$ET = DC$

$ED = DE$

Shared side is "given."

10) SAS

$SR = FR$



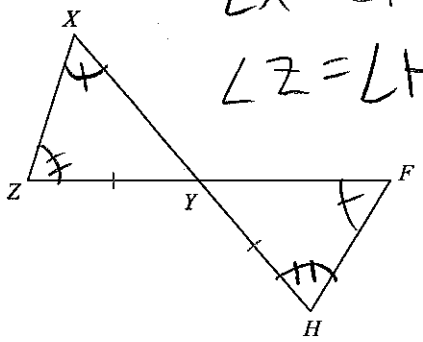
$RQ = RQ$

Shared side.

11) AAS

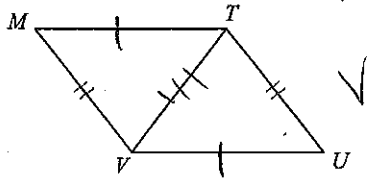
$LX = LF$

$LZ = LH$



12) SSS

$MT = UV$

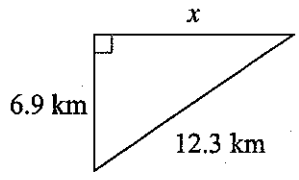


$VT = TV$

Shared side

Find the missing side of each triangle. Round your answers to the nearest tenth if necessary.

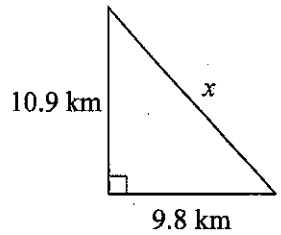
13)



$6.9^2 + x^2 = 12.3^2$

$x = 10.18$ km

14)

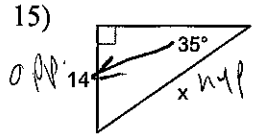


$10.9^2 + 9.8^2 = x^2$

$x = 14.66$ km

Find the missing side. Round to the nearest tenth.

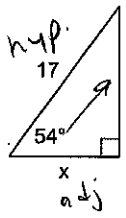
15)



$\frac{\sin 35}{1} = \frac{14}{x}$

$x = 24.41$

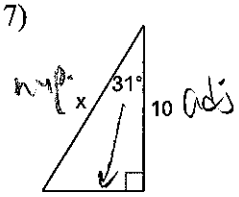
16)



$\frac{\cos 54}{1} = \frac{x}{17}$

$x = 9.992$

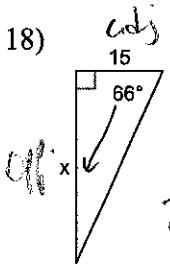
17)



$\frac{\cos 31}{1} = \frac{10}{x}$

$x = 11.67$

18)

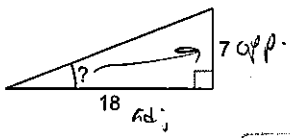


$\frac{\tan 66}{1} = \frac{x}{15}$

$x = 33.69$

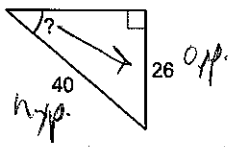
Find the measure of the indicated angle to the nearest degree.

19)



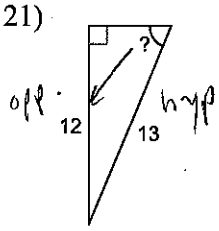
$\tan^{-1}\left(\frac{7}{18}\right) = 21.25° \approx 21°$

20)



$\sin^{-1}\left(\frac{26}{40}\right) = 40.54° \approx 41°$

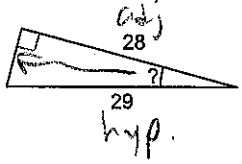
21)



$\sin^{-1}\left(\frac{12}{13}\right) = 67.38°$

$\approx 67°$

22)



$\cos^{-1}\left(\frac{28}{29}\right) = 15.09°$

$\approx 15°$

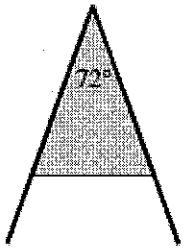
Ch. 7 Closure

WHAT HAVE I LEARNED?

Most of the problems in this section represent typical problems found in this chapter. They serve as a gauge for you. You can use them to determine which types of problems you can do well and which types of problems require further study and practice. Even if your teacher does not assign this section, it is a good idea to try these problems and find out for yourself what you know and what you still need to work on.

Solve each problem as completely as you can. The table at the end of the closure section has answers to these problems. It also tells you where you can find additional help and practice with problems like these.

CL 7-147. Julius set his hinged mirror so that its angle was 72° and the core region was isosceles, as shown below.



a. How many sides did his resulting polygon have? Show how you know.

If this shape is rotated around the center point, it would repeat 5 times. ($\frac{360}{72} = 5$.)

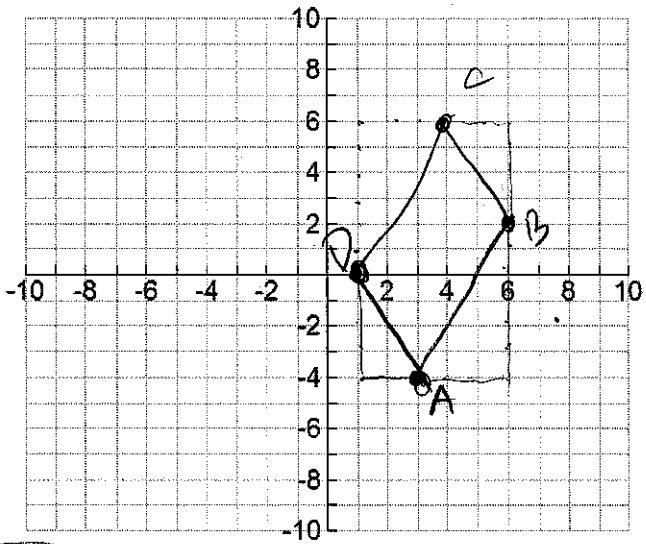
b. What is another name for this polygon?

The shape would be a pentagon.

CL 7-150. *ABCD* is a parallelogram. If $A(3, -4)$, $B(6, 2)$, $C(4, 6)$, then what are the possible locations of point *D*? Draw a graph and justify your answer.

AD must have the same slope as BC $= -\frac{4}{2} = -2$

CD must have the same slope as AB $= \frac{6}{3} = 2$



D (1, 10)

Use slope ratios to find D.

CL 7-151. Each problem below gives the endpoints of a segment. Find the coordinates of the midpoint of the segment.

a. (−3, 11) and (5, 6)

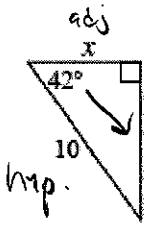
$$\text{Mdpt} = \left(\frac{(-3+5)}{2}, \frac{(11+6)}{2}\right) = (1, 8.5)$$

b. (−4, −1) and (8, 9)

$$\text{Mdpt} = \left(\frac{(-4+8)}{2}, \frac{(-1+9)}{2}\right) = (2, 4)$$

CL 7-152. For each diagram below, solve for the variable.

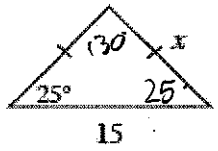
a.



$$\frac{\cos 42}{1} = \frac{x}{10}$$

$$x = 10 \cdot \cos 42 \qquad x \approx 7.43$$

b. Two angles & one side . . . Law of Sine



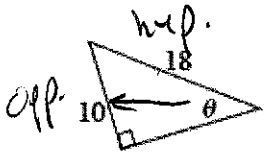
$$\frac{\sin 130}{15} = \frac{\sin 25}{x}$$

$$x \cdot \sin 130 = 15 \cdot \sin 25$$

$$x = \frac{15 \cdot \sin 25}{\sin 130}$$

$$x \approx 8.28$$

c.



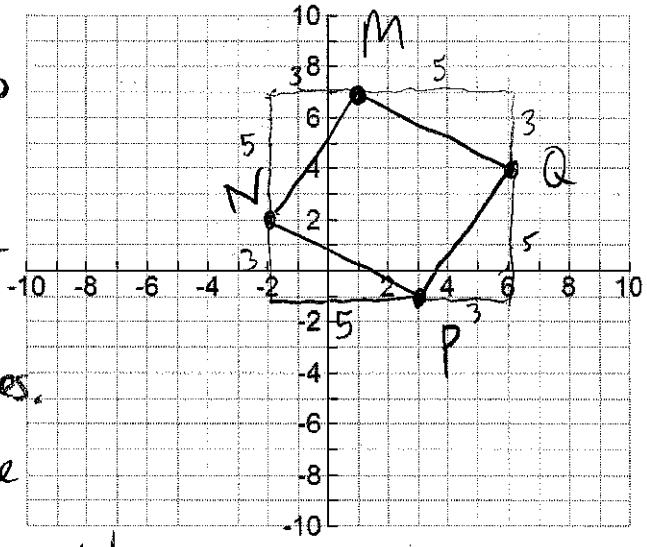
$$\sin^{-1}\left(\frac{10}{18}\right) \approx 33.75°$$

CL 7-153. On graph paper, draw quadrilateral *MNPQ* if *M*(1, 7), *N*(−2, 2), *P*(3, −1), and *Q*(6, 4).

a. Find the slopes of $\overline{MN}$ and $\overline{NP}$. What can you conclude about $\angle MNP$?

Slope $MN = \frac{5}{3}$

Slope $NP = \frac{-3}{5}$ opposite reciprocals, so $m\angle MNP = 90°$



b. What is the best name for *MNPQ*? Justify your answer.

Slope $MQ = -\frac{3}{5}$ All angles are right angles b/c of opp. reciprocal slopes.

Slope $QP = \frac{5}{3}$

Since all slope Δs have the same leg lengths, the sides of MNPQ would all be equal length. So MNPQ is a square.

c. Which diagonal is longer? Explain how you know your answer is correct.

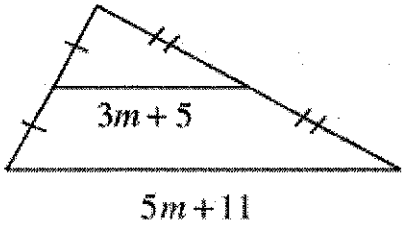
Since MNPQ is a square, the diagonals are equal.

d. Find the midpoint of $\overline{MN}$.

$$\text{Midpt} = \left(\frac{(1+-2)}{2}, \frac{(7+2)}{2}\right) = (-0.5, 4.5)$$

CL 7-154. Examine the geometric relationships in each of the diagrams below. For each one, write and solve an equation to find the value of the variable. Name any geometric property or conjecture that you used.

a. Zoom factor of 2. $\triangle$'s are similar by SAS~.



$2(3m+5) = 5m+11$

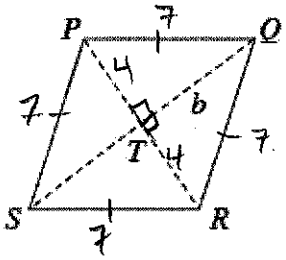
$6m+10 = 5m+11$

$m = 1$

b. *PQRS* is a rhombus with perimeter = 28 units. *PR* = 8 units, find *b* (*QT*)

$28 \div 4 = 7$ each side.

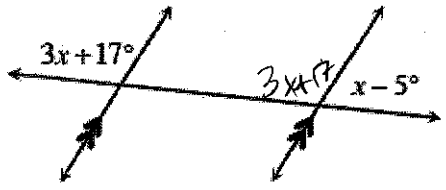
Diagonals are perpendicular.



$b^2 + 4^2 = 7^2$

$b \approx 5.74$

c.

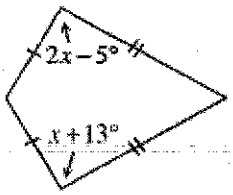


$3x+17 + x-5 = 180$

$4x+12 = 180$

$x = 42$

d.

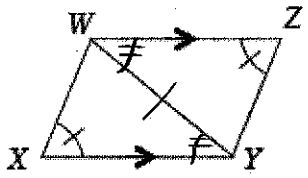


Opposite angles in a kite are equal

$2x - 5 = x + 13$

$x = 18$

CL 7-155. Given the information in the diagram below, prove that $\Delta WXY \cong \Delta YZW$ using either a flowchart or a two-column proof.



Shared side: $WY = YW$

Given: $\angle Z = \angle X$

Alt. Int. angle: $\angle ZWY = \angle XYW$

$\Delta ZWY \cong \Delta XYW$

AAS $\cong$