

**Final Exam Review**

- 1.) Solve for x using a 2 column proof.

$$3(x + 4) - 7 = x + 21$$

- 2.) If a number is odd, then the square of the number is odd.

a. Write the converse of this statement.

b. If this is a biconditional statement, write the statement. If it is not a biconditional statement, explain why and give a counterexample.

- 3.) If the sky is clear, then we can see stars at night.

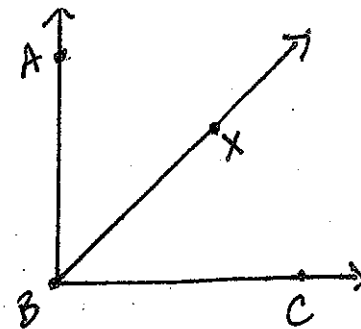
a. Write the converse of this statement.

b. If this is a biconditional statement, write the statement. If it is not a biconditional statement, explain why and give a counterexample.

4.) Fill in the blanks to complete the following proof:

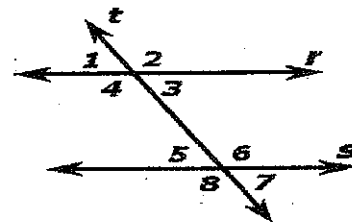
Given:  $\angle ABC$  is a right angle;  $X$  is in the interior of  $\angle ABC$ ,  
and  $m\angle XBC$  is  $45^\circ$ .

Prove:  $\overrightarrow{BX}$  bisects  $\angle ABC$ .



Proof:

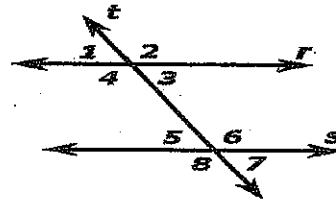
Statement	Reasons
1. $X$ is in the interior of $\angle ABC$ ,	1.
2. $m\angle ABC = m\angle ABX + m\angle XBC$	2.
3. $\angle ABC$ is a right angle	3.
4. $\angle ABC = 90^\circ$	4.
5. $m\angle XBC = 45^\circ$	5.
6. $90^\circ = m\angle ABX + 45^\circ$	6.
7. $45^\circ = m\angle ABX$	7.
8. $m\angle ABX = m\angle XBC$	8.
9. $\overrightarrow{BX}$ bisects $\angle ABC$ .	9.



5.) Given: lines  $r \parallel s$   
Prove:  $m\angle 1 = m\angle 7$ .

Statements	Justifications

6.)



Given: lines  $r \parallel s$ .

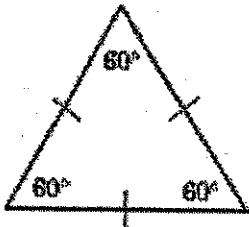
Prove:  $m\angle 6 + m\angle 3 = 180^\circ$ .

Statements

Justifications

Statements	Justifications

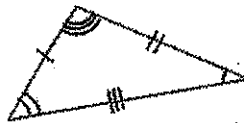
7.) Classify each of the following triangles by their sides and angles according to the marks.



a.

\_\_\_\_\_

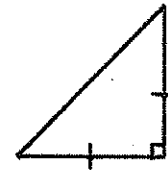
\_\_\_\_\_



b.

\_\_\_\_\_

\_\_\_\_\_



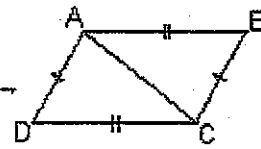
c.

\_\_\_\_\_

\_\_\_\_\_

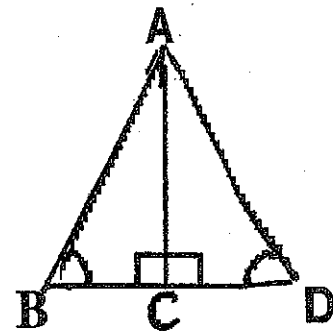
8.) Prove:  $\angle DAC \cong \angle ACB$

Statements	Justifications



9.) Prove:  $\overline{AB} \cong \overline{AD}$

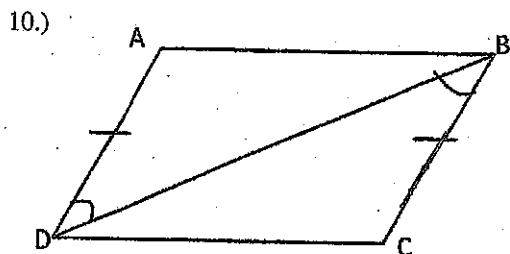
Statements	Justifications



For 10-13, decide whether there is enough information to prove that each pair of triangles is congruent. If not enough information is presented, say so.

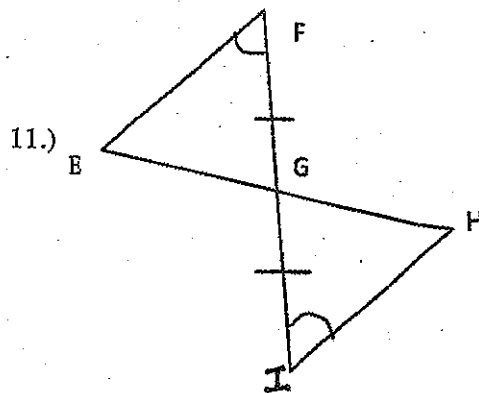
If there is...

- o Add appropriate congruency marks! A MUST!
- o State which triangle congruence theorem guarantees that they will be congruent
- o Name the triangles matching up corresponding vertices.



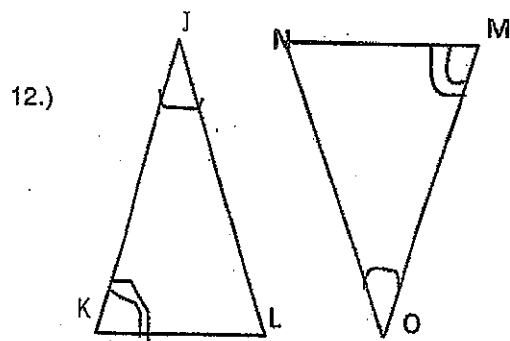
Theorem: \_\_\_\_\_

$\Delta$  \_\_\_\_\_  $\cong$   $\Delta$  \_\_\_\_\_



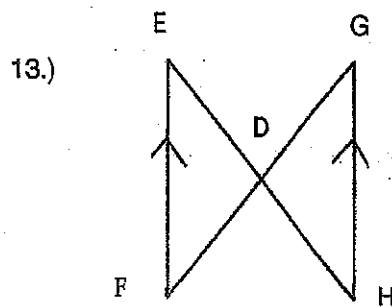
Theorem: \_\_\_\_\_

$\Delta$  \_\_\_\_\_  $\cong$   $\Delta$  \_\_\_\_\_



Theorem: \_\_\_\_\_

$\Delta$  \_\_\_\_\_  $\cong$   $\Delta$  \_\_\_\_\_



D is the midpoint of EH

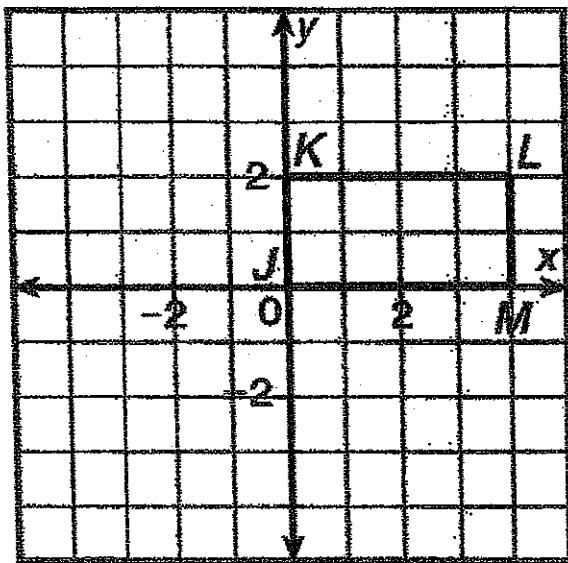
Theorem: \_\_\_\_\_

$\Delta$  \_\_\_\_\_  $\cong$   $\Delta$  \_\_\_\_\_

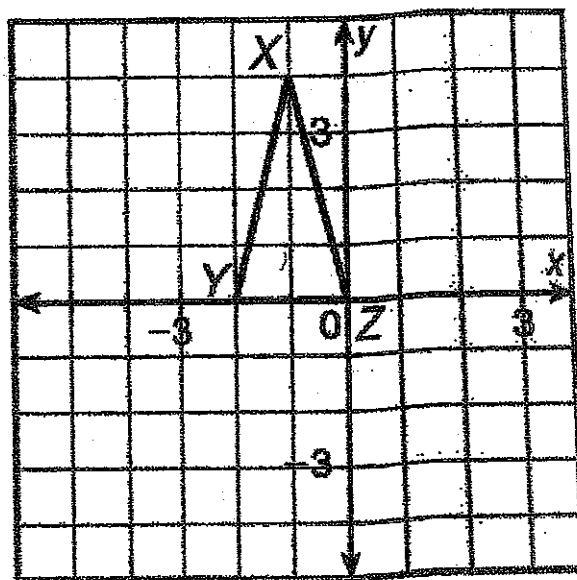
14. If  $\Delta DEF \cong \Delta HIK$ ,  
then state the six  
congruent parts.

- |          |          |
|----------|----------|
| a. _____ | b. _____ |
| c. _____ | d. _____ |
| e. _____ | f. _____ |

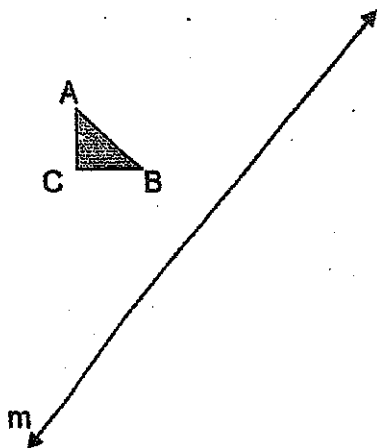
15.) Translate the figure such that  $(x, y) \rightarrow (x-4, y-3)$



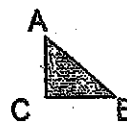
16.) Reflect the figure over the  $x$ -axis



17.) Reflect triangle ABC in the line m

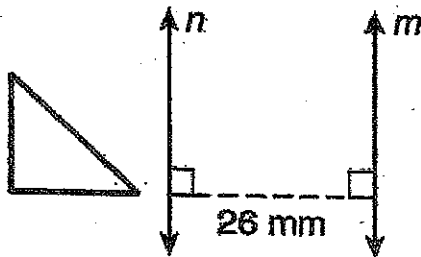


18.) Rotate triangle ABC  $90^\circ$  clockwise about P.



P.

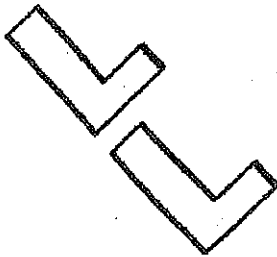
19.) Suppose the triangle shown is reflected across line  $n$  and then across line  $m$ . Describe a single transformation that is equivalent to this composition of transformations. BE SPECIFIC!



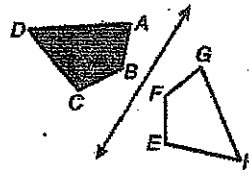
20.) A quadrilateral with vertices  $(-3, 3)$ ,  $(-3, 0)$ ,  $(3, 0)$ , and  $(3, 3)$  is reflected across the  $y$ -axis, give the coordinates of the image.

21.) Name the transformations shown below

a.



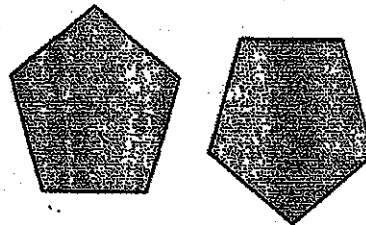
b.



c.



d.



22.) The perimeter of a rectangle is 60 centimeters. The ratio of AB : BC is 3 : 2. Find the length and width of the rectangle.

23.) Solve the following proportions

a.)  $\frac{4}{x} = \frac{5}{7}$

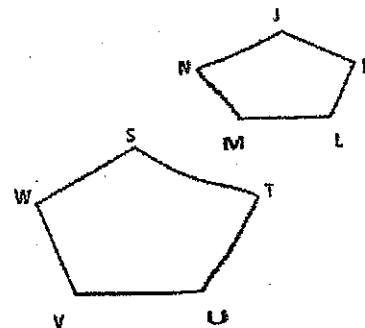
b.)  $\frac{3}{y+2} = \frac{1}{2}$

c.)  $\frac{t-5}{4} = \frac{t}{10}$

d.)  $\frac{4}{x} = \frac{x}{25}$

24.) Pentagons JKLMN and STUVW are similar.

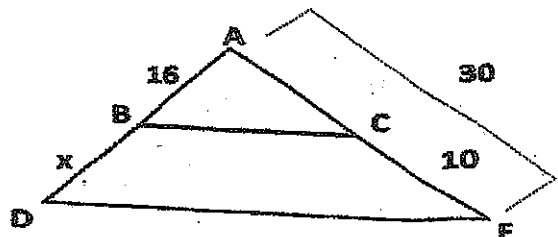
a.) List all the pairs of congruent angles.



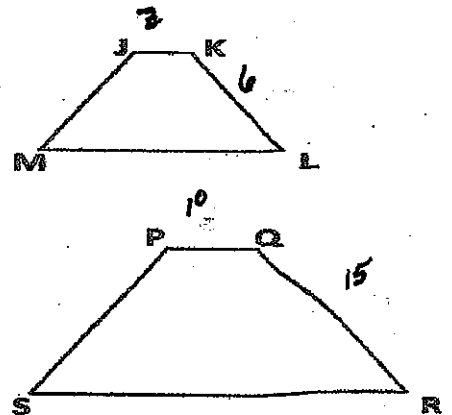
b.) Write the ratios of the corresponding sides in a statement of proportionality.



25.) In the diagram  $\frac{AB}{BD} = \frac{AC}{CE}$  Find the length of  $\overline{BD}$



26.) Quadrilateral JKLM is similar to quadrilateral PQRS. Find the value of  $x$ , then find the scale factor from JKLM to PQRS.

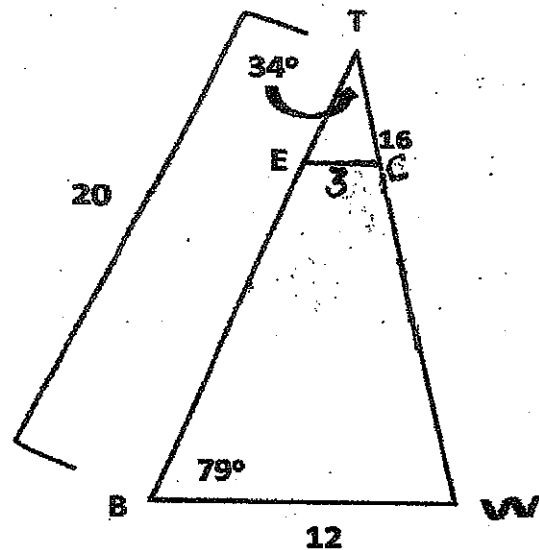


27.) In the diagram,  $\triangle BTW \sim \triangle ETC$

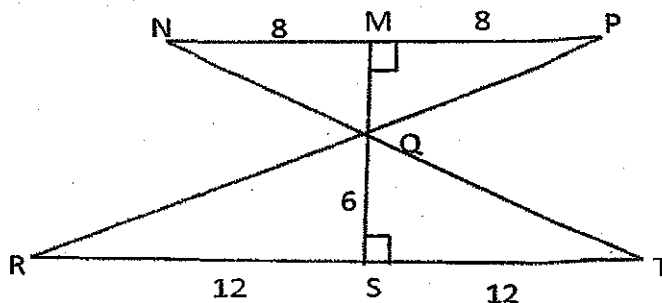
a.) Write a statement of proportionality.

b.) Find  $m\angle TEC$

c.) Find  $ET$  and  $BE$

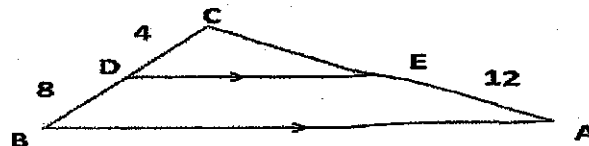


28.) Find the length of the altitude  $MQ$



29.) Bob is 5'7", he is standing next to a tree. His shadow is 8 feet long. The tree's shadow is 14 feet long. Find the height of the tree. (Hint: draw a picture)

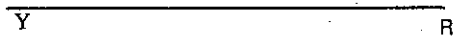
30.) In the diagram,  $AB \parallel ED$ ,  $BD = 8$ ,  $DC = 4$ , and  $AE = 12$ . What is the length of  $EC$



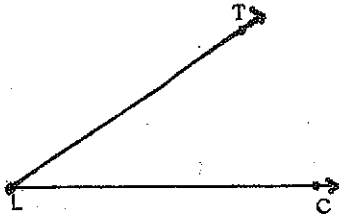
31.) Construct a copy of  $\overline{AB}$ . Label your copy  $\overline{GH}$ .



32.) Construct the bisector of  $\overline{YR}$ . Label the midpoint  $M$ .

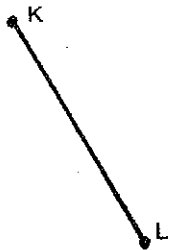


33.) Construct a copy of  $\angle TLC$ . Label your copy  $\angle DEF$ .

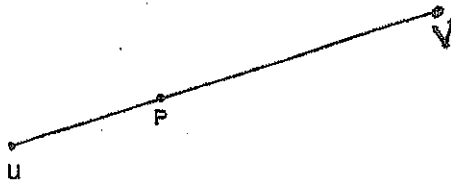


34.) Draw obtuse  $\angle WXY$ . Construct the bisector of  $\angle WXY$ .

35.) Construct the perpendicular bisector of  $\overline{KL}$ .



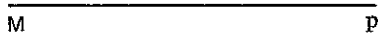
36.) Construct a line perpendicular to  $\overline{UV}$  that passes through  $P$ .



37.) Construct a line perpendicular to  $\overline{DE}$  that passes through  $T$ .



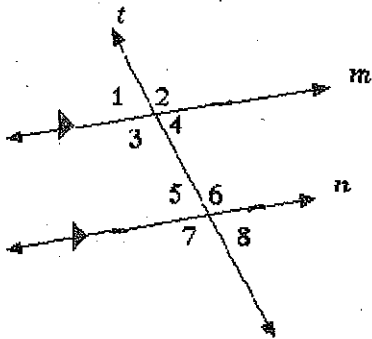
38.) Construct a line parallel to  $\overline{MP}$ .



39.) Construct a rectangle that is not a square.

40.) Construct a  $45^\circ$  angle.

41.) Construct an equilateral triangle



42.)

If  $m\angle 1 = 75^\circ$ , find the measure of each of the other angles.

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