

unit 2

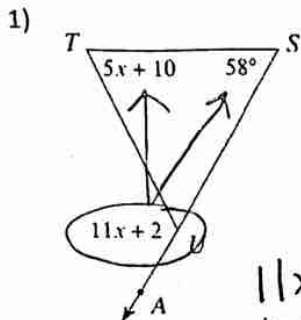
Test Study Guide

☆ skip 15 & 16 ☆
 & 34

1st/3rd
 skip #17 & 35 & 36

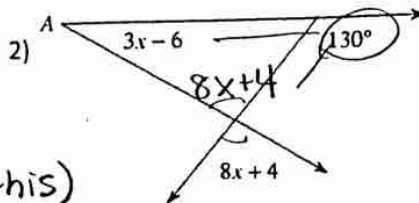
Geometry

Directions: Solve for x. Then find the missing angle.



$x = 11$
 $m\angle TUA = 123^\circ$
 (plug in x together with this)
 outside $\angle 11(11)+2$

$$\begin{aligned} 11x+2 &= 5x+10+58 \\ 11x+2 &= 5x+68 \\ -5x & \quad -5x \\ \hline 6x+2 &= 68 \\ 6x &= 66 \\ x &= 11 \end{aligned}$$



$x = 12$
 $m\angle A = 30^\circ$
 $3(12)-6$

$$\begin{aligned} 130 &= 3x-6+8x+4 \\ 130 &= 11x-2 \\ +2 & \quad +2 \\ \hline 132 &= 11x \\ 12 &= x \end{aligned}$$

Directions: Classify the triangle by its angles.

- 3) $m\angle A = (4x+10)^\circ$
 $m\angle B = (-3x+60)^\circ$
 $m\angle C = (x+74)^\circ$

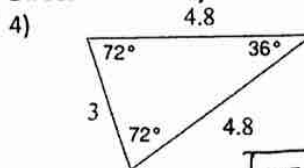
Hint: use Δ sum to find x then determine the measure of each angle

$$\begin{aligned} 4x+10-3x+60+x+74 &= 180 \\ 2x+144 &= 180 \\ 2x &= 36 \\ x &= 18 \end{aligned}$$

$\angle A = 4(18)+10 = 82$
 $\angle B = -3(18)+60 = 6$
 $\angle C = 18+74 = 92$

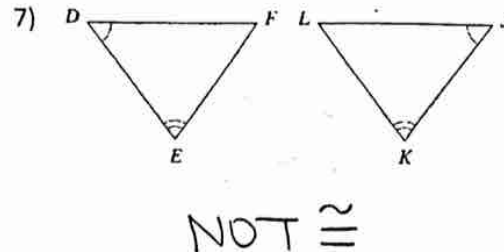
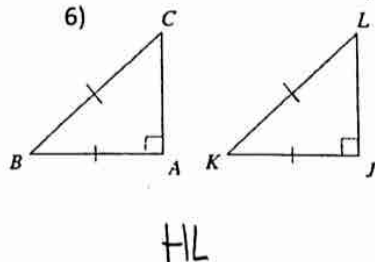
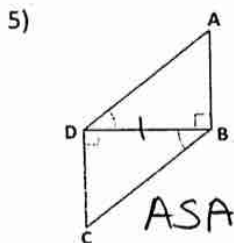
scalene

Direction: Classify the triangle by its sides.

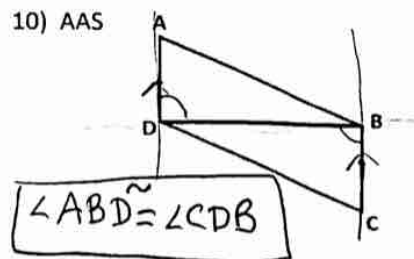
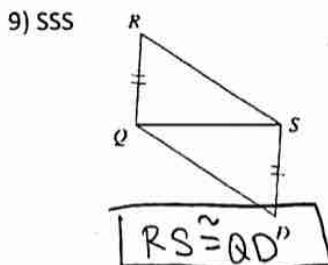
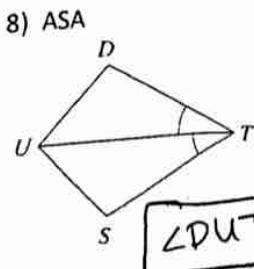


Isosceles

Directions: Determine if the triangles are congruent. If they are, justify your answer & write a triangle congruence statement.



Directions: Determine the missing information needed to prove the triangles are congruent with the given theorem or postulate.



congruent Δ 's means
 \downarrow
 the sides are equal

- 11) Given that $\triangle CDE \cong \triangle HDI$, $CE = 5x$,
 and $HJ = 2x + 15$, find x and CE .

$$5x = 2x + 15$$

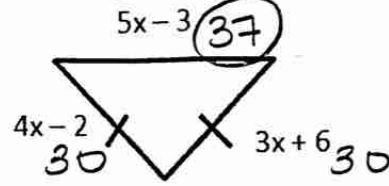
$$3x = 15$$

$$x = 5$$

$$\text{so } CE = 5(5)$$

$$CE = 25$$

- 12) What is the length of the longest side?

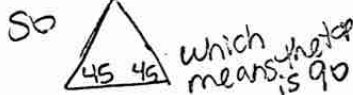


$$4x - 2 = 3x + 6$$

$$x = 8$$

- 13) What is the measure of the vertex angle in an isosceles triangle if a base angle measures 45° ?

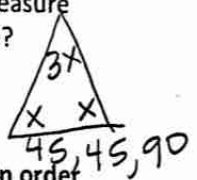
base \angle 's are \cong



- 14) In an isosceles triangle, a vertex angle measures $3x$ and a base angle measures x . What is the measure of each of the angles in the isosceles triangle?

$$4x = 180$$

$$x = 45$$



Directions: Determine if the following side lengths can be used to make a triangle. If they are, write the sides in order from least to greatest and then the angles in order from least to greatest.

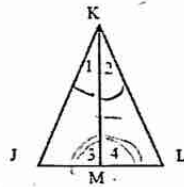
15) $AB = 5, BC = 8, AC = 10$

16) $MN = 3, LN = 2, ML = 5$

can skip 15 & 16

- 17) Given: $\angle 1 \cong \angle 2$
 $\angle 3 \cong \angle 4$

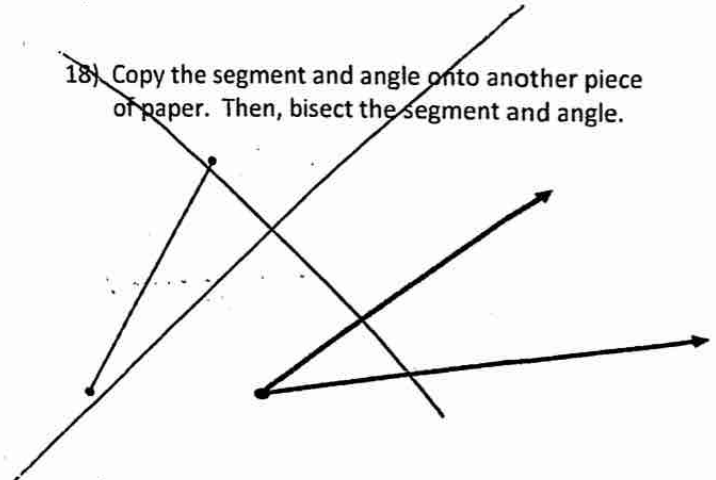
Prove: $\triangle JKL$ is isosceles



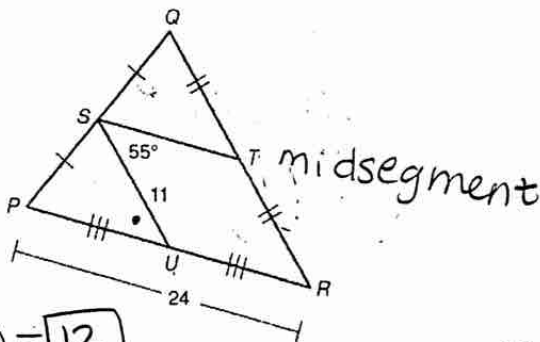
$\angle 1 \cong \angle 2$ given
 $\angle 3 \cong \angle 4$ given
 $KM \cong KM$ reflexive
 $\triangle JKM \cong \triangle LKM$ ASA
 $JK \cong LK$ CPCTC
 $\triangle JKL$ is isosceles Defn. of isosceles

SKIP for 1st/3rd

- 18) Copy the segment and angle onto another piece of paper. Then, bisect the segment and angle.



Directions: Use the triangle midsegment theorem and the figure below to answer 19 - 22.



19) $ST = \frac{1}{2}(24) = 12$

21) $PU = \frac{1}{2}(24) = 12$

20) $QR = \frac{2(\text{midsegment})}{2(11)} = 22$

22) $m\angle SUP = 55^\circ$
 alt. int. angles with the one marked 55° so they are congruent

Topic: Proofs

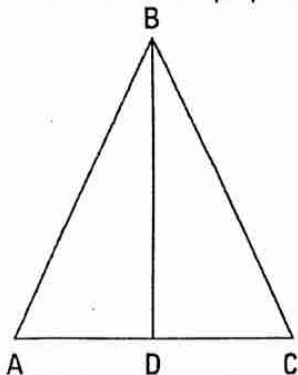
Things to Remember:

- ✓ State what is given FIRST
- ✓ MARK YOUR DIAGRAM!
- ✓ Step 1 - Write down the givens
- ✓ Step 2 - Make any marks that you know are congruent (reflexive property, vertical angles, alternate interior angles)
- ✓ Step 3 - **BUILD OFF YOUR GIVENS; YOU CANNOT ASSUME ANYTHING IF IT IS NOT TOLD TO YOU!!!**
- ✓ Step 4 - Statement will always be showing the Triangles are \cong (SSS, SAS, ASA, AAS, HL)
- ✓ Step 5 - AFTER two triangles are congruent, then you can use CPCTC

Examples:

SSS	SAS	ASA	AAS	HL	CPCTC	Vertical Angles are \cong
Reflexive Property				Alternate Interior Angles \cong		All Right Angles are \cong
Transitive Property				Definition of a Midpoint		Given
Definition of Bisector				Definition of Perpendicular		Definition of congruence

15. If BD and CA are perpendicular, what can you assume?



That $\angle ADB \cong \angle CDB$ are right angles

16. Using the figure on the left, if BD bisects AC, what can you assume?

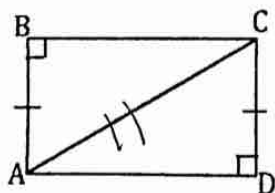
Then $AD \cong CD$

17. Using the figure on the left, if BD bisects $\angle ABC$, what can you assume?

$\angle ABD \cong \angle CBD$

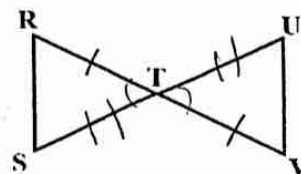
18. Given: $\overline{AB} \cong \overline{DC}$, $\overline{AB} \perp \overline{BC}$, and $\overline{CD} \perp \overline{AD}$

Prove: $\triangle ABC \cong \triangle CDA$



19. Given: \overline{RV} and \overline{SU} bisect each other

Prove: $\angle TSR \cong \angle TUV$



Statements	Reasons
1. $\overline{AB} \cong \overline{DC}$	1. given
2. $\overline{AB} \perp \overline{BC}$	2. given
3. $\overline{CD} \perp \overline{AD}$	3. given
4. scribble	4. scribble
5. $\angle ABC \cong \angle CDA$	5. right \angle 's are =
6. $\overline{AC} \cong \overline{AC}$	6. reflexive
7. $\triangle ABC \cong \triangle CDA$	7. HL

Statements	Reasons
1. \overline{RV} & \overline{SU} bisect	1. Given
2. $\overline{RT} \cong \overline{TV}$	2. defn. bisects
3. $\overline{ST} \cong \overline{TU}$	3. defn. bisects
4. $\angle RTS \cong \angle VTU$	4. vertical
5. $\triangle RTS \cong \triangle VTU$	5. SAS
6. $\angle TSR \cong \angle TUV$	6. CPCTC

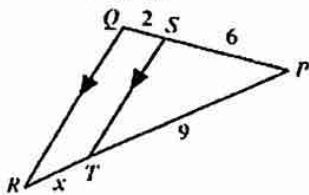
Topic: Triangle Proportionality

Things to Remember:

- ✓ $\frac{\text{top}}{\text{bottom}} = \frac{\text{top}}{\text{bottom}}$ OR ANYWAY THAT KEEPS THE SAME ORDER!!
- ✓ ONLY WHEN TWO SIDES ARE PARALLEL

Examples

25. Solve for x.

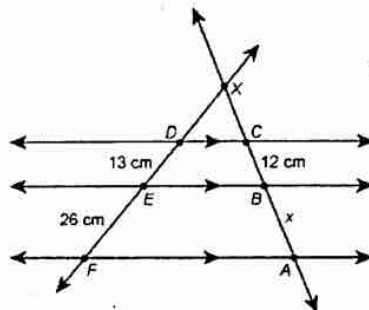


$$\frac{x}{9} = \frac{2}{6}$$

$$6x = 18$$

$$x = 3$$

26. Solve for x



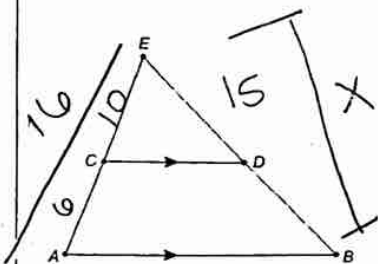
~~$$\frac{x}{12} = \frac{26}{12}$$~~

$$12x = 312$$

$$x = 26$$

27. $AE = 16$, $CA = 6$, and $ED = 15$

Solve for EB .

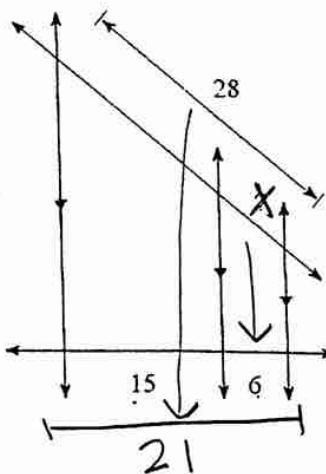


$$\frac{x}{15} = \frac{16}{10}$$

$$10x = 240$$

$$x = 24$$

28. Solve for the missing length



~~$$\frac{x}{28} = \frac{6}{21}$$~~

$$21x = 168$$

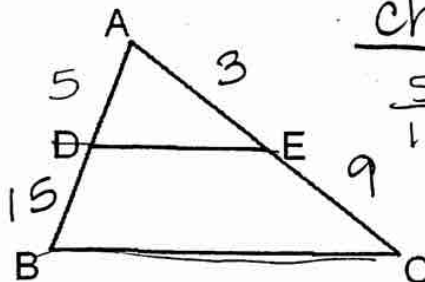
$$x = 8$$

29. Determine if \overline{DE} is parallel to \overline{BC}

$AD = 5$, $DB = 15$, $AE = 3$, and $EC = 9$

from p. 26 & 27

check:



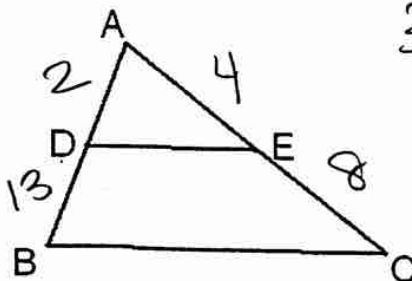
$$\frac{5}{15} = \frac{3}{9} ?$$

$$.3 = .3$$

yes

30. Determine if \overline{DE} is parallel to \overline{BC}

$AD = 2$, $DB = 13$, $AE = 4$, and $EC = 8$



$$\frac{2}{13} = \frac{4}{8} ?$$

$$.15 \neq .5$$

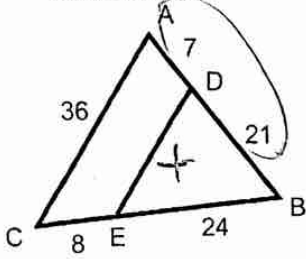
NO

Topic: Similar Figures

Things to Remember:

- ✓ ALL angles are congruent
- ✓ ALL sides are proportional (have the same scale factor)
- ✓ There are ONLY 3 ways to prove two triangles are similar: SSS Similarity, SAS Similarity, and AA Similarity

31. Given $\triangle EBD \sim \triangle CBA$
Solve for ED.

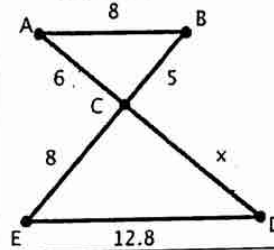


$$\frac{x}{36} = \frac{21}{28}$$

$$28x = 756$$

$$x = 27$$

32. Given $\triangle EDC \sim \triangle BAC$
Solve for x.

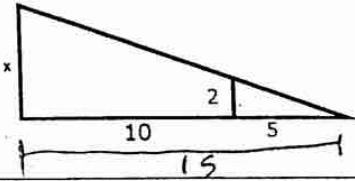


$$\frac{x}{6} = \frac{8}{5}$$

$$5x = 48$$

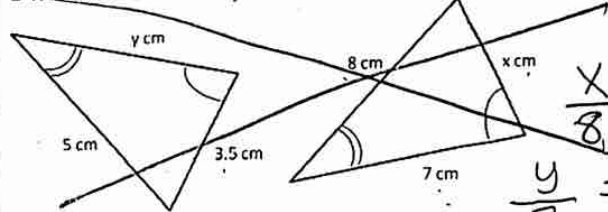
$$x = 9.6$$

33. Solve for x if the large triangle is similar to the smaller triangle.



$$\frac{x}{2} = \frac{15}{5}$$

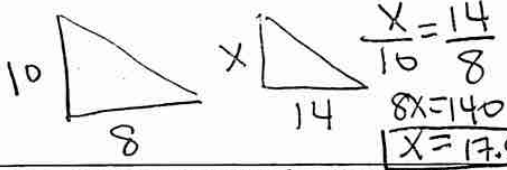
34. Solve for x and y.



$$\frac{x}{8} = \frac{3.5}{5}$$

$$\frac{y}{7} = \frac{3.5}{5}$$

35. A telephone pole is 10 meters tall casts a shadow 8 meters long. A tree nearby casts a shadow 14 meters long. How tall is the tree? Draw a picture.



$$\frac{x}{10} = \frac{14}{8}$$

$$8x = 140$$

$$x = 17.5$$

36. A map has a scale of 3 cm : 18 miles. If Marietta and Kennesaw are 7.5 miles apart, how many centimeters are the two cities apart on the map?

cm	3	=	x	
miles	18	=	7.5	

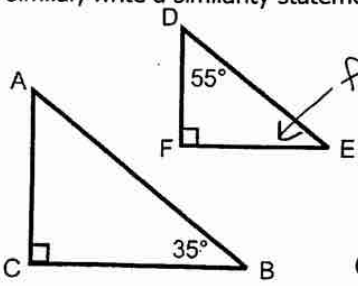
$$18x = 22.5$$

$$x = 1.25$$

37. The area of an old picture is 24.5 in². If you want to enlarge the picture 3 times, what would the area be of the new picture?

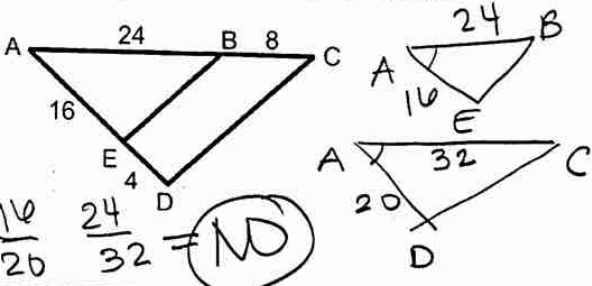
38. Triangles IJK and TUV are similar. The length of the sides of IJK are 40, 50, and 24. The length of the longest side of TUV is 275, what is the perimeter of TUV?

39. Determine if the triangles are similar. If the figures are similar, write a similarity statement.



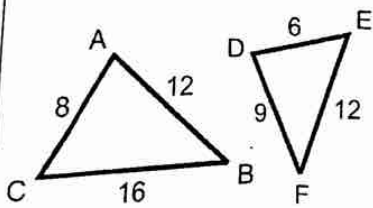
find this
 $180 - 90 - 55 = 35$
so yes
AA~

40. Determine if the triangles are similar. If the figures are similar, write a similarity statement.



$$\frac{16}{20} \neq \frac{24}{32} = \text{NO}$$

41. Determine if the triangles are similar. If the figures are similar, write a similarity statement.

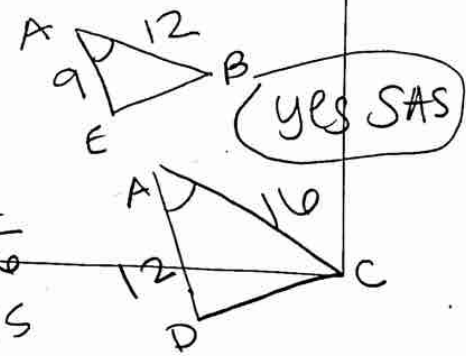
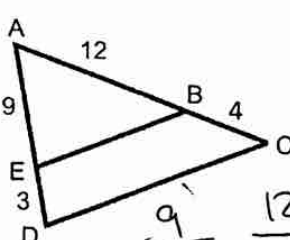


$$\frac{8}{6} = \frac{12}{9} = \frac{16}{12}$$

$$1.\bar{3} \quad 1.\bar{3} \quad 1.\bar{3}$$

yes
SSS~

42. Determine if the triangles are similar. If the figures are similar, write a similarity statement.



$$\frac{9}{12} = \frac{12}{16}$$

$$.75 = .75$$

yes SAS