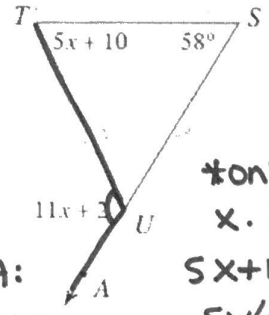
3.12 Unit 3 Test Review KEY

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

1)



x = 11

m∠TUA = 123°

*only one way to solve for x. Use exterior ∠'s Theorem.

$5x+10+58 = 11x+2$

$5x+68 = 11x+2$

$-5x \quad -5x$

$68 = 6x+2$

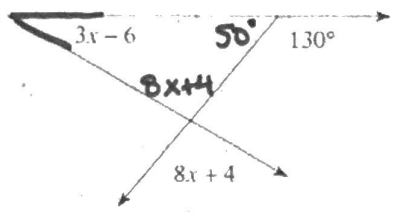
$-2 \quad -2$

$66 = 6x$

X = 11

m∠TUA: $11(11)+2 = 123°$

2)



x = 12

m∠A = 30°

m∠A: $3(12)-6 = 30°$

* 2 ways to solve for X.

1) Exterior ∠'s Theorem

→ 2) Triangle Sum Theorem

$3x-6+50+8x+4 = 180$

$11x+48 = 180$

$-48 \quad -48$

$11x = 132$

X = 12

Directions: Classify the triangle by its angles.

3) m∠A = (4x + 10)° 82°

m∠B = (−3x + 60)° 6°

m∠C = (x + 74)° 92°

*Solve for X & plug it in to all 3 angles.

*use Triangle Sum Theorem to solve.

$4x+10-3x+60+x+74 = 180$

$2x+144 = 180$

$-144 \quad -144$

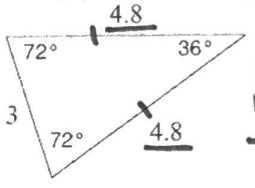
$\frac{2x}{2} = \frac{36}{2}$

X = 18

Obtuse because of 92°

Direction: Classify the triangle by its sides.

4)

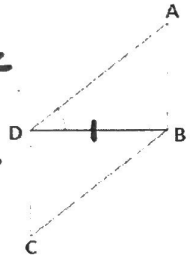


Isosceles because there are 2 ≅ sides.

(Base ∠'s are also ≅)

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

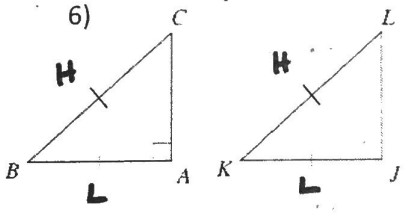
5)



*mark shared side ≅.

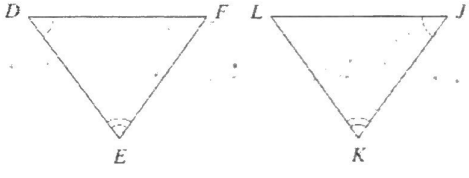
ΔBDA ≅ ΔDBC by ASA

6)



ΔBAC ≅ ΔKJL by HL

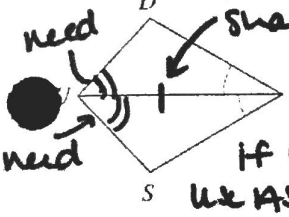
7)



NO, can't use AA to prove Δ's ≅.

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

8) ASA



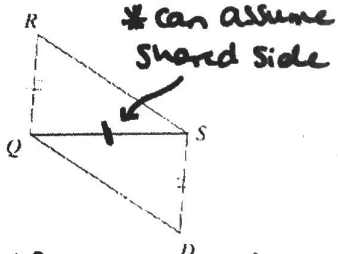
need

*can assume shared side.

need

If we want to use ASA, we need ∠DUT ≅ ∠SUT.

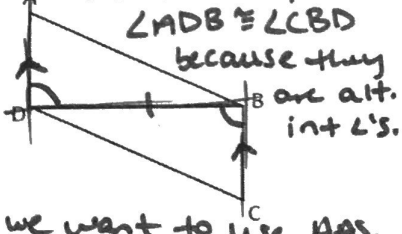
9) SSS



*Can assume shared side

If we want to use SSS, we need $\overline{RS} \cong \overline{QD}$.

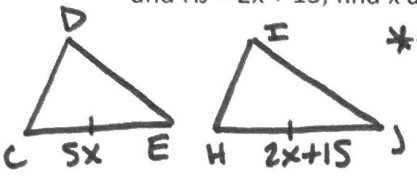
10) AAS



*Can assume shared side & ∠ADB ≅ ∠CBD because they are alt. int ∠'s.

If we want to use AAS, we need ∠BAD ≅ ∠DCB.

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



*Corresponding sides are ≅, so set equal to each other to solve.

$5x = 2x + 15$

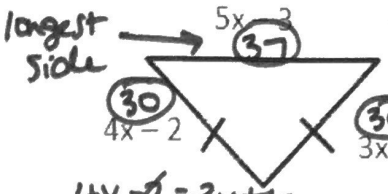
$-2x \quad -2x$

$3x = 15$

$x = 5$

$\overline{CE}$: $5(5) = 25$

12) What is the length of the longest side?



*Set ≅ Sides equal to each other to solve for x.

$4x - 2 = 3x + 6$

$+2 \quad +2$

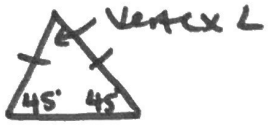
$4x = 3x + 8$

$-3x \quad -3x$

$x = 8$

*plug in for each side.

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



$180 - 45 - 45 = 90°$

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?

$x + x + 3x = 180$

$\frac{5x}{5} = \frac{180}{5}$ $x = 36$

36, 36, 108°

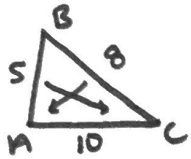
Directions: Determine if the following side lengths can be used to make a triangle. If they are, write the sides in order from least to greatest and then the angles in order from least to greatest.

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

*The sum of 2 smallest, has to be greater than longest!

$5 + 8 = 13$

$13 > 10$ ✓



$\overline{AB}, \overline{BC}, \overline{AC}$

$\angle C, \angle A, \angle B$

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

$3 + 2 = 5$

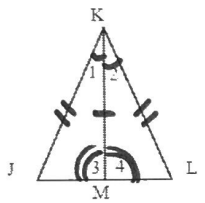
$5 > 5$ ✗ NO

Can not make a Δ.

17) Given: $\angle 1 \cong \angle 2$

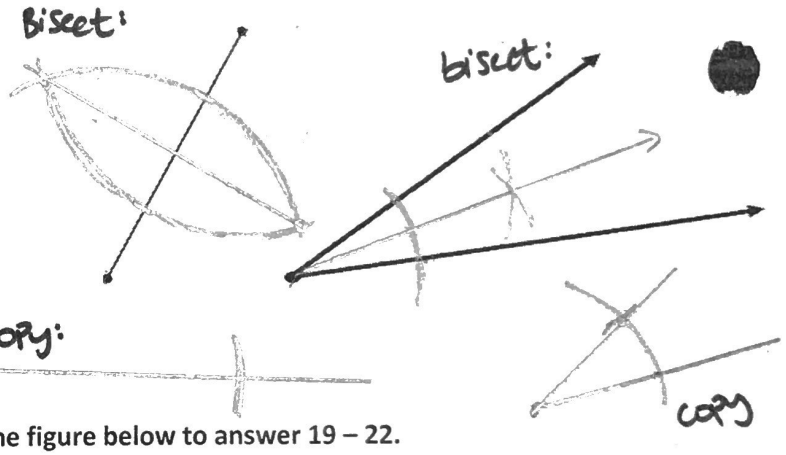
$\angle 3 \cong \angle 4$

Prove: ΔJKL is isosceles

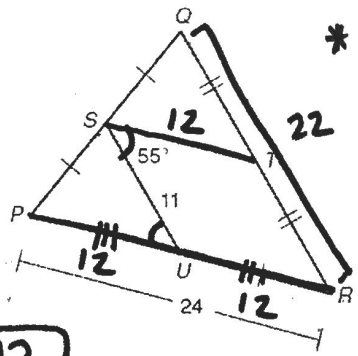


Statement	Reason
① $\angle 1 \cong \angle 2$	Given
② $\angle 3 \cong \angle 4$	Given
③ $\overline{KM} \cong \overline{KM}$	Reflexive Prop.
④ $\Delta JKM \cong \Delta LKM$	ASA
⑤ $\overline{JK} \cong \overline{KL}$	CPCTC
⑥ ΔJKL is isos.	It has 2 ≅ sides.

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.



* Two things to remember w/ midsegments

1) parallel lines: look for Alt. int or corresp. ∠'s

2) midsegment is $\frac{1}{2}$ the length of the side. (either multiply by 2 or ÷ by 2)

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

20) QR $11 \times 2 = 22$

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

22) m∠SUP 55°

(∠SUP ≅ ∠TSU are Alt. int ∠'s.)