

State if the given numbers can be the measures of the sides of a triangle.

1. 8, 12, 8

Two sides of a triangle are given. Find the range of possible measures for the third side.

2. 11, 7

Order the angles of the triangle from smallest to largest.

3. In triangle KLM, $KL = 18$, $KM = 13$, $LM = 20$

Order the sides of the triangle from shortest to longest.

4. In triangle LMN, $\angle L = 98^\circ$, $\angle M = 46^\circ$, $\angle N = 36^\circ$

5. Triangle LMN has midsegment GF parallel to NL. $NL = 20$. Find the length of GF.

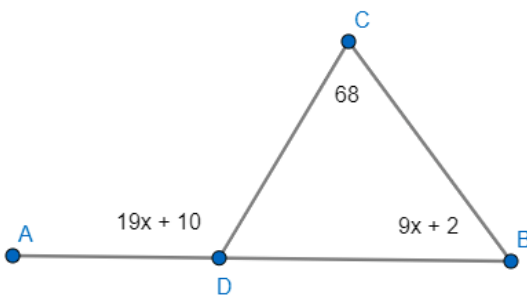
6. In triangle RST, FE is a midsegment parallel to RT. $FE = 7$. Find the length of RT.

7. In triangle IJK, EF is a midsegment parallel to IK. $EF = x + 14$ and $IK = x + 22$. Find IK.

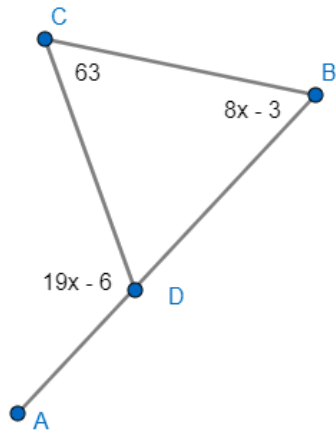
8. Triangle TSU has exterior angle EST. $m\angle EST = 150^\circ$, $m\angle U = 30^\circ$. Find the measure of angle T.

9. Triangle TSU has exterior angle JUT. $m\angle S = 20^\circ$, $m\angle T = 20^\circ$. Find the measure of angle JUT.

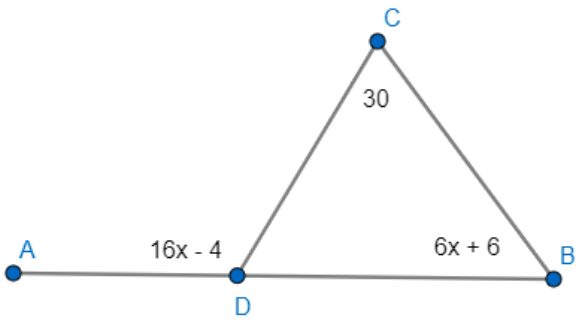
10. Solve for x.



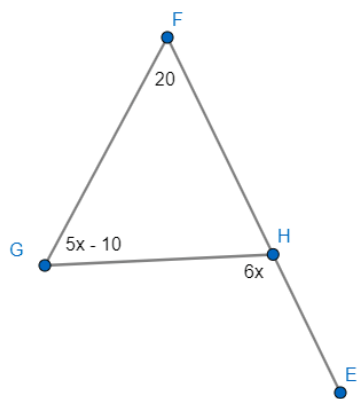
11. Solve for x.



12. Solve for x.



13. Find $m\angle GHE$



Answers:

1. yes

$$8+12>8, 8+8>12 \quad \text{yes a } \triangle$$

2. $4 < x < 18$

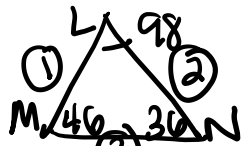
$$11+7=18, 7+4=11 \quad \text{so between 4 and 18}$$

3. $\angle L, \angle M, \angle K$



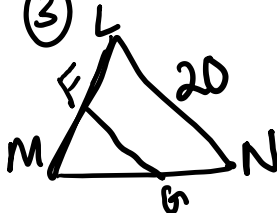
$$\angle L, \angle M, \angle K$$

4. LM, LN, MN



$$LM, LN, MN$$

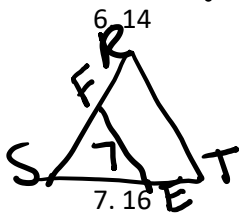
5. 10



$$LN = 2GF$$

$$\frac{20}{2} = \frac{2GF}{2}$$

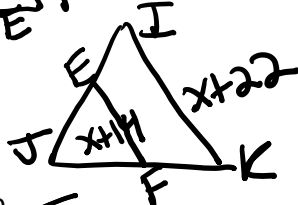
$$GF = 10$$



$$RT = 2FE$$

$$RT = 2(7)$$

$$RT = 14$$



$$IK = 2EF$$

$$x+22 = 2(x+14)$$

$$x+22 = 2x+28$$

$$-x \quad 22 = -x+28$$

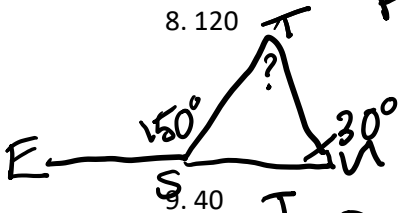
$$-28 \quad -28$$

$$x = -6$$

$$IK = -6+22$$

$$IK = 16$$

8. 120

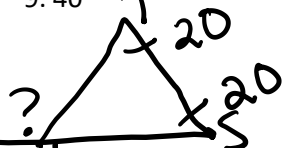


$$150 = \angle T + 30$$

$$-30 \quad -30$$

$$\angle T = 120^\circ$$

9. 40



$$\angle JUT = 20+20$$

$$\angle JUT = 40^\circ$$

10. 6

$$19x+10 = 68+9x+2$$

$$19x+10 = 9x+70$$

$$-9x \quad -9x$$

$$10x+10 = 70$$

$$-10 \quad -10$$

$$10x = 60$$

$$10 \quad 10$$

$$x = 6$$

11.6 $19x - 6 = 63 + 8x - 3$
 $19x - 6 = 60 + 8x$
 $-8x \quad -8x$
 $11x - 6 = 60$
 $+6 \quad +6$
 $11x = 66$
 $\frac{11x}{11} = \frac{66}{11}$
 $x = 6$

12.4 $16x - 4 = 30 + 6x + 6$
 $16x - 4 = 36 + 6x$
 $-6x \quad -6x$
 $10x - 4 = 36$
 $+4 \quad +4$
 $10x = 40$
 $\frac{10x}{10} = \frac{40}{10}$
 $x = 4$

13.60

$20 + 5x - 10 = 6x$
 $5x + 10 = 6x$
 $-5x \quad -5x$
 $10 = x$
 $m\angle GHE = 6x$
 $= 6(10)$
 $= 60^\circ$