

Triangle Rules

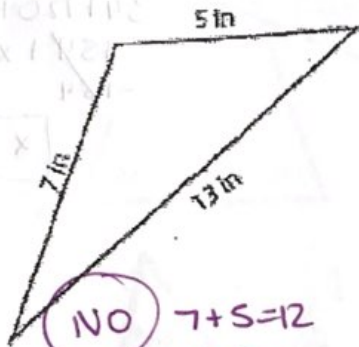
NAME _____

Triangle Inequality Theorem

The sum of any two sides of a triangle must be greater than the third side.

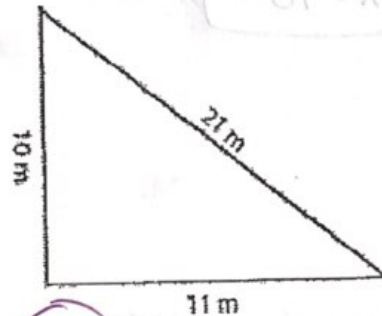
Can the three sides form a triangle? Explain why or why not.

1.



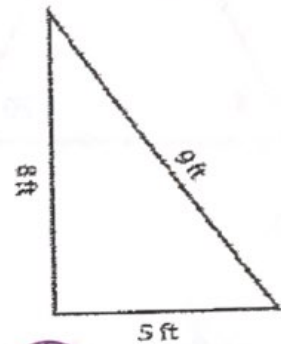
NO $7 + 5 = 12$
 $12 < 13$

2.



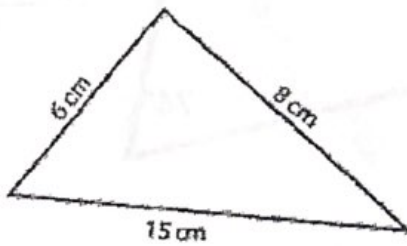
NO $10 + 11 = 21$
 $21 = 21$

3.



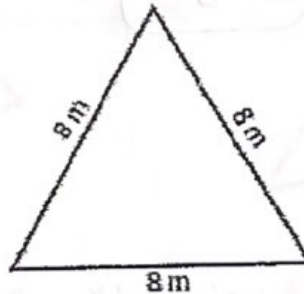
yes $8 + 5 = 13$
 $13 > 9$

4.



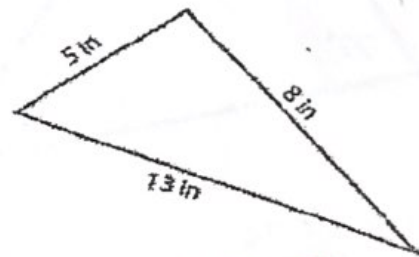
$6 + 8 = 14$
 $14 < 15$ **NO**

5.



$8 + 8 = 16$
 $16 > 8$
yes

6.



$8 + 5 = 13$
 $13 = 13$
NO

7. 3, 4, 9

$3 + 4 = 7$
 $7 < 9$

No

8. 8, 7, 2

$2 + 7 = 9$

$9 > 8$
yes

9. 14, 3, 9

$3 + 9 = 12$

$12 < 14$

NO

10. 4, 9, 5

$4 + 5 = 9$

$9 = 9$

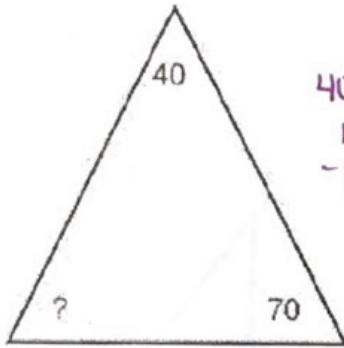
NO

Triangle Sum Theorem

The sum of the angles of a triangle must add up to 180° .

Find the missing angle in each triangle.

11.

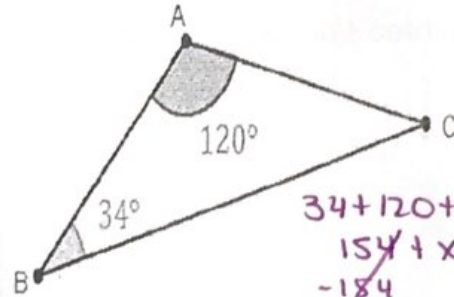


$$40 + 70 + x = 180$$

$$\begin{array}{r} 110 + x = 180 \\ -110 \quad -110 \end{array}$$

$$x = 70^\circ$$

12.

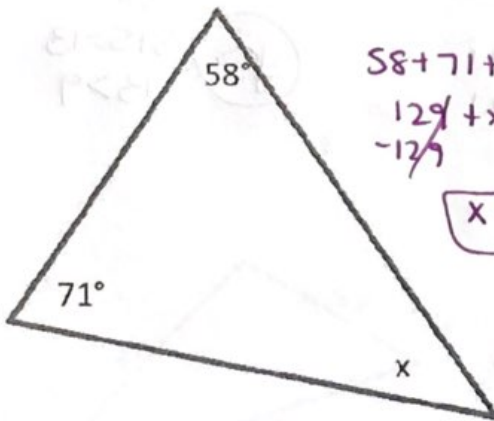


$$34 + 120 + x = 180$$

$$\begin{array}{r} 154 + x = 180 \\ -154 \quad -154 \end{array}$$

$$x = 26^\circ$$

13.

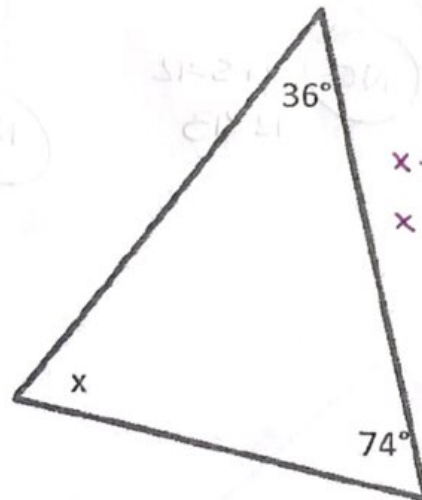


$$58 + 71 + x = 180$$

$$\begin{array}{r} 129 + x = 180 \\ -129 \quad -129 \end{array}$$

$$x = 51^\circ$$

14.

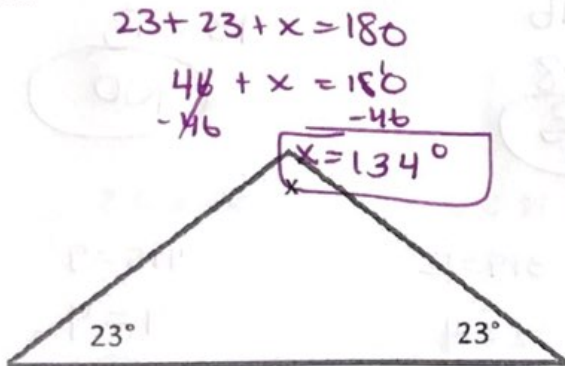


$$x + 74 + 36 = 180$$

$$\begin{array}{r} x + 110 = 180 \\ -110 \quad -110 \end{array}$$

$$x = 70^\circ$$

15.

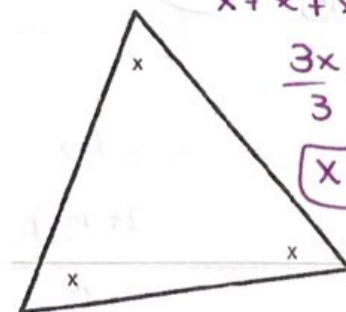


$$23 + 23 + x = 180$$

$$\begin{array}{r} 46 + x = 180 \\ -46 \quad -46 \end{array}$$

$$x = 134^\circ$$

16.



$$x + x + x = 180$$

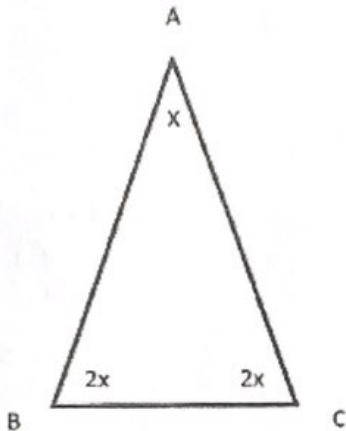
$$\begin{array}{r} 3x = 180 \\ \underline{\quad 3} \quad \underline{\quad 3} \end{array}$$

$$x = 60^\circ$$

17. For each of the following, write an equation and find each of the angles...

Find all the angles in each of the following...

1.



$$x + 2x + 2x = 180$$

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

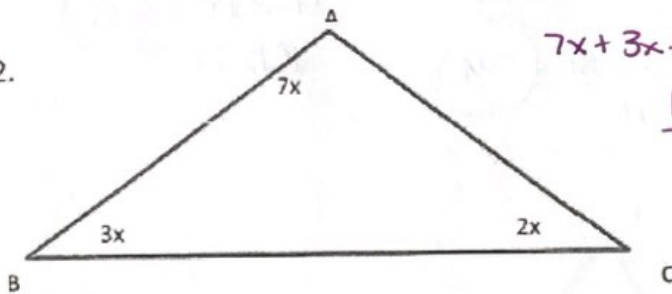
$$x = 36$$

$$\angle A = \underline{36^\circ}$$

$$36 \times 2 \quad \angle B = \underline{72^\circ}$$

$$\angle C = \underline{72^\circ}$$

2.



$$7x + 3x + 2x = 180$$

$$\frac{12x}{12} = \frac{180}{12}$$

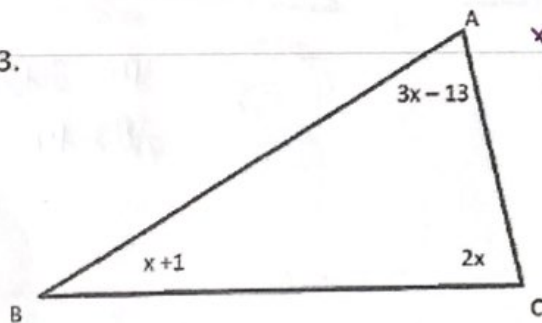
$$x = 15$$

$$7(15) \angle A = \underline{105^\circ}$$

$$3(15) \angle B = \underline{45^\circ}$$

$$2(15) \angle C = \underline{30^\circ}$$

3.



$$x + 1 + 2x + 3x - 13 = 180$$

$$6x - 12 = 180$$

$$\frac{6x}{6} = \frac{192}{6}$$

$$x = 32$$

$$3(32) - 13 \quad \angle A = \underline{83^\circ}$$

$$\angle B = \underline{33^\circ}$$

$$\angle C = \underline{64^\circ}$$