

Name: key

Date _____

Period _____

Shapes and Designs Unit Test Review

Standards

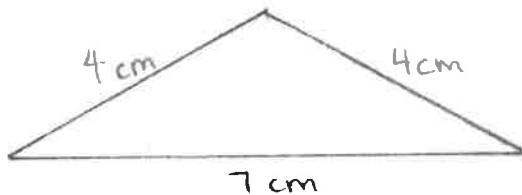
7.G.2: Draw, with ruler and protractor, triangles with given conditions.

7.G.2: Identify when the conditions determine a unique triangle, more than one triangle or no triangle.

7.G.5: Use facts about supplementary, complementary, vertical, and adjacent angles to write and solve simple equations for an unknown angle in a figure.

1. $\triangle ABC$ with side lengths of 4 cm, 4 cm, and 7 cm.

a. Draw and label $\triangle ABC$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.



b. Is it possible to draw a different triangle with these same measures?

no

2. $\triangle DEF$ with side lengths of 2 in, 3 in, and 6 in.

a. Draw and label $\triangle DEF$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.

Not possible.

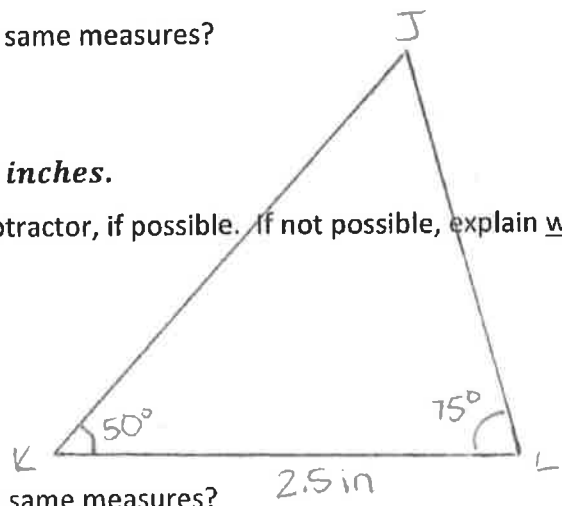
The sum of the 2 shorter sides must be greater than the longest side, or the side won't meet.

b. Is it possible to draw a different triangle with these same measures?

no

3. $\triangle JKL$ with $\angle JKL = 50^\circ$, $\angle KLJ = 75^\circ$, and $\overline{KL} = 2.5$ inches.

a. Draw and label $\triangle JKL$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.

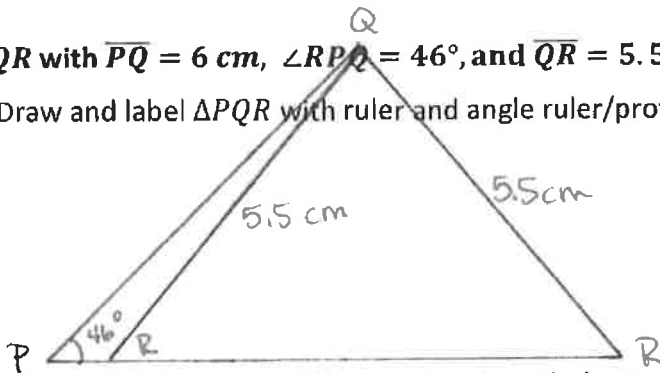


b. Is it possible to draw a different triangle with these same measures?

no

4. $\triangle PQR$ with $\overline{PQ} = 6\text{ cm}$, $\angle RPQ = 46^\circ$, and $\overline{QR} = 5.5\text{ cm}$.

a. Draw and label $\triangle PQR$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.



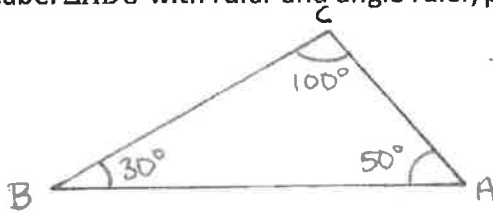
* two different possible angles for Q and R *

b. Is it possible to draw a different triangle with these same measures?

yes

5. $\triangle ABC$ with $\angle ABC = 30^\circ$, $\angle CAB = 50^\circ$ and $\angle BCA = 100^\circ$.

a. Draw and label $\triangle ABC$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.



* any side lengths possible *

b. Is it possible to draw a different triangle with these same measures?

yes

6. $\triangle DEF$ with $\angle ABC = 45^\circ$, $\angle CAB = 55^\circ$ and $\angle BCA = 85^\circ$.

a. Draw and label $\triangle DEF$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.

Not possible.

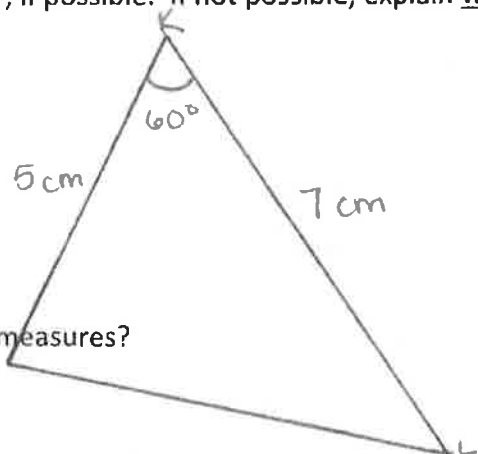
The angles of a triangle need to add to 180° , and these add to 185° .

b. Is it possible to draw a different triangle with these same measures?

no

7. $\triangle JKL$ with $\overline{JK} = 5\text{ cm}$, $\angle JKL = 60^\circ$, and $\overline{KL} = 7\text{ cm}$.

a. Draw and label $\triangle JKL$ with ruler and angle ruler/protractor, if possible. If not possible, explain why.



b. Is it possible to draw a different triangle with these same measures?

no

8. The following problems use your understanding of supplementary, complimentary, vertical and adjacent angles. For each problem, write and solve an equation to find the value of x . Then, use that value to find the measure of $\angle ABC$. The diagrams are not to scale.

a. $\angle ABC = 33^\circ$ $x = 14$

$2x + 5 + 57 = 90$
 $2x + 62 = 90$
 $-62 \quad -62$
 $\frac{2x}{2} = \frac{28}{2}$
 $x = 14$

$\angle ABC = 2(14) + 5 = 28 + 5 = 33$

b. $\angle ABC = 99^\circ$ $x = 16$

$\angle ABC = 6(16) + 3$
 $m\angle ABC = 99^\circ$

$6x + 3 + 5x + 1 = 180$
 $11x + 4 = 180$
 $-4 \quad -4$
 $\frac{11x}{11} = \frac{176}{11}$
 $x = 16$

c. $\angle ABC = 59^\circ$ $x = 29$

$2x + 1 = 59$
 $-1 \quad -1$
 $\frac{2x}{2} = \frac{58}{2}$
 $x = 29$

$m\angle ABC = 2(29) + 1 = 58 + 1 = 59$

d. $\angle ABC = 101^\circ$ $x = 43$

Circle = 360

$2x + 15 + 44 + 215 = 360$
 $2x + 274 = 360$
 $-274 \quad -274$
 $\frac{2x}{2} = \frac{86}{2}$
 $x = 43$

$m\angle ABC = 2(43) + 15 = 86 + 15 = 101$

9. Based on the diagram, write an equation and solve for x . Then, determine whether each equation is true. Select True or False for each statement.

$2(23) + 16 = 62$
 $46 + 16 = 62$

$3 + (5 \times 23) = 118$
 $(2x + 16) + (3 + 5x) = 118$

$2x + 16 + 3 + 5x = 118$
 $7x + 19 = 118$
 $-19 \quad -19$
 $\frac{7x}{7} = \frac{99}{7}$
 $x = 23$

Statement	True	False
$2x + 16 = 62^\circ$	X	
$3^\circ + 5x = 118^\circ$	X	
$7x + 19 = 90^\circ$		X