Agenda:

"I know what we're going to do today.

1) Warm up- find and fix the mistakes

2) Go over homework with 1:00 buddy

3) Lesson 4: Triangle Inequality Theorem
What is the relationship between side lengths and creating triangles?

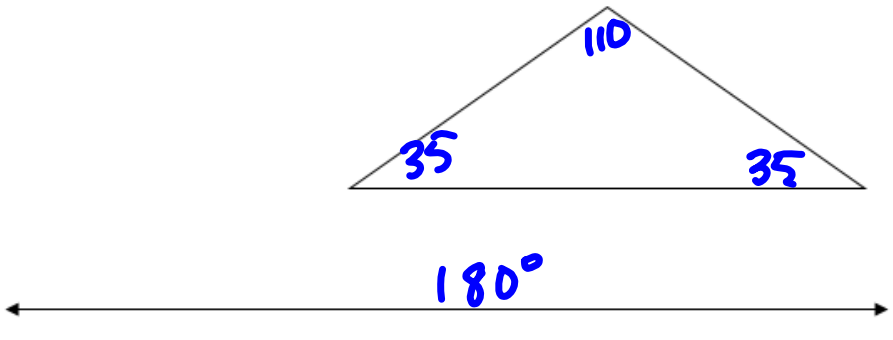
4) HW: Triangle Inequality Theorem (1-3)

5) Exit Ticket

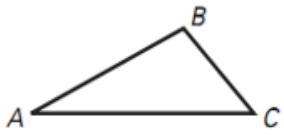
7-4 – TRIANGLE INTERIOR/EXTERIOR ANGLE THEOREMS Geometry

Aim: SWBAT use Triangle Interior and Exterior Angle Sum Theorem to find missing angles of triangles.

Notes: Which is greater- the measure of a straight angle or the sum of the angles of a triangle?

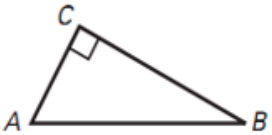


TRIANGLE SUM THEOREM



angles in a △ add to 180°

COROLLARY TO THE TRIANGLE SUM THEOREM

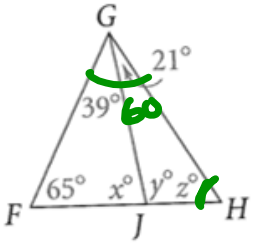


Right triangle, 2 acute angles add to 90°

Example 1

Finding angle measures of triangles

Find x, y, and z. Explain.



60

X = 76
Y = 104
Z = 55

39
65 x

65 + 39 + x = 180

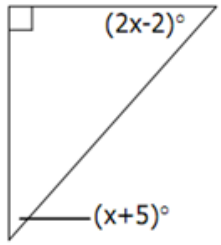
76 y

76 + y = 180
−76 −76
y = 104

104 z

104 + z = 180
−125 −125
z = 55

Find x.



(2x − 2) + (x + 5) = 90

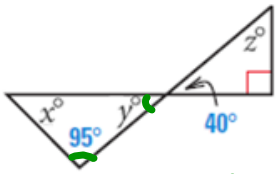
3x + 3 = 90
−3 −3

3x = 87
3 3

x = 29

Find the value of each variable. Show your work .

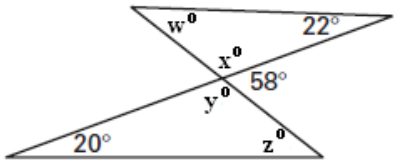
1.



$y = 40$

$x + 95 + 40 = 180$

2.



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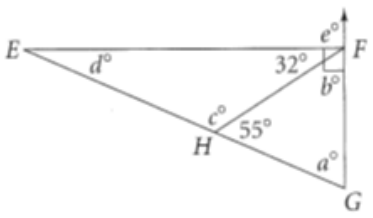
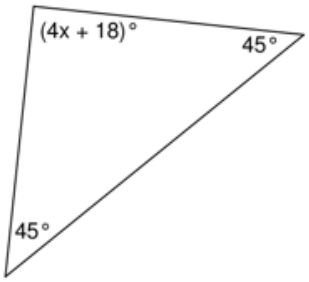


Find x.

4.



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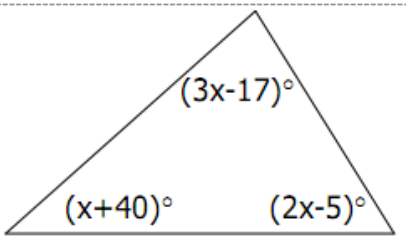
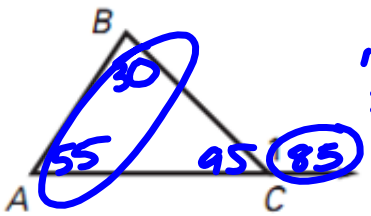


TRIANGLE EXTERIOR ANGLE THEOREM



180 − 95 = 85

Sum of 2 Remote interior angles = exterior angle

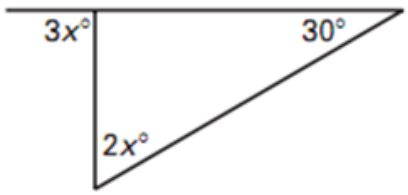
180 − 30 = 150

150 − 55 = 95

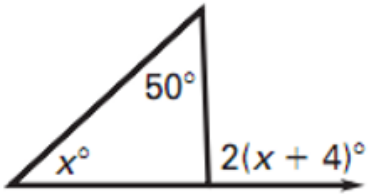
Ex Using the Exterior Angle Theorem to find missing angles

Measure of exterior angle =

Find x.

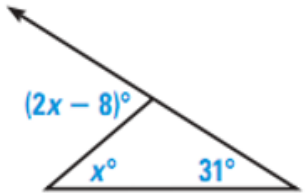


Find the measure of the exterior angle shown.



Find x.

6.



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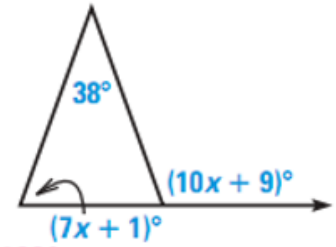
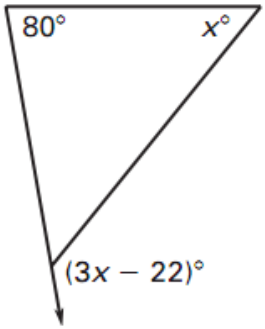


Find the measure of the exterior angle shown.

8.



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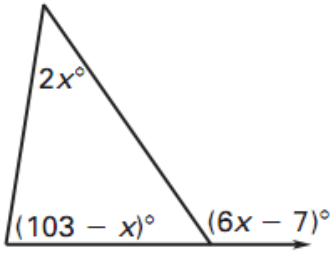
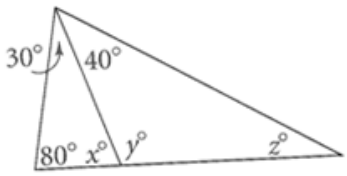


7-4 – TRIANGLE INTERIOR/EXTERIOR ANGLE THEOREMS HOMEWORK | **Geometry**

Aim: SWBAT use Triangle Interior and Exterior Angle Sum Theorem to find missing angles of triangles by writing an solving equations.

Find the value of each variable. Explain.

1.



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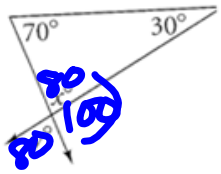

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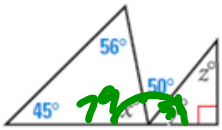

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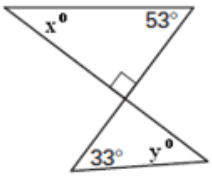


5.

$z + 51 = 90$

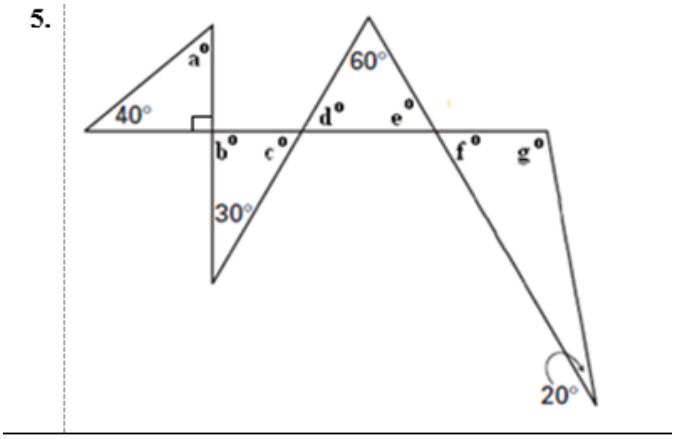
$z = 39$

$79 + 50 + y = 180$

$129 + y = 180$

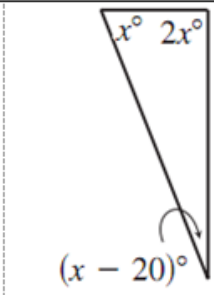
$y = 61$

5.



Find x.

6.



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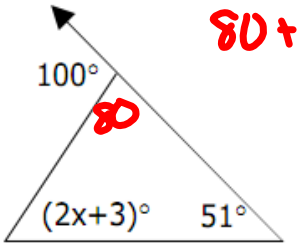


$80 + 51 + 2x + 3 = 180$

$100 = 51 + 2x + 3$

$100 = 54 + 2x$

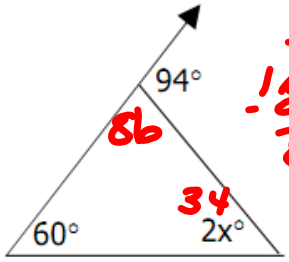
$-54 \quad -54$

$\frac{46}{2} = \frac{2x}{2}$

$23 = x$

Find x.

8.



$180 - 94 = 86$

$86 - 60 = 34$

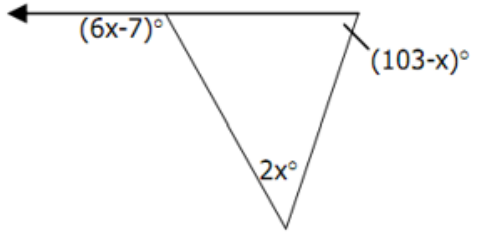
$94 = 60 + 2x$

$-60 \quad -60$

$\frac{34}{2} = \frac{2x}{2}$

$17 = x$

9.



$6x - 7 = 2x + 103 - x$

$6x - 7 = x + 103$

$-x \quad -x$

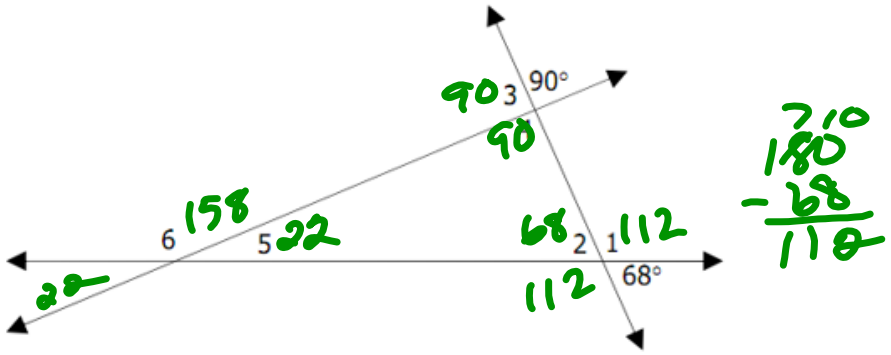
$5x - 7 = 103$

$+7 \quad +7$

$\frac{5x}{5} = \frac{110}{5}$

$x = 22$

10 Find the measure of each numbered angle below. Explain your reasoning.



Lesson 7-5: Triangle Inequality Discovery Lab

Procedure:

1. Empty each bag of straws onto your table at a time (only one color should be out at a time).
2. Measure each one in centimeters, and place the measurements in the table.
3. Try and form a triangle, where the pieces only touch by their ends.
4. Add the lengths of the shorter pieces together, and compare them to the other piece using >, < or =
5. Put those pieces back in the bag, and complete the process with another color

Color	Measurements (cm)	Form Triangle?	Short side + short side (<,>,=) long side
white	4.4 9.7 4.5	NO	4.4+4.5 9.7 8.9 < 9.7

Follow Up Questions:

1. Compare your last two columns in the table – what do you notice regarding when you were/were not able to create a triangle? Sum of 2 shorter sides has to be greater than longest side to create a triangle

2. What can you conclude regarding the side lengths of a triangle?

short side + short side > long side

3. Would the side lengths 8 cm, 7 cm and 2 cm form a triangle? Why or why not?

2+7 > 8 yes

4. Would the side lengths 4 cm, 9 cm, and 5 cm for a triangle? Why or why not?

4+5=9 No

Lesson 7-5: Triangle Inequality Discovery Lab

Practice Problems: Determine if the side lengths listed could form a triangle – show the inequality to justify your answer.

1) 4+5>7 yes

2) 3, 6, 2

3) 5, 2, 4

4) 8, 2, 8 8+2 > 8 yes

5) 9, 6, 5

6) 5, 8, 4

7) 4, 7, 8

8) 11, 12, 9

9) 3, 10, 8

10) 1, 13, 13

11) 2, 15, 16

12) 10, 18, 10

Homework 7-5

1) Decide whether each set of numbers is a triangle. Write an inequality to justify your answer.

a) 12, 15, 9

b) 23, 16, 7

c) 20, 10, 9

d) 8.5, 6.5, 13.5

2) The measures of two sides of a triangle are given. Between what two numbers must the third side fall? Write an inequality to justify your answer.

a) 9 cm and 15 cm

b) 11 in and 20 in

3) A sign maker tries to sketch two possible triangular shaped signs. Sign 1 has side lengths of 2ft, 3ft, and 3ft. Sign 2 has side lengths of 1 ft, 1ft, and 3 ft.

Can the sign maker make both signs? Explain.

Draw the two signs, if possible, and label the side lengths. Let 1 inch = 1 foot.

Sign 1	Sign 2