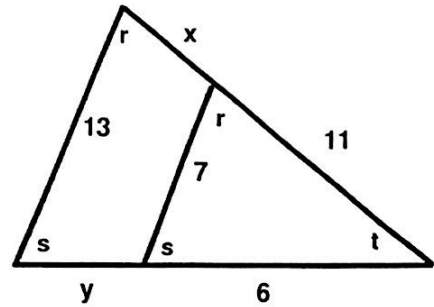


Similar Triangles 2

How To Find the Unknown Sides: Part 2

Look at the triangle at the right. It has two similar triangles, one inside the other. Notice where the similar angles are. Also notice that one angle, t , is the same for both.

The way to find the missing sides in this type of triangle is a little different from the one in Part 1.



BUT, we will still be using the similar triangles equation and cross multiplying.

Small Triangle : side measurements are: 7, 6, and 11

Large Triangle : side measurements are: 13, $x+11$, and $y+6$

Why $x+11$ and $6+y$? Because, we do not know the full length of the two sides. We only know that part of one is 13 and the other is 7. The remaining parts are the unknowns x & y .

So, how to find x & y ?

Step 1: Find x first.

small triangle = $\frac{11}{7}$, $\frac{7}{6}$

large triangle = $x+11$, 13

Cross Multiply and Solve: Don't Forget BEDMAS!!

$$7(x+11) = 11 \times 13$$

$$7x + 77 = 143 \quad \text{Now subtract 77 from each side}$$

$$7x + 77 - 77 = 143 - 77$$

$$7x = 66$$

Now divide each side by 7

$$\frac{7x}{7} = \frac{66}{7}$$

$$x = \frac{66}{7}$$

$$x = \underline{9.43} \text{ OR the Total length of side for large triangle} = 11 + 9.43$$

$$= \underline{20.43}$$

Step 2: Find y next.

small triangle = $\frac{6}{7}$, $\frac{7}{11}$

large triangle = $y+6$, 13

Cross Multiply and Solve: Don't Forget BEDMAS!!

$$7(y+6) = 6 \times 13$$

$$7y + 42 = 78$$

$$7y + 42 - 42 = 78 - 42$$

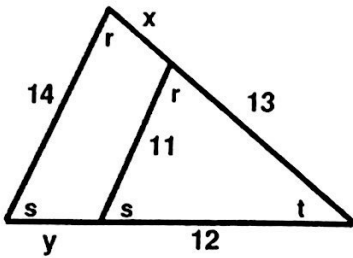
$$7y = 36$$

$$y = \underline{5.14} \text{ OR the Total length of the side for large triangle} = 6 + 5.14$$

$$= \underline{11.14}$$

Now You Try: Look at each of the figures below. Use the similar triangles formula to find the perimeter of each. Show all of your work. You may want to use a separate piece of paper.

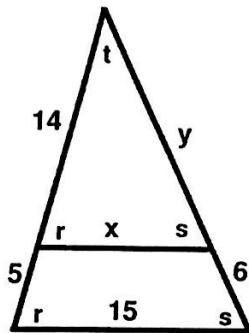
1)



Side X

Side Y

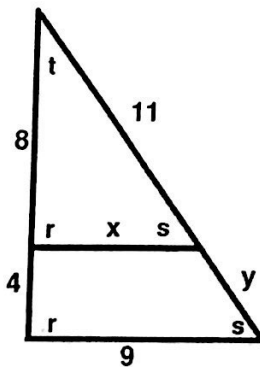
2)



Side X

Side Y: Hint: use $\frac{y}{y+6}$

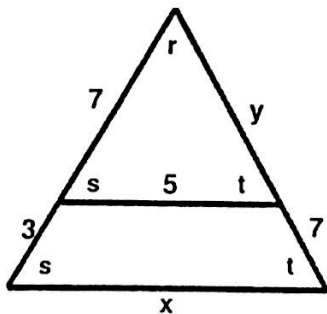
3)



Side X

Side Y: Similar Hint

4)



Side X

Side Y: Similar Hint

Worksheet 2: More Difficult Similar Triangles

Score: _____ / 64 Percent: _____ % Name _____

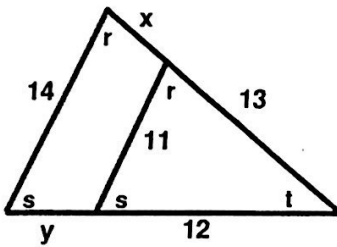
All Questions are worth 8 marks each. Date _____

Directions: Find the X and Y Sides. Show All Work. Use a separate pieces of paper if needed.

1)

Side X

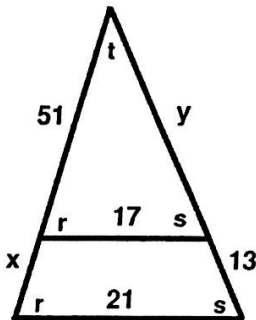
Side Y



2)

Side X

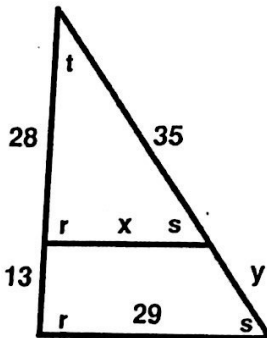
Side Y



3)

Side X

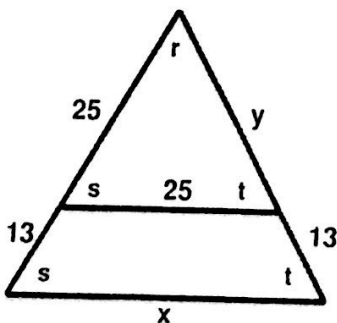
Side Y



4)

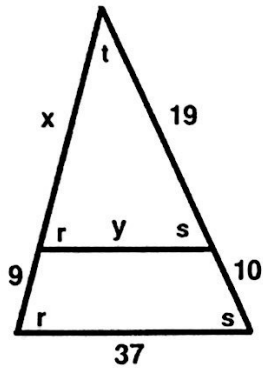
Side X

Side Y



Worksheet 2: More Difficult Similar Triangles cont'd

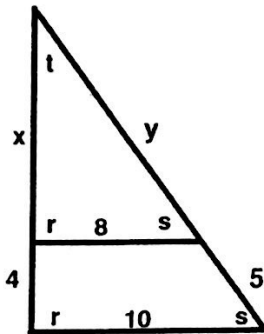
5)



Side X

Side Y

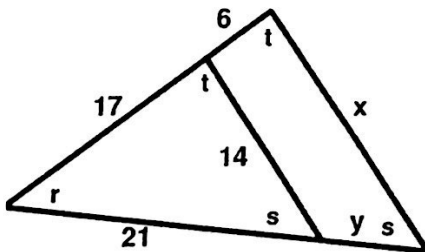
6)



Side X

Side Y

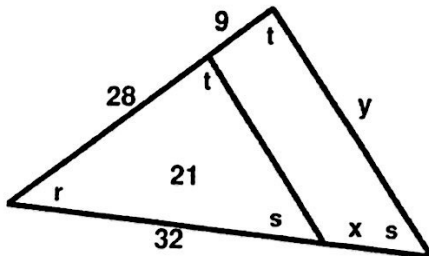
7)



Side X

Side Y

8)



Side X

Side Y