Name: Date:

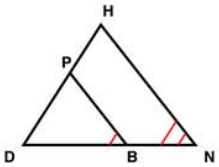
WORKSHEET :

Similar Triangles

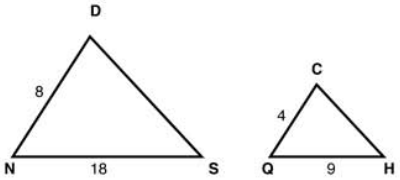
Similar Triangles

Indicate if each triangle pair is similar and based on which criteria (AA, SAS, or SSS).

1)



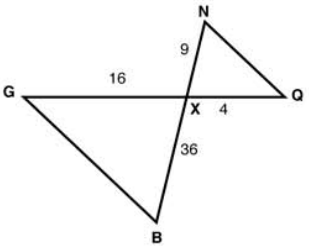
2)



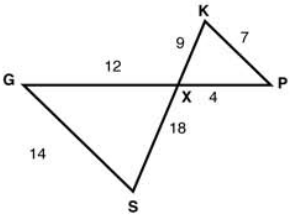
Δ NDH ~ _____

Δ DNS ~ _____

3)



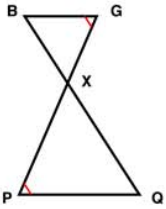
4)



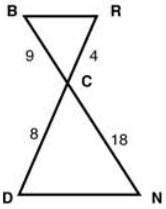
Δ QXN ~ _____

Δ PXK ~ _____

5)



6)



Δ GXB ~ _____

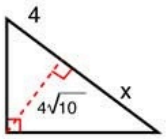
Δ RCB ~ _____

WORKSHEET :

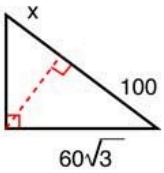
Similar Triangles

Similar Right Triangles

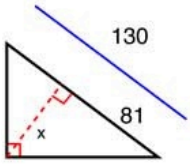
Find x. Leave your answer in the simplest radical form.

1) 

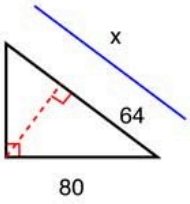
x = _____

2) 

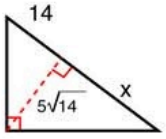
x = _____

3) 

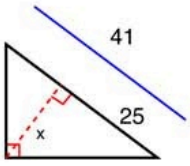
x = _____

4) 

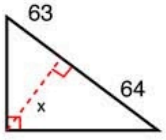
x = _____

5) 

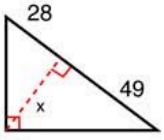
x = _____

6) 

x = _____

7) 

x = _____

8) 

x = _____

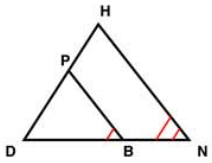
ANSWERS :

Similar Triangles

Similar Triangles

Indicate if each triangle pair is similar and based on which criteria (AA, SAS, or SSS).

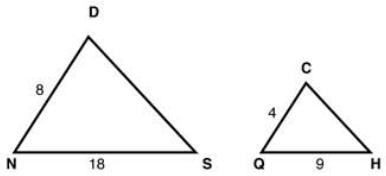
1)



Not Similar

Δ NDH ~ _____

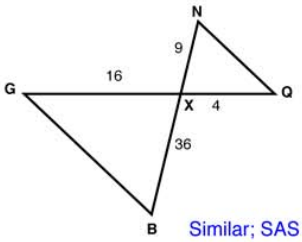
2)



Similar; SAS similarity

Δ DNS ~ Δ CQH

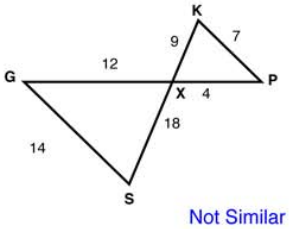
3)



Similar; SAS similarity

Δ QXN ~ Δ GXB

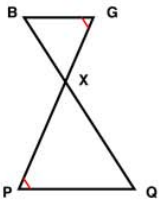
4)



Not Similar

Δ PXK ~ _____

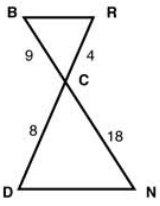
5)



Similar; AA similarity

Δ GXB ~ Δ PXQ

6)



Similar; SAS similarity

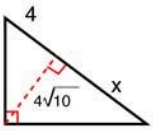
Δ RCB ~ Δ DCN

ANSWERS :

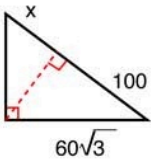
Similar Triangles

Similar Right Triangles

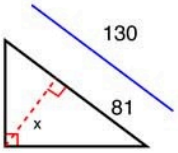
Find x. Leave your answer in the simplest radical form.

1) 

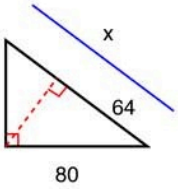
x = 40

2) 

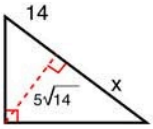
x = 8

3) 

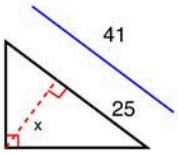
x = 63

4) 

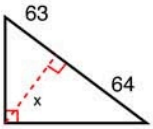
x = 100

5) 

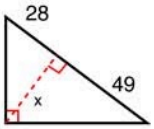
x = 25

6) 

x = 20

7) 

x = $24\sqrt{7}$

8) 

x = $14\sqrt{7}$

KEY CONCEPTS:

Similar Triangles: Similar triangles and other polygons have the following features.

A ~ B if the two triangles have the....

1. Same interior angles.
2. Proportional side lengths (corresponding sides that are proportional are identified as the side opposite the same interior angle)
3. Rotation/flipping does not matter

Tests of Similar Triangles: For triangles the following tests determine similarity.

a. **AA** - angle, angle (if triangle shave 2 equal interior angles then all are equal)
b. **SSS** - side, side, side (if all sides are proportional between both triangles)
c. **SAS** - side, angle, side (if 2 sides are proportional with the same angle between them)

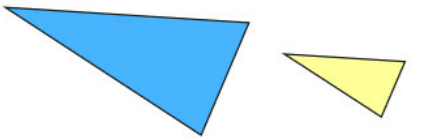
* Note that there is a relation between length and opposite angles in polygons like triangles. If all interior angles are equal then the sides must all be proportional and vice-versa.

e.g. **The longest side of a triangle is opposite the largest interior angle.**
The shortest side of a triangle is opposite the smallest interior angle.
...and the order relation is preserved in between also.

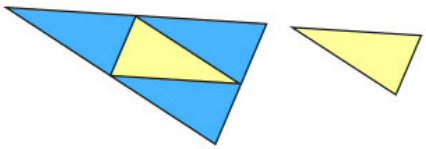
Related Theorems of Similar Triangles:

1. **Area Comparison** - If two similar triangles have sides in the ratio x:y (the scale factor), then their areas are in the ratio x^2:y^2 (the scale factor squared).

e.g Triangle A has sides 2,2,3 and triangle B has sides 4,4,6 (a scale factor of 2 to 1). The ratio of the area triangle B to area triangle A is 2^2:1 or 4:1

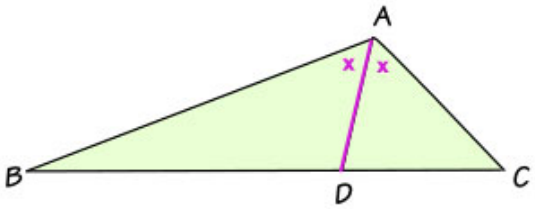


2 to 1 Scale Factor

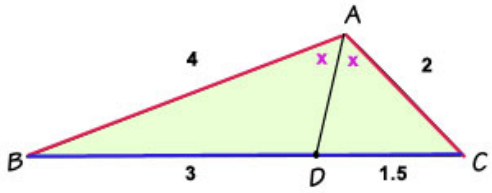


4 to 1 Area Factor

2. **Angle Bisector Theorem -** If a line bisects the angle of any triangle then the opposite sides will be split in proportion to the adjacent sides as follows.

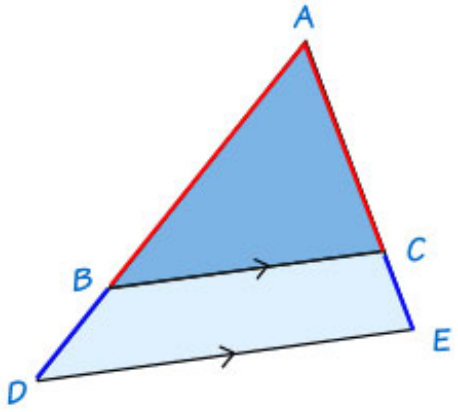


$$\frac{AB}{BD} = \frac{AC}{CD}$$



$$\frac{4}{3} = \frac{2}{1.5}$$

3. **Side Splitter Theorem -** If any line parallel to one side of the triangle is drawn inside the triangle then the line splits the other two sides in the same proportion.



$$\frac{AB}{BD} = \frac{AC}{CE}$$