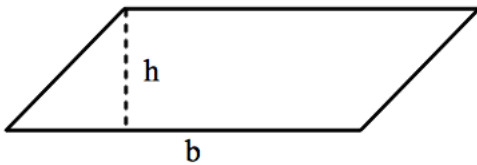


Area of a Traingle via Area of a Parallelogram

April 25, 2013

1. Write down the formula for the area of the parallelogram below. Here b is the base, h the height, and A is the area:

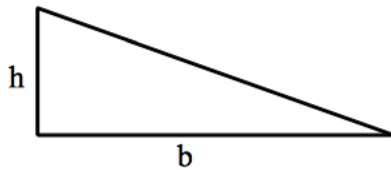


$A =$

2. Let $\triangle ABC$ be a right angle triangle such that

$$AC = h$$

$$BC = b$$



- (a) Label the vertices A , B , C .

- (b) Draw a triangle equal to this one on the same picture so that together they form a rectangle.

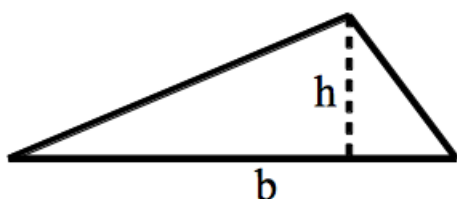
(c) What is the area of the rectangle?

$$A(\text{rectangle}) =$$

(d) What is the area of the triangle?

$$A(\triangle ABC) =$$

3. Let $\triangle ABC$ be the triangle below.



(a) Label the vertices A, B, C so that BC has length b .

(b) Draw a triangle equal to this one on the same picture so that together they form a parallelogram.

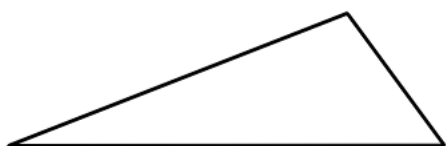
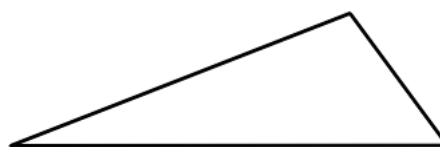
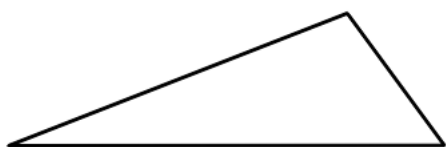
(c) What is the area of the parallelogram?

$$A(\text{parallelogram}) =$$

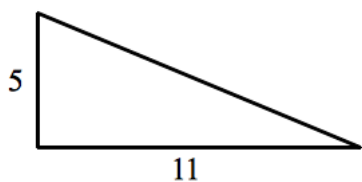
(d) What is the area of the triangle?

$$A(\triangle ABC) =$$

4. There are three ways to make a parallelogram out of 2 copies of the same triangle. With the triangles below, draw the other copy in a way so that they make three different parallelograms.

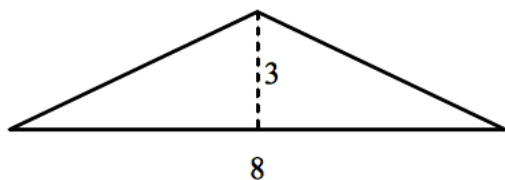


5. Find the area of the triangles below and then draw the corresponding rectangle or parallelogram and give its area.



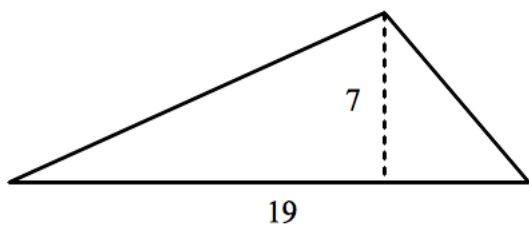
Area of Rectangle/Parallelogram:

Area of Triangle:



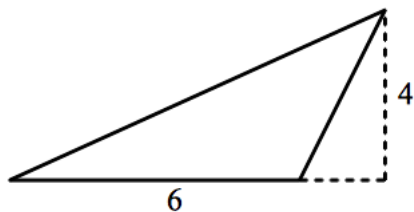
Area of Rectangle/Parallelogram:

Area of Triangle:



Area of Rectangle/Parallelogram:

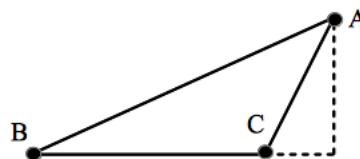
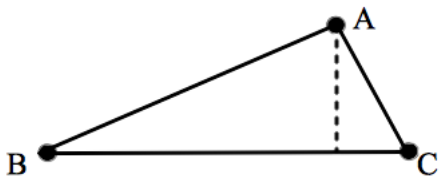
Area of Triangle:



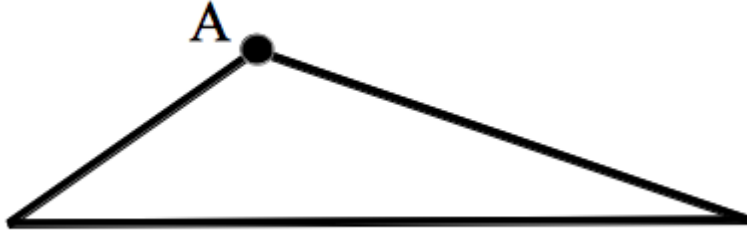
Area of Rectangle/Parallelogram:

Area of Triangle:

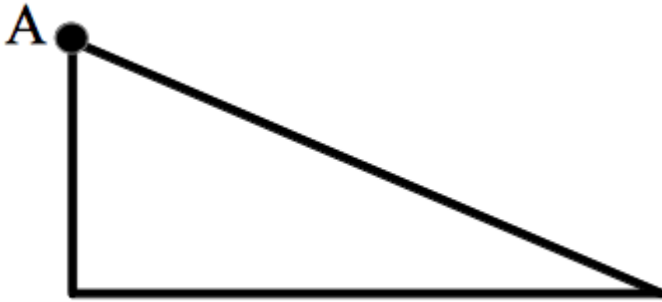
6. An **altitude** from a vertex A to the opposite side BC is the segment which is perpendicular to the side BC:



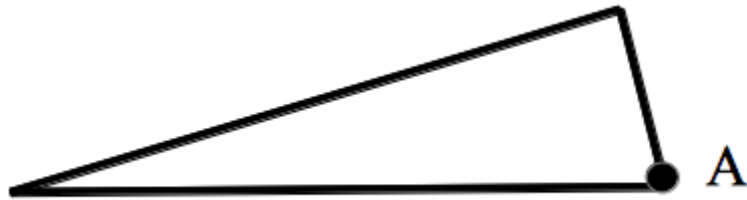
Draw altitudes from vertex A in the following \triangle 's. Extend BC if necessary.



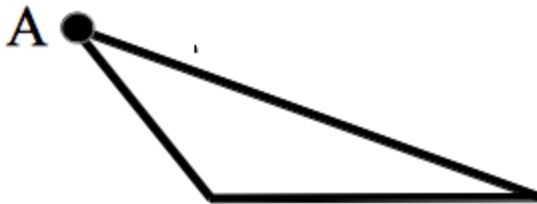
(a)



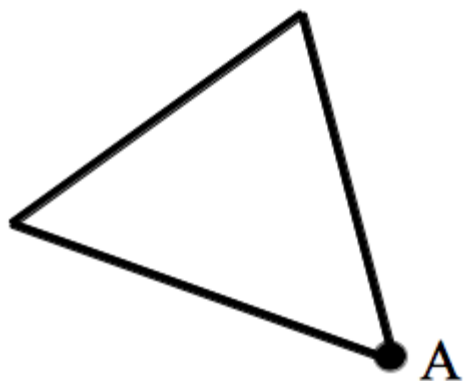
(b)



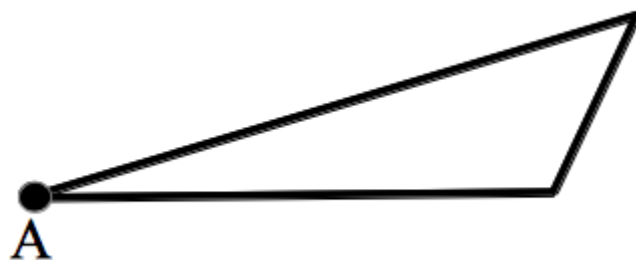
(c)



(d)



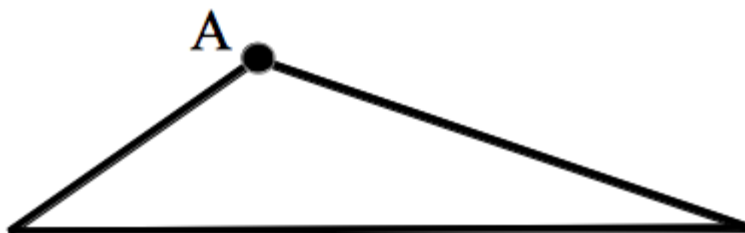
(e)



(f)

7. What is the relation between altitude for $\triangle ABC$ and the height of a parallelogram made of two copies of $\triangle ABC$?

8. Given altitude and bases of the triangles, compute area. Also draw the parallelogram around the above triangles for which the given altitude is the height.

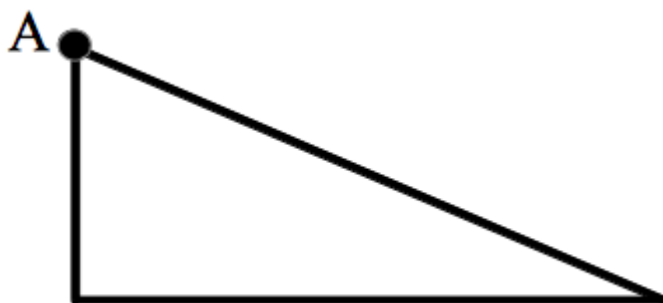


(a)

$$\textit{Altitude} = 3$$

$$\textit{Base} = 7$$

$$\textit{Area} =$$



(b)

$$\textit{Altitude} = 8$$

$$\textit{Base} = 17$$

$$\textit{Area} =$$

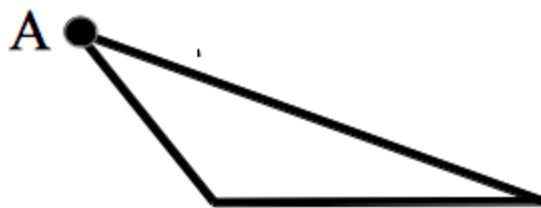


(c)

$$\textit{Altitude} = 2$$

$$\textit{Base} = 5$$

$$\textit{Area} =$$

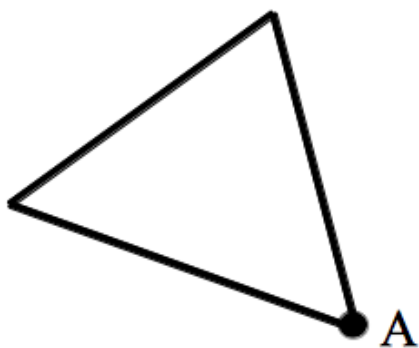


(d)

$$\textit{Altitude} = 9$$

$$\textit{Base} = 21$$

$$\textit{Area} =$$



(e)

$$\textit{Altitude} = 4$$

$$\textit{Base} = 7$$

$$\textit{Area} =$$



(f)

$$\textit{Altitude} = 5$$

$$\textit{Base} = 11$$

$$\textit{Area} =$$

9. Multiply the following numbers using Egyptian Multiplication:

(a) 100×100

(b) 113×118