6.G Areas of Right Triangles

Task

a. Explain why the right triangle shown has an area of exactly 20 square units.

b. The "legs" of a right triangle are the two sides that form the right angle. If one leg of a right triangle is 5 units long, explain what else would have to be true about the right triangle in order for its area to be 30 square units.

c. Here are leg measurements for more right triangles. What is the area of each?
   i. 6 and 3
   ii. 12 and 4 \(\frac{1}{2}\)
   iii. 3 and 7
   iv. 6.5 and 9
d. Explain in words how you can find the area of a right triangle when you know the lengths of its legs.

e. Let $a$ represent the length of one leg of a right triangle and $b$ represent the length of the other leg of the right triangle. Write a mathematical expression for the area of the right triangle in terms of $a$ and $b$. 