**12.5 Homework: Trigonometric functions**                              **HSG.SRT.C.8**
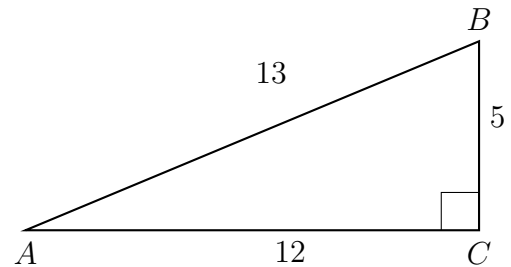
  1. Right triangle $\triangle ABC$ is shown with side lengths marked. Identify the sides.
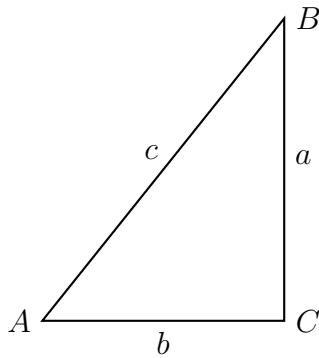
     (a) Which length is the hypotenuse?

     (b) Which length is *opposite* angle $A$?

     (c) Which length is *adjacent* to angle $A$?

  2. $\triangle ABC$ is shown with $m\angle C = 90°$. The lengths of the triangle's sides are $a$, $b$, and $c$.
     Express each trigonometric ratio as a fraction of two lengths.

     (a) $\tan A =$

     (b) $\sin A =$

     (c) $\cos A =$

  3. Express the result to *the nearest thousandth*.

     (a) $\tan 81° =$                               (b) $\sin 16° =$

  4. Express the result to *the nearest whole degree*.

     (a) $\sin^{-1} 0.675 =$                          (b) $\tan^{-1} 1.15 =$

5. Are the lines parallel, perpendicular, or neither? Justify your answer. (you must use the values of the slopes in your justification)

$y = -\frac{5}{3}x + 5$ $\qquad\qquad\qquad\qquad\qquad\qquad$ $y = \frac{3}{5}x - 4$

6. Given $P(1,7)$ and $Q(5,5)$, find the length of $\overline{PQ}$, expressed as a simplified radical.

Use: $l = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

7. A translation $T_{x,y}$ maps $A(6,2) \to A'(3,7)$.

(a) Write down the translation.

(b) Apply the same translation to $B(5,1)$.

8. $A(2,3)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(5,7)$. Find the other endpoint $B$. (hint: find the translation that maps $A \to M$, then apply it to map $M \to B$.)