10.15 Classwork: Unit review **HSG.SRT.C.8**

1. As shown, right $\triangle ABC$ has $AC = 8, BC = 15, AB = 17$, $\text{m}\angle C = 90°$.

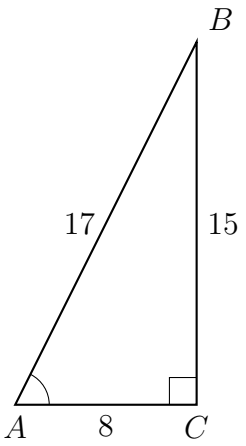
   Express each trigonometric ratio as a fraction.

   (a) $\sin A =$

   (b) $\cos A =$

   (c) $\tan A =$

   (d) Find $m\angle A$.

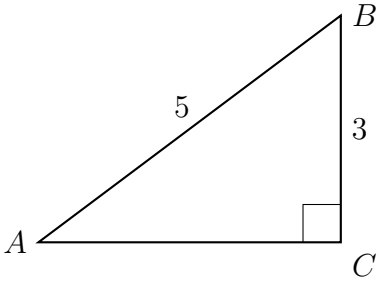


2. Right triangle $\triangle ABC$ is shown with measures as marked.

   (a) Write down $\sin A$.

   (b) Find the length of side AC.

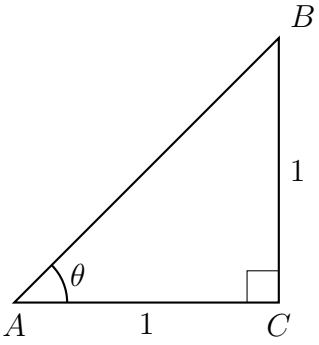
   (c) Find the angle measure of $\angle A$.



3. Isosceles right $\triangle ABC$ is shown with legs $AC = BC = 1$ as marked.

   (a) Write down θ.

   (b) Find the length of hypotenuse AB.

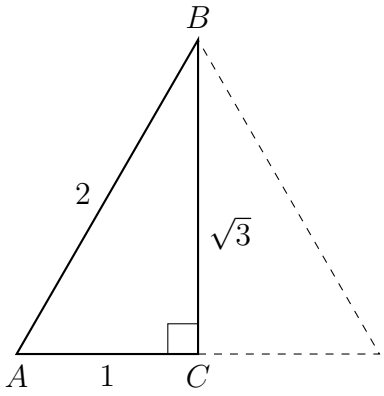


4. Right $\triangle ABC$ has base $AC = 1$, height $BC = \sqrt{3}$, and hypotenuse $AB = 2$ as marked. (A reflection $\triangle ABC$ of is also shown.)

   (a) Write down the angle measure of $\angle A$.

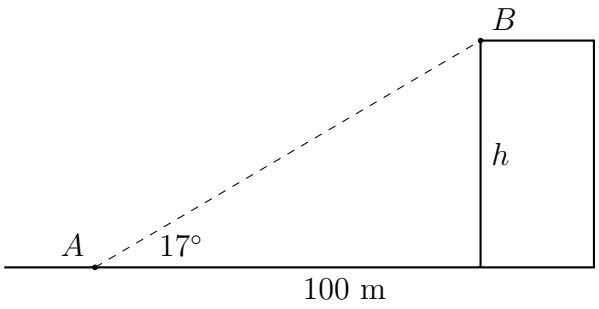
   (b) Write down the angle measure of $\angle ABC$.

   (c) Write down $\cos A$.



5. At an angle of elevation of 17°, the top of a structure B is visible from point A on the ground 100 meters away, as shown below.

   Find the height h of the structure to the *nearest meter*. (not to scale)



6. A 15-foot ladder leans against a building and reaches a window 12 feet above ground. What is the measure of the angle, to the *nearest degree*, that the ladder forms with the ground?

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

$y = 2x + 5$ $y = -\frac{1}{2}x - 9$

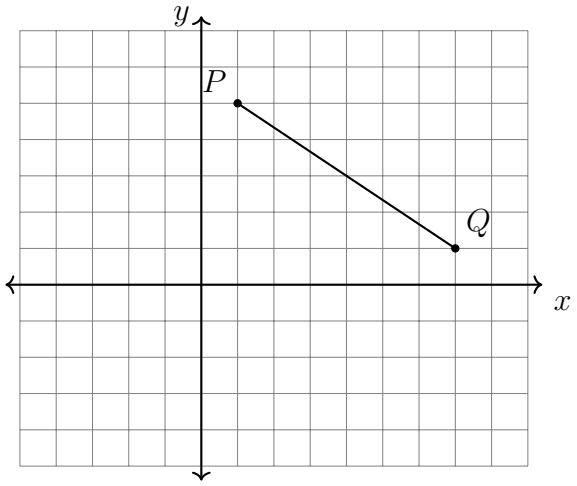
8. Given $P(4, 6)$ and $Q(1, 12)$, find the length of $\overline{PQ}$, expressed as a simplified radical.
Use: $l = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

9. A translation $T_{x,y}$ maps $A(-3, 5) \rightarrow A'(-7, 8)$.
   (a) Write down the translation.

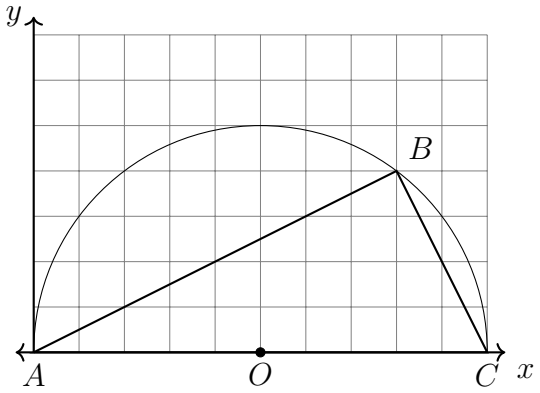
   (b) Apply the same translation to $B(5, 4)$.

10. In a right triangle, the acute angles have the relationship $\sin(2x + 7) = \cos(33)$.
What is the value of x?

11. In the diagram below, $\overline{PQ}$ has endpoints with coordinates $P(1, 5)$ and $Q(7, 1)$. Find the equation of the perpendicular bisector of $\overline{PQ}$ and plot it on the grid.



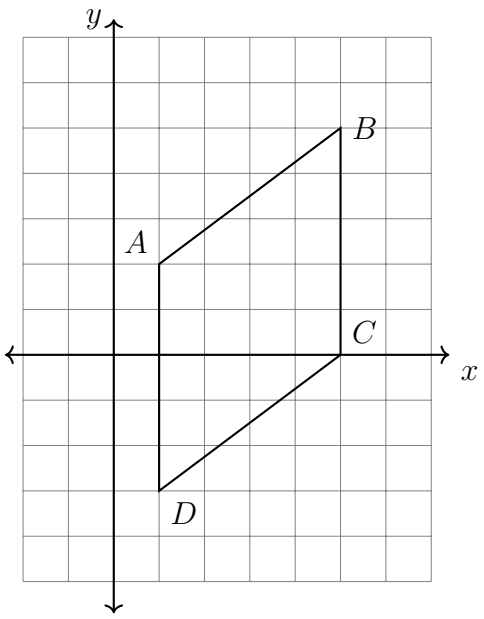
12. In the diagram below, $\triangle ABC$ is inscribed in semi-circle O. Show that $\overline{AB} \perp \overline{BC}$.



13. As shown in the diagram below, quadrilateral $ABCD$ has vertices with coordinates $A(1, 2)$, $B(5, 5)$, $C(5, 0)$, and $D(1, -3)$.

    Show that $ABCD$ is a rhombus.

    (a) Find the lengths of the sides of $ABCD$.



    (b) Write a concluding statement using the definition that a quadrilateral is a rhombus if and only if its four sides are congruent.