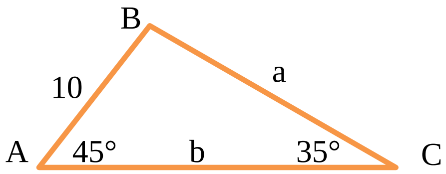
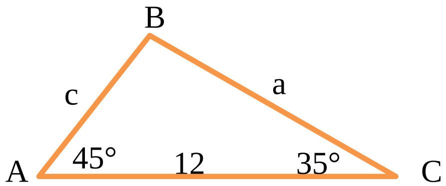
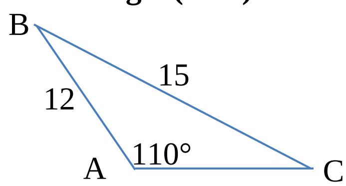
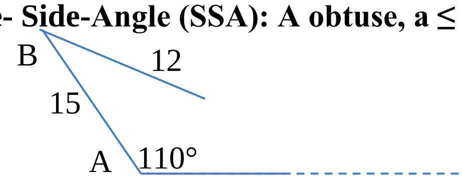
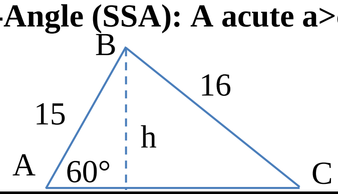
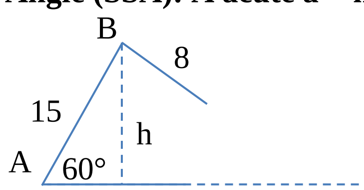
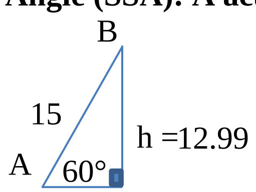
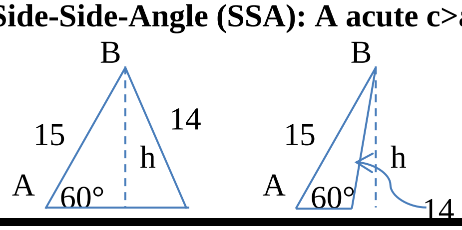
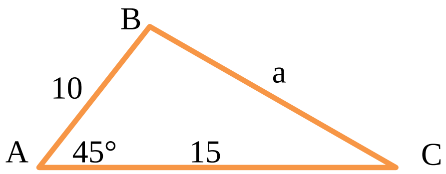
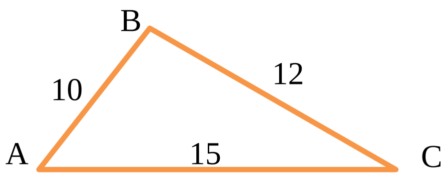
If You See…	You Should Think…
Angle-Angle-Side (AAS) 	**Law of Sines (one solution)** (note: $\angle B = 180° - \angle A - \angle C = 110°$) $\frac{\sin C}{c} = \frac{\sin A}{a} \rightarrow \frac{\sin 35°}{10} = \frac{\sin 45°}{a}$ (solve for a) $\frac{\sin C}{c} = \frac{\sin B}{b} \rightarrow \frac{\sin 35°}{10} = \frac{\sin 110°}{b}$ (solve for b)
Angle- Side-Angle (ASA) 	**Law of Sines (one solution)** (note: $\angle B = 180° - \angle A - \angle C = 110°$) $\frac{\sin C}{c} = \frac{\sin B}{b} \rightarrow \frac{\sin 35°}{c} = \frac{\sin 110°}{12}$ (solve for c) $\frac{\sin B}{b} = \frac{\sin A}{a} \rightarrow \frac{\sin 110°}{12} = \frac{\sin 45°}{a}$ (solve for a)
Side- Side-Angle (SSA): A obtuse, a > c 	**Law of Sines (one solution)** (note: because a > c, there is only one solution) $\frac{\sin C}{c} = \frac{\sin A}{a} \rightarrow \frac{\sin C}{12} = \frac{\sin 110°}{15}$ (solve for $\angle C$ and then $\angle B$) $\frac{\sin B}{b} = \frac{\sin A}{a} \rightarrow \frac{\sin B}{b} = \frac{\sin 110°}{15}$ (solve for b)
Side- Side-Angle (SSA): A obtuse, a ≤ c 	**No solution** There is no solution because side a (length 12) is too short to ever reach side b (which is at least 15 units away). Therefore, no triangle can be constructed.
Side-Side-Angle (SSA): A acute a>c> h 	**Law of Sines (one solution)** (note: because a > c, there is only one solution) $\frac{\sin C}{c} = \frac{\sin A}{a} \rightarrow \frac{\sin C}{15} = \frac{\sin 60°}{16}$ (solve for $\angle C$, $\angle B = 180° - \angle A - \angle C$, and then find b using the Law of Sines).
Side-Side-Angle (SSA): A acute a < h 	**No solution** Calculate h = 15sin60° using SOHCAHTOA. a = 8 < 12.99 = h. There is no solution because side a is too short (length 8) to ever reach side b (at least 12.99 units away). Therefore, no triangle can be constructed.
Side-Side-Angle (SSA): A acute a = h 	**Right Triangle (one solution)** Calculate h = 15sin60°. a = 12.99 = h. There is one solution because side a is perpendicular to side b (right triangle). Therefore, use the Pythagorean Theorem to find side b ($15^2 - 12.99^2 = b^2$). $\angle B = 180° - \angle A - \angle C = 30°$.
Side-Side-Angle (SSA): A acute c>a> h 	**Law of Sines (2 solutions)** Calculate h = 15sin60°. B = 15 > a = 14 > 12.99 = h. There are two solutions because sin($\angle C$) is positive for two values of $\angle C$ (one acute, one obtuse). Find the two values of $\angle B$. Then use the Law of Sines for each of the two possible triangles to find side b.

Side-Angle-Side (SAS)  	**Law of Cosines (one solution)** $a^2 = b^2 + c^2 - 2bc\cos A = 15^2 + 10^2 - 2(15)(10)\cos 45°$ Then use the Law of Sines to find $\angle C$ and then $\angle B = 180° - \angle A - \angle C$.
Side-Side-Side (SSS)  	**Law of Cosines (one solution)** $a^2 = b^2 + c^2 - 2bc\cos A$ → $12^2 = 15^2 + 10^2 - 2(15)(10)\cos A$ Solve for $\angle A$. Then use the Law of Sines to find $\angle C$, and then $\angle B = 180° - \angle A - \angle C$.