

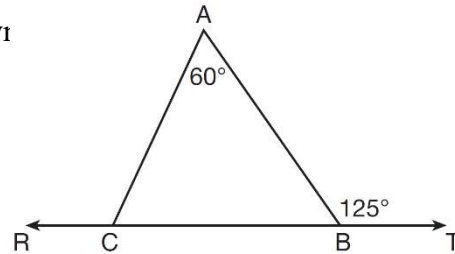
Name _____
Mr. Schlansky

Date _____
Geometry

Complex Triangle Problems

1. In the diagram below, $\overleftrightarrow{RCBT}$ and $\triangle ABC$ are shown.
What is $m\angle ACR$?

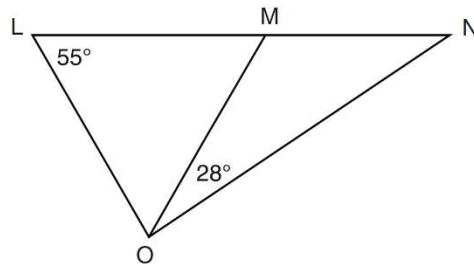
- 1) 125
- 2) 115
- 3) 65
- 4) 55



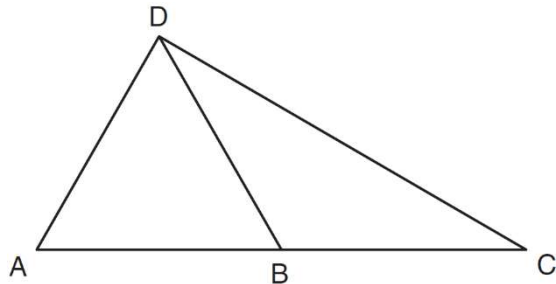
2. In the diagram below, $\triangle LMO$ is isosceles with $LO = MO$.

If $m\angle L = 55$ and $m\angle NOM = 28$, what is $m\angle N$?

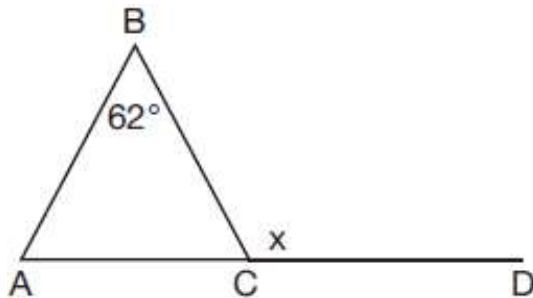
- 1) 27
- 2) 28
- 3) 42
- 4) 70



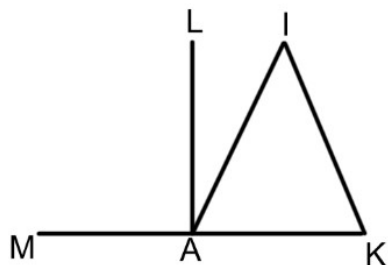
3. In the diagram below of $\triangle ACD$, B is a point on \overline{AC} such that $\triangle ADB$ is an equilateral triangle, and $\triangle DBC$ is an isosceles triangle with $\overline{DB} \cong \overline{BC}$. Find $m\angle C$.



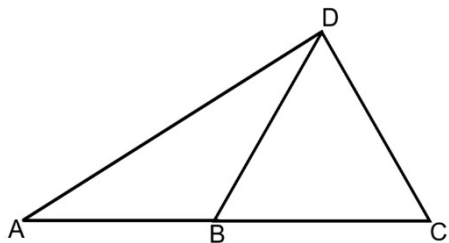
4. Given $\triangle ABC$ with $m\angle B = 62^\circ$ and side \overline{AC} extended to D , as shown below. Which value of x makes $\overline{AB} \cong \overline{CB}$?



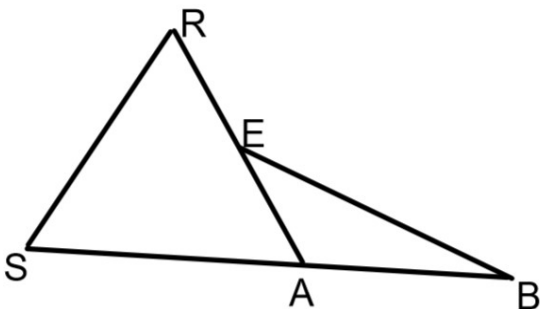
5. In the diagram below, $m\angle MAL = 90$, $m\angle IAL = 20$, and $\overline{IA} \cong \overline{AK}$. Find $m\angle I$.



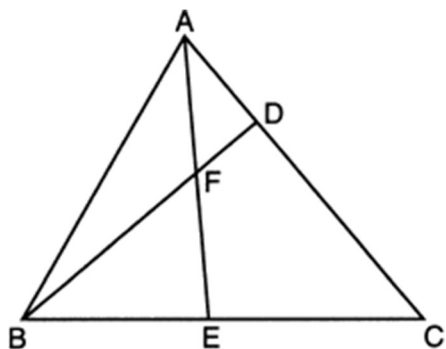
6. In the diagram below, $\triangle DBC$ is an equilateral triangle and $m\angle ADB = 25$. Find $m\angle DAB$.



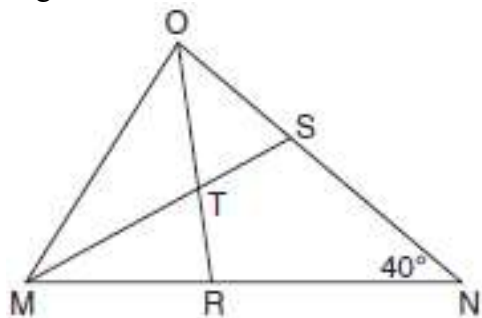
7. In the diagram below, $\overline{SR} \cong \overline{RA}$, $m\angle SRA = 40$, and $m\angle ABE = 30$. Find $m\angle BEA$.



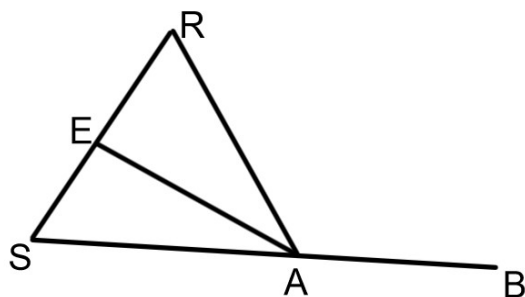
8. In the diagram of $\triangle ABC$ below, \overline{AE} bisects angle BAC , and altitude \overline{BD} is drawn. If $m\angle C = 50^\circ$ and $m\angle ABC = 60^\circ$, what is $m\angle FEB$?



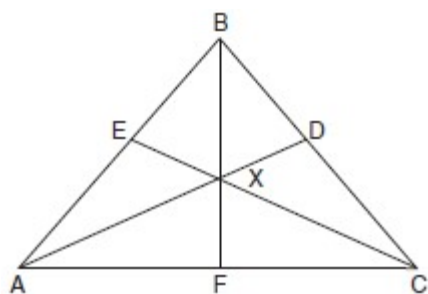
9. In the diagram below of triangle MNO , $\angle M$ and $\angle O$ are bisected by \overline{MS} and \overline{OR} , respectively. Segments MS and OR intersect at T , and $m\angle N = 40^\circ$. If $m\angle TMR = 28^\circ$, what is the measure of angle OTS ?



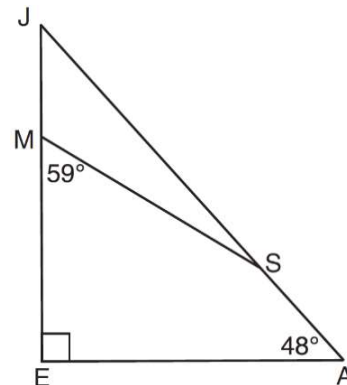
10. In the diagram below, \overline{EA} bisects $\angle SAR$, $\overline{RA} \cong \overline{AS}$ and $m\angle SRA = 55$. Find $m\angle RAB$ and $m\angle REA$.



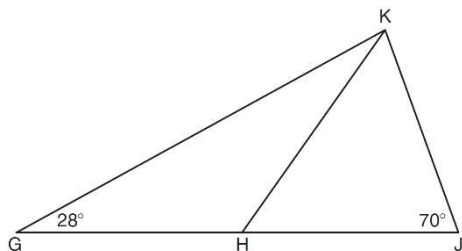
11. In the diagram below of isosceles triangle ABC , $\overline{AB} \cong \overline{CB}$ and angle bisectors \overline{AD} , \overline{BF} , and \overline{CE} are drawn and intersect at X . If $m\angle BAC = 50^\circ$, find $m\angle AXC$.



12. In the diagram of $\triangle JEA$ below, $m\angle JEA = 90$ and $m\angle EAJ = 48$. Line segment MS connects points M and S on the triangle, such that $m\angle EMS = 59$. What is $m\angle JSM$?



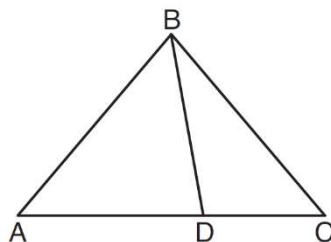
13. In the diagram below of $\triangle GJK$, H is a point on \overline{GJ} , $\overline{HJ} \cong \overline{JK}$, $m\angle G = 28$, and $m\angle GJK = 70$. Determine whether $\triangle GHK$ is an isosceles triangle and justify your answer.



14. In the diagram below, $m\angle BDC = 100^\circ$, $m\angle A = 50^\circ$, and $m\angle DBC = 30^\circ$.

Which statement is true?

- 1) $\triangle ABD$ is obtuse.
- 2) $\triangle ABC$ is isosceles.
- 3) $m\angle ABD = 80^\circ$
- 4) $\triangle ABD$ is scalene.



15. In the diagram of $\triangle BCD$ shown below, \overline{BA} is drawn from vertex B to point A on \overline{DC} , such that $\overline{BC} \cong \overline{BA}$.

In $\triangle DAB$, $m\angle D = x$, $m\angle DAB = 5x - 30$, and $m\angle DBA = 3x - 60$. In $\triangle ABC$, $AB = 6y - 8$ and $BC = 4y - 2$. [Only algebraic solutions can receive full credit.] Find $m\angle D$. Find $m\angle BAC$. Find the length of \overline{BC} . Find the length of \overline{DC} .

