

Name _____
Mr. Schlansky

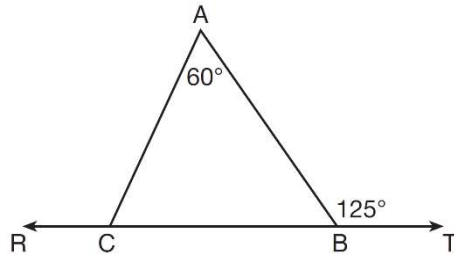
Date _____
Geometry

Complex Triangle Problems

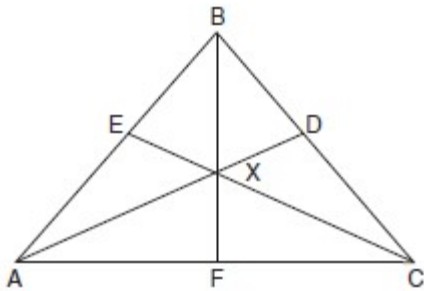
1. In the diagram below, $\overleftrightarrow{RCBT}$ and $\triangle ABC$ are shown with $m\angle A = 60$ and $m\angle ABT = 125$.

What is $m\angle ACR$?

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



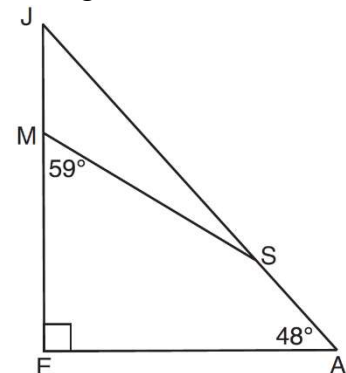
2. In the diagram below of isosceles triangle ABC , $\overline{AB} \cong \overline{CB}$ and angle bisectors \overline{AD} , \overline{BF} , and \overline{CE} are drawn and intersect at X . If $m\angle BAC = 50^\circ$, find $m\angle AXC$.



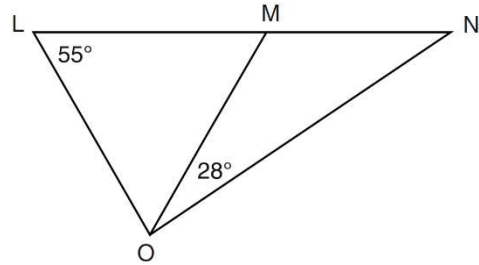
3. In the diagram of $\triangle JEA$ below, $m\angle JEA = 90$ and $m\angle EAJ = 48$. Line segment MS connects points M and S on the triangle, such that $m\angle EMS = 59$.

What is $m\angle JSM$?

- 1) 163
- 2) 121
- 3) 42
- 4) 17



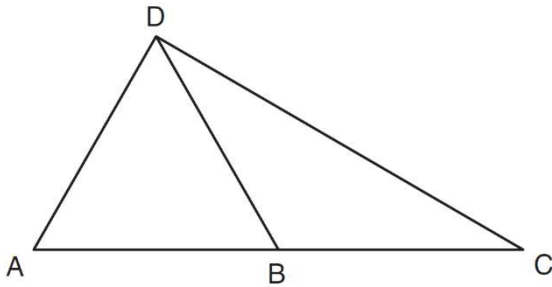
4. In the diagram below, $\triangle LMO$ is isosceles with $LO = MO$.



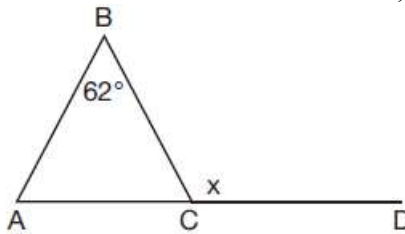
If $m\angle L = 55$ and $m\angle NOM = 28$, what is $m\angle N$?

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

5. 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 $m\angle C$.



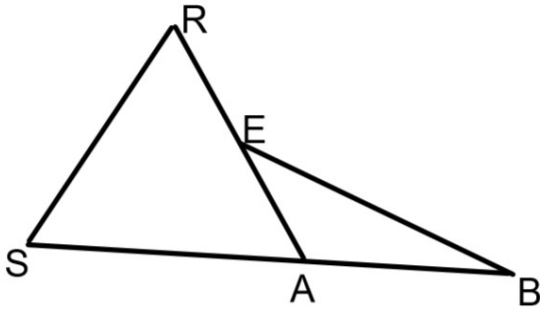
6. Given $\triangle ABC$ with $m\angle B = 62^\circ$ and side \overline{AC} extended to D , as shown below.



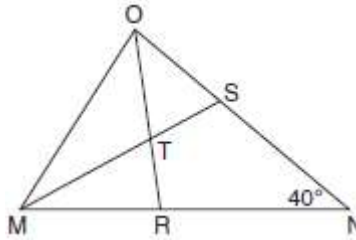
Which value of x makes $\overline{AB} \cong \overline{CB}$?

- | | |
|---------------|----------------|
| 1) 59° | 3) 118° |
| 2) 62° | 4) 121° |

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



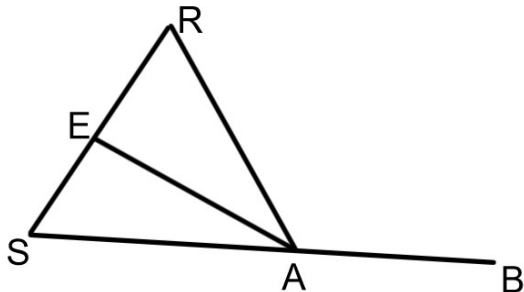
8. In the diagram below of triangle MNO , $\angle M$ and $\angle O$ are bisected by \overline{MS} and \overline{OR} , respectively. Segments MS and OR intersect at T , and $m\angle N = 40^\circ$.



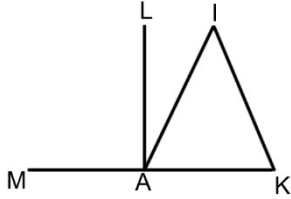
If $m\angle TMR = 28^\circ$, the measure of angle OTS is

- 1) 40°
- 2) 50°
- 3) 60°
- 4) 70°

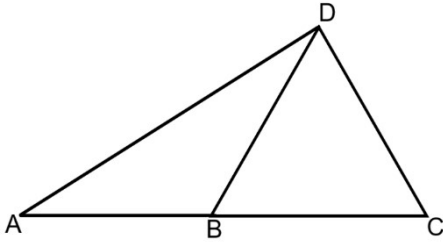
9. In the diagram below, \overline{EA} bisects $\angle SAR$, $\overline{RA} \cong \overline{AS}$ and $m\angle SRA = 55$. Find $m\angle RAB$ and $m\angle REA$.



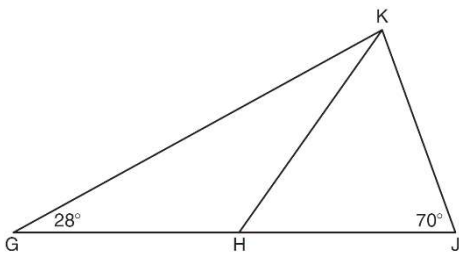
10. In the diagram below, $m\angle MAL = 90$, $m\angle IAL = 20$, and $\overline{IA} \cong \overline{AK}$. Find $m\angle I$.



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



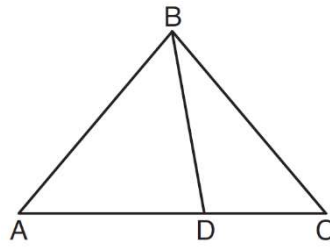
12. In the diagram below of $\triangle GJK$, H is a point on \overline{GJ} , $\overline{HJ} \cong \overline{JK}$, $m\angle G = 28$, and $m\angle GJK = 70$. Determine whether $\triangle GHK$ is an isosceles triangle and justify your answer.



13. 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.



14. 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} .

