

# The Weekly Rigor

No. 130

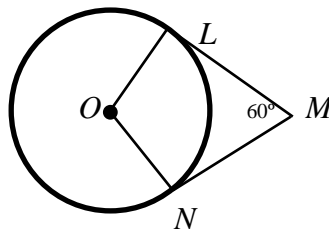
“A mathematician is a machine for turning coffee into theorems.”

December 17, 2016

## SAT Math Test Problem Children: Geometry

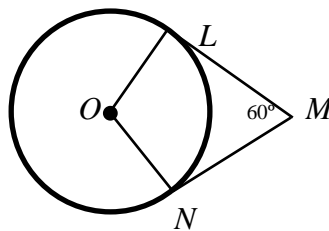
(Part 4)

7.



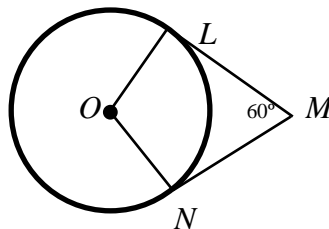
In the figure above, point  $O$  is the center of the circle, line segments  $LM$  and  $MN$  are tangent to the circle at points  $L$  and  $N$ , respectively, and the segments intersect at point  $M$  as shown. If the circumference of the circle is 99, what is the length of minor arc  $\widehat{LN}$  ?

8.



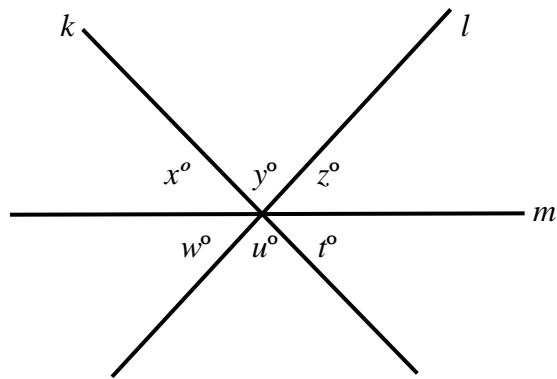
In the figure above, point  $O$  is the center of the circle, line segments  $LM$  and  $MN$  are tangent to the circle at points  $L$  and  $N$ , respectively, and the segments intersect at point  $M$  as shown. If the circumference of the circle is 45, what is the length of minor arc  $\widehat{LN}$  ?

9.



In the figure above, point  $O$  is the center of the circle, line segments  $LM$  and  $MN$  are tangent to the circle at points  $L$  and  $N$ , respectively, and the segments intersect at point  $M$  as shown. If the circumference of the circle is 96, what is the length of minor arc  $\widehat{LN}$  ?

10.



Note: Figure not drawn to scale.

In the figure above, lines  $k$ ,  $l$ , and  $m$  intersect at a point. If  $x + y = u + w$ , which of the following must be true?

- I.  $w = t$
  - II.  $y = u$
  - III.  $w = u$
- A) I and II only
  - B) I and III only
  - C) II and III only
  - D) I, II, and III

“Only he who never plays, never loses.”