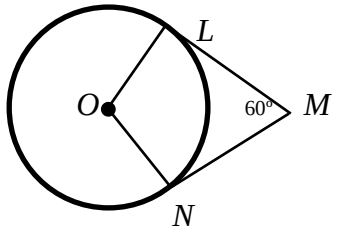
The Weekly Rigor

No. 142 "A mathematician is a machine for turning coffee into theorems." March 11, 2017

SAT Math Test Problem Children: Randomized Problem Set 1

(Part 2)

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 99, what is the length of minor arc $\widehat{LN}$?

10.

$$f(x) = \frac{3}{2}x + b$$

In the function above, *b* is a constant. If $f(4) = 6$, what is the value of $f(-2)$?

11.

$$\sqrt{x - a} = x - 4$$

If $a = 2$, what is the solution set of the equation above?

12.

$3x - 4y = -11$
$4x - 3y = 4$

If (x, y) is a solution to the system of equations above, what is the value of $x - y$?

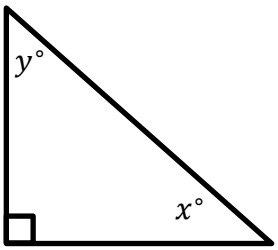
A) -15

B) -7

C) -1

D) 7

13.



In the triangle above, the sine of x° is 0.8. What is the cosine of y° ?

14. If $x > 0$ and $5x^2 + 4x - 1 = 0$, what is the value of *x*?

15. Which of the following equations represents a line that is parallel to the line with equation $y = -4x + 4$?

A) $6x + 4y = 15$
B) $4x - y = 7$
C) $8x + 2y = 6$
D) $x + 2y = 1$