

B. One cross support in the center of the tower measures  $4c + 3$ , and the other measures  $6c - 5$ . What is the length of each cross support?

**SOLUTION**

$$4c + 3 = 6c - 5$$

$$8 = 2c$$

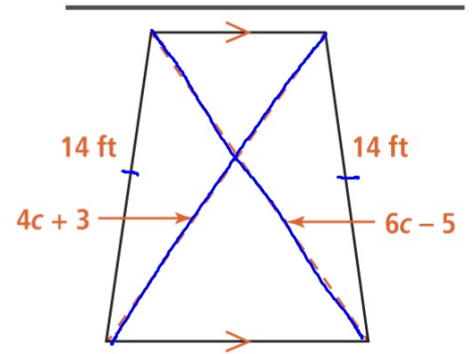
$$c = 4$$

$$4(4) + 3$$

$$19$$

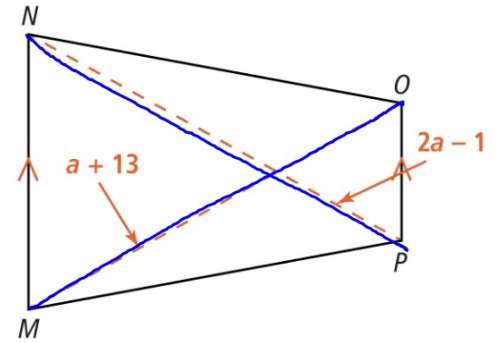
$$6(4) - 5$$

$$19$$



4. Given isosceles trapezoid  $MNOP$  where the given expressions represent the measures of the diagonals, what is the value of  $a$ ?

Enter your answer  $a + 13 = 2a - 1$   
 $a = 14$

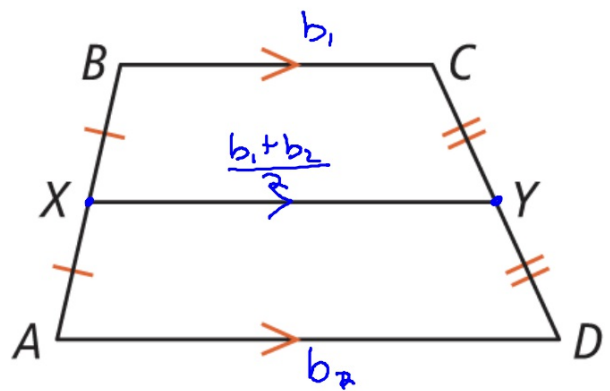


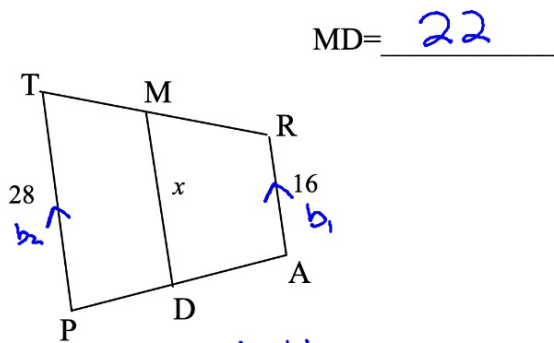
### Midsegment of a Trapezoid

In a trapezoid, the segment containing the midpoints of the two legs is parallel to the bases, and its length is half the sum of the lengths of the bases.

$$\overline{XY} \parallel \overline{AD}, \overline{XY} \parallel \overline{BC},$$

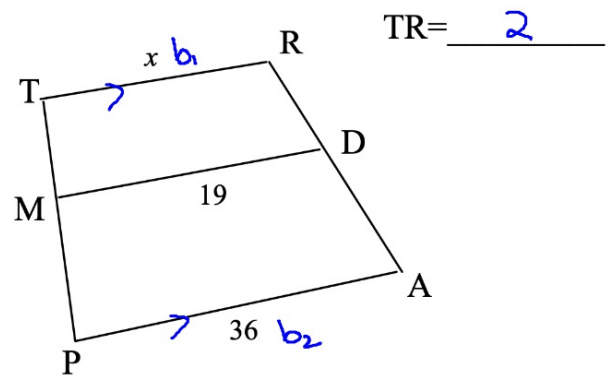
and  $XY = \frac{1}{2}(AD + BC)$





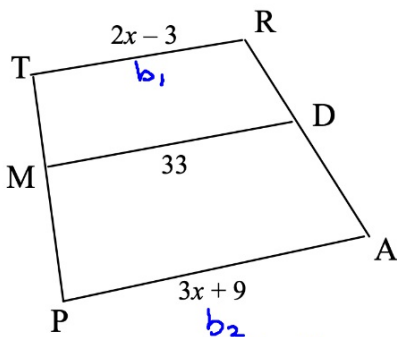
$$MD = \underline{22}$$

$$\begin{aligned} x &= \frac{b_1 + b_2}{2} \\ &= \frac{16 + 28}{2} \\ &= 22 \end{aligned}$$



$$TR = \underline{2}$$

$$\begin{aligned} \frac{b_1 + b_2}{2} &= 19 \\ 2 \left( \frac{x + 36}{2} \right) &= (19) \cdot 2 \\ x + 36 &= 38 \\ x &= 2 \end{aligned}$$



$$x = \underline{12}$$

$$TR = \underline{2(12) - 3 = 21}$$

$$PA = \underline{3(12) + 9 = 45}$$

$$\text{Midseg} = \frac{b_1 + b_2}{2}$$

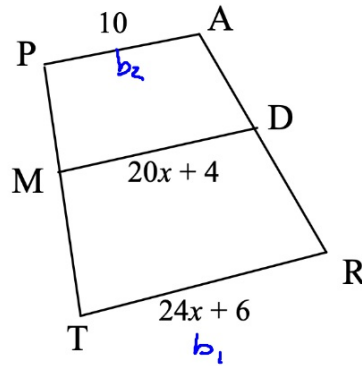
$$33 = \frac{2x - 3 + 3x + 9}{2}$$

$$2(33) = \left(\frac{5x + 6}{2}\right) 2$$

$$66 = 5x + 6$$

$$60 = 5x$$

$$x = 12$$



$$x = \underline{\frac{1}{2}}$$

$$TR = \underline{18}$$

$$MD = \underline{14}$$

$$\frac{10 + 24x + 6}{2} = 20x + 4$$

$$\frac{24x + 16}{2} = 20x + 4$$

$$24x + 16 = 40x + 8$$

$$8 = 16x$$

$$x = \frac{1}{2}$$