BECA / Dr. Huson / Geometry
Unit 1: Segments, length, and area   Name: $Solutions$
9 Sept 2022
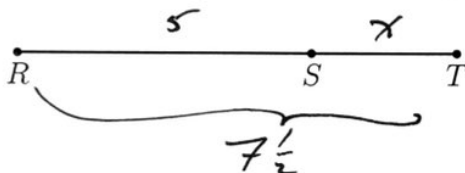
1.2 Classwork: Segment Addition Postulate and solving for length

1. Given $\overline{ABC}$, $AB = 8$, and $BC = 4$.

A ———— 8 ———— B — 4 — C

   (a) Find AC. Write your answer as an equation. $AC = 8 + 4 = 12$

   (b) Name the postulate used in this problem: __Segment Addition Postulate__

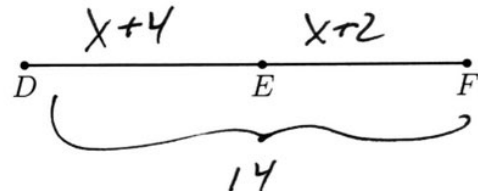2. Given $\overline{RST}$, $RS = 5$, and $RT = 7\frac{1}{2}$. Find ST.

   R —— 5 —— S —— x —— T
   (brace: $7\frac{1}{2}$)

   $5 + x = 7\frac{1}{2}$
   $x = 2\frac{1}{2}$

   $5 + 2\frac{1}{2} = 7\frac{1}{2}$ ✓

3. Given $\overline{DEF}$, $DE = x + 4$, $EF = x + 2$, $DF = 14$. Find DE.

   (a) Label the diagram with the given values.

   D —— $x+4$ —— E —— $x+2$ —— F
   (brace: 14)

   (b) Write an equation:

   $(x+4) + (x+2) = 14$

   (c) Solve for x

   $2x + 6 = 14$
   $2x = 8$
   $x = 4$

   (d) Answer the question.

   Find DE by substituting for x.

   $DE = (4) + 4 = 8$

   $EF = (4) + 2 = 6$

   (e) Check your answer

   $8 + 6 = 14$ ✓

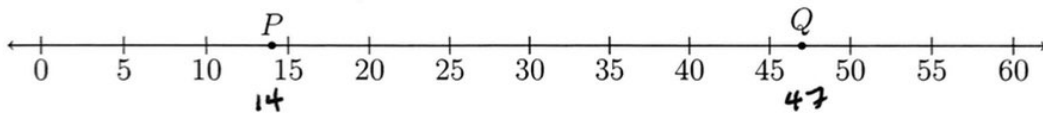4. The points shown are in a straight line, $\overline{XYZ}$.

   (a) Measure and label the lengths XY and YZ to the nearest centimeter.

   4 cm   2cm

   X   Y   Z

   (b) Write an equation employing the Segment Addition Postulate.
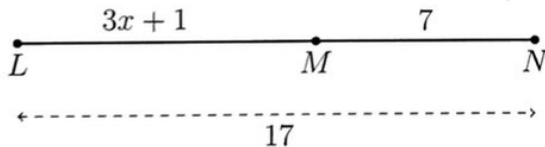   (fill in the blanks with values in centimeters)

   $XZ = \underline{\quad 4 \quad} + \underline{\quad 2 \quad} = \underline{\quad 6 \quad}$ cm

5. Points $P = 14$ and $Q = 47$ are shown below. Find PQ.

   P   Q

   0   5   10   15   20   25   30   35   40   45   50   55   60

   14   47

   $PQ = 47 - 14 = 33$

6. Given $\overline{LMN}$, $LM = 3x + 1$, $MN = 7$, $LN = 17$. Find x.

   $3x + 1$ 7

   L   M   N

   17

   (a) Write down an equation to represent the situation.

   $(3x+1) + 7 = 17$
   $3x + 8 = 17$
   $3x = 9$
   $x = 3$

   (b) Solve for x.

   (c) Check your answer.

   $\left(3(3) + 1\right) + 7 \overset{?}{=} 17$
   $10 + 7 = 17$ ✓