17. $x = 6.5$; The triangles with x and 13 as their bases are similar by AA~, and their corresponding sides are proportional. Use the Side-Splitter Theorem to solve for x.

$\frac{x}{2+4} = \frac{13}{6+2+4}$

$12x = 6 \cdot 13$

$x = \frac{6 \cdot 13}{12}$

$x = 6.5$

18. $y = 3$; By the Side-Splitter Theorem, the corresponding sides are proportional. Solve for y.

$\frac{y}{6} = \frac{2}{4}$

$y = 6 \cdot \frac{2}{4}$

$y = 3$

19. $z = \frac{13}{3}$; The triangles with z and 13 as their bases are similar by AA~, and their corresponding sides are proportional. Use the Side-Splitter Theorem to solve for z.

$\frac{z}{4} = \frac{13}{4+2+6}$

$z = 4 \cdot \frac{13}{12}$

$z = \frac{13}{3}$

20. $x = 8$; Apply the Side-Splitter Theorem to solve for x.

$\frac{16}{x} = \frac{x}{4}$

$64 = x^2$

$8 = x$

21. $x = 7.5$; Given $y = 16$. Apply the Triangle-Angle-Bisector Theorem to solve for x.

$\frac{y}{x} = \frac{15}{7}$

$\frac{(16)}{x} = \frac{15}{7}$

$7 \cdot 16 = 15x$

$x = \frac{7 \cdot 16}{15}$

$x = 7.5$

22. $x = 9.3$; Given $y = 20$. Apply the Triangle-Angle-Bisector Theorem to solve for x.

$$\frac{y}{x} = \frac{15}{7}$$
$$\frac{(20)}{x} = \frac{15}{7}$$
$$7 \cdot 20 = 15x$$
$$x = \frac{7 \cdot 20}{15}$$
$$x = 9.3$$

23. $x = 8.4$; Given $y = 18$. Apply the Triangle-Angle-Bisector Theorem to solve for x.

$$\frac{y}{x} = \frac{15}{7}$$
$$\frac{(18)}{x} = \frac{15}{7}$$
$$7 \cdot 18 = 15x$$
$$x = \frac{7 \cdot 18}{15}$$
$$x = 8.4$$

24. $\frac{EG}{ED} = \frac{EG}{EG+GD} = \frac{EG}{2EG} = \frac{1}{2}$, $\frac{EH}{EF} = \frac{EH}{EH+HF} = \frac{EH}{2EH} = \frac{1}{2}$, and $\angle E \cong \angle E$, so $\triangle EGH \sim \triangle EDF$ by SAS~. Since corresponding angles of similar triangles are congruent, $\angle EGH \cong \angle EDF$, so $\overline{GH} \parallel \overline{DF}$ by the Converse of the Corresponding Angles Theorem. Since corresponding sides of similar triangles are proportional, $\frac{GH}{DF} = \frac{EG}{ED} = \frac{1}{2}$, so $GH = \frac{1}{2}DF$.

26. Since $\triangle JPM$ is equilateral, $JP = JM = 30$. Apply the Side-Splitter Theorem to solve for KO and LM.

$$\frac{KO}{18+6} = \frac{JP}{30}$$
$$KO = 24 \cdot \frac{JP}{30}$$
$$KO = \frac{4}{5}JP$$
$$KP = \frac{4}{5}(30)$$
$$KP = 24$$

$$\frac{LM}{18} = \frac{JP}{30}$$
$$LM = 18 \cdot \frac{JP}{30}$$
$$LM = \frac{3}{5}JP$$
$$LM = \frac{3}{5}(30)$$
$$LM = 18$$