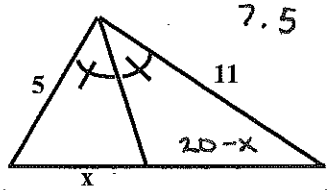
KEY

$\frac{5}{x} = \frac{x}{15}$ → $x = 5\sqrt{3}$

Geometric Mean and Proportions of Similar Triangles

Find the value of the variables. (Lines that appear parallel are parallel.)

1.



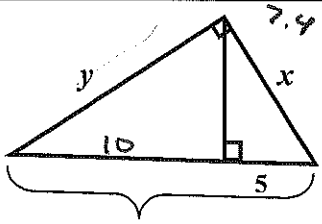
$\frac{5}{11} = \frac{x}{20-x}$

$100 - 5x = 11x$

$100 = 16x$

$x = \frac{100}{16} = \frac{25}{4}$

2.

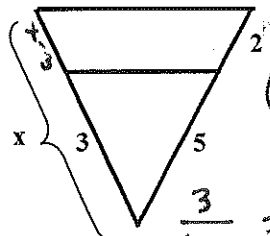


$\frac{10}{y} = \frac{y}{15}$

$y^2 = 150$

$y = 5\sqrt{6}$

3.



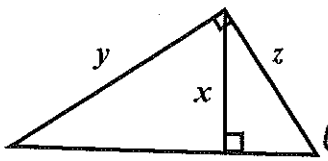
$\frac{3}{x-3} = \frac{5}{2}$

$6 = 5x - 15$

$21 = 5x$

$x = \frac{21}{5}$

4.



$\frac{3}{2} = \frac{2}{9}$

$z = 3\sqrt{3}$

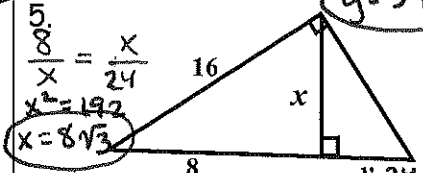
$\frac{6}{y} = \frac{y}{9}$

$y = 3\sqrt{6}$

$\frac{6}{x} = \frac{x}{3}$

$x = 3\sqrt{2}$

5.



$\frac{8}{x} = \frac{x}{24}$

$x^2 = 192$

$x = 8\sqrt{3}$

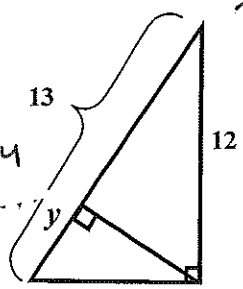
$\frac{8}{16} = \frac{16}{8+y}$

$64 + 8y = 256$

$8y = 192$

$y = 24$

6.



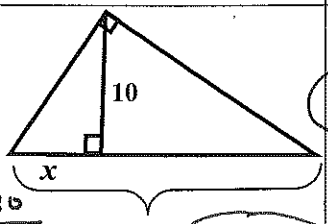
$\frac{13-y}{12} = \frac{12}{13}$

$-13y + 169 = 144$

$-13y = -25$

$y = \frac{25}{13}$

7.



$\frac{x}{10} = \frac{10}{25-x}$

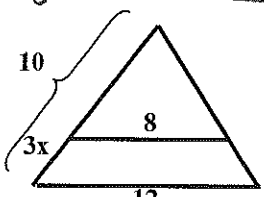
$25x - x^2 = 100$

$0 = x^2 - 25x + 100$

$0 = (x-20)(x-5)$

$x = 20, 5$

8.



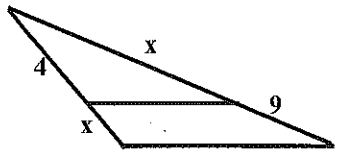
$\frac{10-3x}{10} = \frac{8}{12}$

$120 - 36x = 80$

$-36x = -40$

$x = \frac{10}{9}$

9.

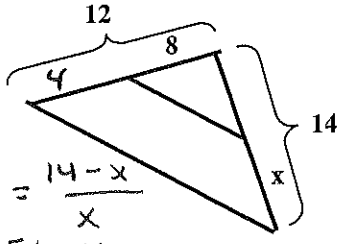


$\frac{4}{x} = \frac{x}{9}$

$36 = x^2$

$6 = x$

10.



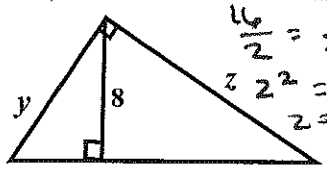
$\frac{8}{4} = \frac{14-x}{x}$

$8x = 56 - 4x$

$12x = 56$

$x = 14/3$

11.



$\frac{4}{8} = \frac{8}{x}$

$4x = 64$

$x = 16$

$\frac{16}{2} = \frac{2}{20}$

$z^2 = 320$

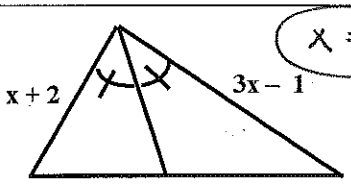
$z = 8\sqrt{5}$

$\frac{4}{y} = \frac{y}{20}$

$80 = y^2$

$4\sqrt{5} = y$

12.



$x = 5$

$\frac{x+2}{3x-1} = \frac{x-3}{x-1}$

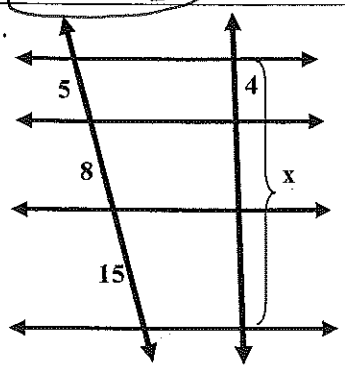
$x^2 + x - 2 = 3x^2 - 10x + 3$

$0 = 2x^2 - 11x + 5$

$0 = (2x - 1)(x - 5)$

$x = \frac{1}{2}, 5$

13.



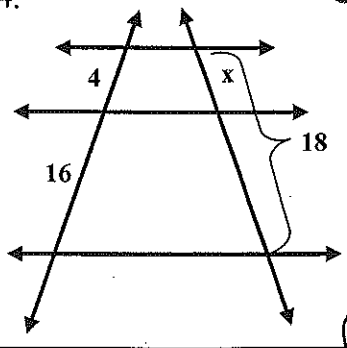
$\frac{5}{23} = \frac{4}{x-4}$

$5x - 20 = 92$

$5x = 112$

$x = \frac{112}{5}$

14.



$\frac{4}{16} = \frac{x}{18-x}$

$72 - 4x = 16x$

$72 = 20x$

$\frac{18}{5} = x$