

2

$$\triangle QPR \sim \triangle SPQ \sim \triangle SQR$$

4

$2\sqrt{10}$

$$\frac{4}{x} = \frac{x}{10}$$

$$\sqrt{x^2} = \sqrt{40}$$

$\begin{matrix} 4 & 10 \\ \text{---} & \text{---} \\ 2 & 5 \end{matrix}$

$$x = 2\sqrt{10}$$

6 34-39

25

$$\frac{5}{x} = \frac{x}{125}$$

$$\sqrt{x^2} = \sqrt{625}$$

$x = 25$

7


$x = 6\sqrt{3}, y = 3\sqrt{3}$

$$\frac{3}{y} = \frac{y}{9} \text{ (heartbeast)}$$

$$9\sqrt{y^2} = 27 \quad y = 3\sqrt{3}$$


$$\frac{9}{x} = \frac{x}{12} \text{ (boomerang)}$$

$$x^2 = 108$$

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


8

$x = 20, y = 10\sqrt{5}$




$$\frac{40}{x} = \frac{x}{10} \quad \frac{10}{y} = \frac{y}{50}$$

heartbeast boomerang

9

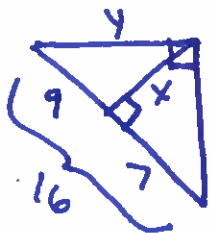
$x = 10, y = 2\sqrt{21}$



$$\frac{21}{y} = \frac{y}{4} \quad \frac{4}{x} = \frac{x}{25}$$

10

$x = 3\sqrt{7}, y = 12$



$$\frac{9}{x} = \frac{x}{7}$$

$$\frac{9}{y} = \frac{y}{16}$$

13

$10\sqrt{10}$

$$\frac{1}{x} = \frac{x}{1000}$$

15

2

$$\frac{\sqrt{8}}{x} = \frac{x}{\sqrt{2}}$$

$$x^2 = \sqrt{8} \cdot \sqrt{2}$$

$$x^2 = \sqrt{16}$$

$$x^2 = 4 \quad x = 2$$

17

$\sqrt{14}$

$$\frac{\sqrt{28}}{x} = \frac{x}{\sqrt{7}}$$

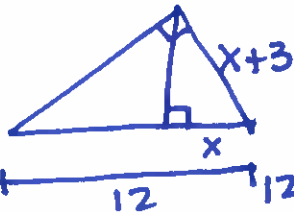
$$x^2 = \sqrt{196}$$

$$x^2 = 14$$

$x = \sqrt{14}$

26

3



$$\frac{x}{x+3} = \frac{x+3}{12}$$

$$12x = (x+3)(x+3)$$

$$12x = x^2 + 3x + 3x + 9$$


$$0 = x^2 - 6x + 9$$

$$0 = (x-3)(x-3)$$

$x = 3$

27

4



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

$$x(x+5) = (x+2)(x+2)$$

$$x^2 + 5x = x^2 + 2x + 2x + 4$$

$$x^2 + 5x = x^2 + 4x + 4$$

$$-x^2 \quad -x^2$$

$$5x = 4x + 4$$

$x = 4$

#28 6

$$\frac{x}{12} = \frac{12}{x+18}$$

$$144 = x(x+18)$$

$$144 = x^2 + 18x$$

$$0 = x^2 + 18x - 144$$

$$0 = (x-6)(x+24)$$

$x=6$ $x=-24$

#29 5

$$\frac{x}{x+5} = \frac{x+5}{20}$$

$$20x = (x+5)(x+5)$$

$$20x = x^2 + 5x + 5x + 25$$

$$20x = x^2 + 10x + 25$$

$$0 = x^2 - 10x + 25$$

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

$x=5$

#34 8.50m

$$\frac{1.84}{3.5} = \frac{3.5}{x}$$

$$1.84x = 12.25$$

$$x = 6.6576$$

$$+ 1.84$$

$= 8.50m$

#35 $(-2, 6), (10, 6)$

Graph paper

#36 $l_1 = \sqrt{2}, l_2 = \sqrt{2}$

$a=1, s_2=1$

$$\frac{1}{l_2} = \frac{l_2}{2}$$

$$\frac{1}{l_1} = \frac{l_1}{2}$$

$$\frac{1}{a} = \frac{a}{1}$$

#37 $l_1 = 6\sqrt{2}, l_2 = 6\sqrt{2}, h = 12, s_2 = 6$

$$\frac{6}{6} = \frac{6}{s_2}$$

$$s_2 = 6$$

$$h = 6 + s_2$$

$$h = 6 + 6$$

$$h = 12$$

$$\frac{6}{l_1} = \frac{l_1}{12}$$

$$\frac{6}{l_2} = \frac{l_2}{12}$$

#38 $l_2 = 2\sqrt{3}, h = 4, a = \sqrt{3}$

$s_1 + 3 = h, s_1 = 1$

$$\frac{s_1 + 3}{2} = \frac{2}{s_1}$$

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

$$4 = x(x+3)$$

$$4 = x^2 + 3x$$

$$0 = x^2 + 3x - 4$$

$$0 = (x+4)(x-1)$$

$x = -4, x = 1$

$s_1 = 1$

$$\frac{3}{a} = \frac{a}{3}$$

$$3 = a^2$$

$\sqrt{3} = a$

#39 $l_1 = 6, h = 12, a = 3\sqrt{3}$

$h = 3 + 3h, s_2 = 9$

first find $s_2 \rightarrow$
then plug in s_2 & find h
then \downarrow

$h = 12$

$$\frac{s_2}{6\sqrt{3}} = \frac{6\sqrt{3}}{s_2 + 3}$$

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

$$x(x+3) = 6\sqrt{3} \cdot 6\sqrt{3}$$

$$x^2 + 3x = 36 \cdot 3$$

$$x^2 + 3x = 108$$

$$x^2 + 3x - 108 = 0$$

$$0 = x^2 + 3x - 4$$

$$0 = (x+4)(x-1)$$

$x = -4, x = 1$

$s_1 = 1$

$$\frac{3}{l_2} = \frac{l_2}{4}$$

$$\sqrt{12} = l_2$$

$h = s_1 + 3$

$h = 4$

$2\sqrt{3} = l_2$

$h = 12$

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

$$27 = a^2$$

$3\sqrt{3} = a$

$$\frac{3}{l_1} = \frac{l_1}{12}$$

$$36 = l_1^2$$

$6 = l_1$

$$(x+12)(x-9) = 0$$

$x = -12, x = 9$

$s_2 = 9$

(4, 2)

(4, 6)

(4, 15)

#35

$$\frac{4}{x} = \frac{x}{9}$$
$$36 = x^2$$
$$6 = x$$

