

Solutions:

Q1(a) $\triangle ABC \sim \triangle APQ$
$$\frac{6}{6+y} = \frac{z}{z+6} = \frac{10}{15}$$

$$\frac{6}{6+y} = \frac{10}{15}$$
$$60+10y=90$$
$$10y=30$$
$$y=3cm$$

(b) $\triangle ABC \sim \triangle QPC$
$$\frac{t}{4} = \frac{9}{3} = \frac{s+3}{6}$$

$$\frac{z}{z+6} = \frac{10}{15}$$
$$60+10z=15z$$
$$5z=60$$
$$z=12cm$$

$$\frac{t}{4} = \frac{9}{3}$$
$$3t=36$$
$$t=12cm$$
$$\frac{9}{3} = \frac{s+3}{6}$$
$$s+3=18$$
$$s=15cm$$

Q2(a) $\triangle ABC \sim \triangle APQ$
$$\frac{16}{24} = \frac{12}{12+l}$$

$$\frac{2}{3} = \frac{12}{12+l}$$
$$24+2l=36$$
$$2l=12$$
$$l=6cm$$

$\triangle ABC \sim \triangle ARS$

$$\frac{16}{24+m} = \frac{12}{21+6}$$
$$336+96=288+12m$$
$$144=12m$$
$$m=12cm$$

Q2(b) $\triangle ABC \sim \triangle PQC$
$$\frac{p}{8} = \frac{16}{6}$$
$$p = 21\frac{1}{3}cm$$

Q3 $\triangle ABC \sim \triangle AZY$
$$\frac{AZ}{AZ+3} = \frac{5}{7}$$
$$7AZ = 5AZ + 15$$
$$2AZ = 15$$
$$AZ = 7.5cm$$

$\triangle YXC \sim \triangle AZY$
$$\frac{CX}{4.8} = \frac{2}{5}$$
$$CX = 1.92cm$$

Q4(a) $\triangle ABC \sim \triangle ADE$

$$\frac{7.4}{7.4+a} = \frac{5}{9}$$

$$5a + 37 = 66.6$$

$$5a = 29.6$$

$$a = 5.92$$

(b) $\triangle ABC \sim \triangle EDC$

$$\frac{b}{10} = \frac{11}{7}$$

$$b \approx 15.7$$

$$\frac{c}{8} = \frac{11}{7}$$

$$c \approx 12.6$$

Q5(a) $\triangle BCS \sim \triangle PQS$

$$\frac{c}{2} = \frac{8}{4}$$

$$c = 4$$

$$\frac{d}{5} = \frac{8}{4}$$

$$d = 10$$

(b) $\triangle BFE \sim \triangle BDC$

$$\frac{f+10}{10} = \frac{8}{6}$$

$$f = 3\frac{1}{3}$$

$\triangle ABC \sim \triangle FEC$

$$\frac{g}{6} = \frac{10 + 3\frac{1}{3}}{3\frac{1}{3}}$$

$$g = 24$$

Q6 $\triangle CDE \sim \triangle ABE$

$$\frac{AB}{CD} = \frac{BE}{DE}$$

$$\frac{AB}{1.4} = \frac{18}{2.1}$$

$$AB = 12m$$

Q7 $\triangle OPQ \sim \triangle OSR$

$$\frac{SR}{4} = \frac{30}{15}$$

$$SR = 8m$$