VOCAB

1. congruent
2. shape , size
3. scale factor
4. enlarged

SOLUTIONS

Q1. C

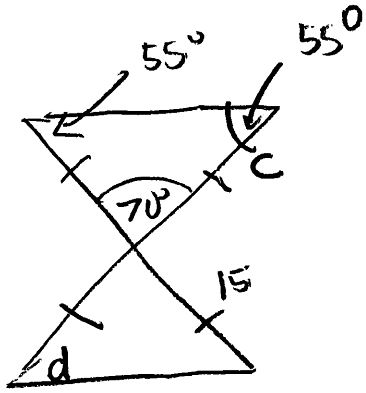
Q2. B

$k = \frac{2.5}{10} = \frac{1}{4}$

$a = \frac{1}{4} \times 12$

$a = 3$

Q3. A



Q4. C

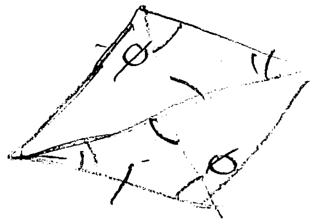
Q5. C

$\frac{a}{16} = \frac{21}{12}$

$\frac{a}{16} = \frac{7}{4}$

$a = \frac{7}{4} \times 16$

$a = 28$



Q6. A

$\angle DEA = \angle CEB$
(vertically opposite)

$\angle DAE = \angle ECB$ (given)

$\therefore \angle ADE = \angle EBC$
(180° in a triangle)

Q7. D

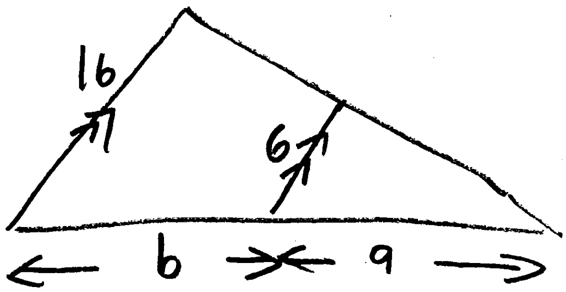
Q8. A

Q9. D

Q10. C

Section C

Q1.



$$\frac{16}{6} = \frac{b+9}{9}$$

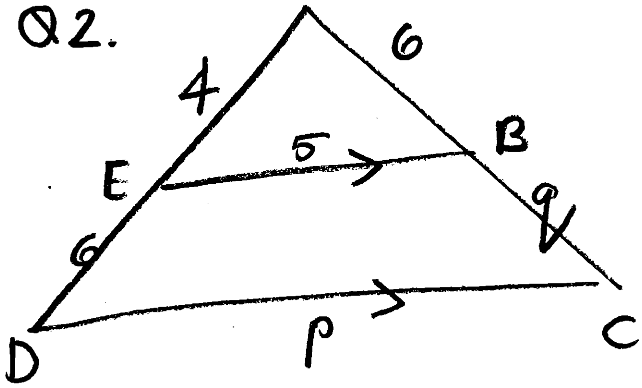
$$\therefore \frac{8}{3} = \frac{b+9}{9}$$

$$\therefore 72 = 3b + 27$$

$$45 = 3b$$

$$\therefore b = 15$$

Q2.



$$k = \frac{10}{4} = \frac{5}{2}$$

$$\therefore p = \frac{5 \times 5}{2} = \frac{25}{2}$$

$$6 + q = \frac{5}{2} \times 6$$

$$\therefore q = 15 - 6$$

$$q = 9$$

Q3.

They are not similar because the SAS condition is not satisfied (the angle equal in both triangles is not the included angle)

Q4.

$e = 10, \quad d = 9$

Q5.

Internal angles in both triangles are $108°, 32°, 40°$.

By AAA, both triangles must be similar.

(Also: $\frac{12}{8.4} = \frac{120}{84} = \frac{10}{7}$

and $\frac{5}{3.5} = \frac{50}{35} = \frac{10}{7}$

Included angle in both $= 40°$

$\therefore$ By SAS, both triangles are similar)

Q6. (a) Trapezium

(b) Rhombus

(c) Rectangle / Parallelogram

Q7. Given: $\angle ABE = \angle DEB$ $(=90°)$

$\overline{AB} = \overline{DE}$

$\overline{BE}$ is common to both triangles

The $90°$ angle is the included angle

By SAS, $\triangle ABE \cong \triangle BDE$

(Also:

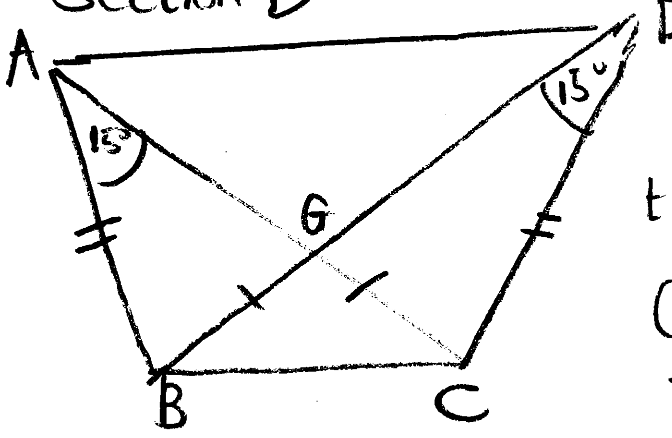
since $\overline{AB} = \overline{DE}$

$\overline{BE}$ is common,

by Pythagoras: $\overline{AE} = \overline{BD}$ (since both triangles are right angled)

$\therefore$ By RHS, $\triangle ABE \cong \triangle BDE$)

Section D



(a) $\angle AGB = \angle DGC$ because they are vertically opposite

(b)

$\overline{AB} = \overline{DC}$ (given)

$\angle BAG = \angle CDG = 15°$ (given)

$\angle AGB = \angle DGC$ (vertically opposite)

$\therefore \angle ABG = \angle DCG$ ($180°$ in a triangle)

$\therefore$ By ASA, $\triangle AGB \cong \triangle DGC$.

(c) Given: $\overline{GB} = \overline{GC}$

Since we have already established that $\Delta AGB \cong \Delta DGC$, we know:

$$\overline{AG} = \overline{GD}$$

$$\therefore \overline{AG} + \overline{GC} = \overline{DG} + \overline{GB}$$

$$\therefore \overline{AC} = \overline{DB}$$

$\overline{AB} = \overline{DC}$ (given)

$\overline{BC}$ is common to both

By SSS, $\Delta ACB \cong \Delta DBC$

(Alternatively:

since $\Delta AGB \cong \Delta DCG$, $\angle ABG = \angle DCG$

$\angle GBC = \angle GCB$ (~~isosc~~ ΔGBC is isosceles)

$\therefore \angle ABC = \angle DCB$

$\overline{AB} = \overline{DC}$ (given)

$\overline{BC}$ is common to both

By SAS, $\Delta ACB \cong \Delta DBC$)